

ESTIMATED GAS SAVINGS

ThermWise® Appliance Rebates

SINGLE FAMILY

Measure	Annual Savings	Source
92% AFUE natural gas furnace	16.6 Dth/unit	2013 PECEI Energy Model Estimate
95% AFUE natural gas furnace	20.5 Dth/unit	PECEI Energy Model (REM/Design v. 12.61)
95% AFUE natural gas furnace with ECM	20.5 Dth/unit	PECEI Energy Model (REM/Design v. 12.61)
98% AFUE natural gas furnace with ECM	21.8 Dth/unit	2013 PECEI Energy Model Estimate
Gas Storage Water Heater .67 EF	2.86 Dth/unit	2010 Deemed savings reduced by realization rate*
Tankless Gas Water Heater Tier 1	8.56 Dth/unit	PECEI Energy Model (REM/Design v. 12.61)
Tankless Gas Water Heater Tier 2	9.37 Dth/unit	PECEI Energy Model (REM/Design v. 12.61)
Condensing Storage Water Heater	8.68 Dth/unit	PECEI Energy Model (REM/Design v. 12.61)
Hybrid Water Heater	8.68 Dth/unit	PECEI Energy Model (REM/Design v. 12.61)
Gas Boiler Tier 1	18.7 Dth/unit	PECEI Energy Model (REM/Design v. 12.61)
Gas Boiler Tier 2	25.2 Dth/unit	PECEI Energy Model (REM/Design v. 12.61)
Solar Assisted Gas Water Heating (domestic)	17.5 Dth/unit	PECEI Energy Model (REM/Design v. 12.61)
Solar Assisted Gas Water Heating (pool)	68.9 Dth/unit	2012 PECEI Energy Model Estimate
Direct Vent natural gas fireplace	10.8 Dth/unit	PECEI Energy Model (REM/Design v. 12.61)
Smart Thermostat	8.6 Dth/unit	2014 PECEI Energy Model Estimate

MULTIFAMILY

Measure	Annual Savings	Source
92% AFUE natural gas furnace	5.6 Dth/unit	2013 PECEI Energy Model Estimate
95% AFUE natural gas furnace	6.5 Dth/unit	2013 PECEI Energy Model Estimate
95% AFUE natural gas furnace with ECM	6.5 Dth/unit	2013 PECEI Energy Model Estimate
98% AFUE natural gas furnace with ECM	21.8 Dth/unit	2013 PECEI Energy Model Estimate
Storage Water Heater .67 EF	2.86 Dth/unit	2010 Deemed savings reduced by realization rate*
Tankless Gas Water Heater Tier 1	5.4 Dth/unit	PECEI Energy Model (REM/Design v. 12.61)

*See Cadmus Phase II Evaluation

Tankless Gas Water Heater Tier 2	6.0 Dth/unit	PECI Energy Model (REM/Design v. 12.61)
Condensing Storage Water Heater	5.4 Dth/unit	PECI Energy Model (REM/Design v. 12.61)
Hybrid Water Heater	5.4 Dth/unit	PECI Energy Model (REM/Design v. 12.61)
Gas Boiler Tier 1	12.08 Dth/unit	PECI Energy Model (REM/Design v. 12.61)
Gas Boiler Tier 2	16.11 Dth/unit	PECI Energy Model (REM/Design v. 12.61)
Solar Assisted Gas Water Heating (domestic)	17.5 Dth/unit	PECI Energy Model (REM/Design v. 12.61)
Solar Assisted Gas Water Heating (pool)	68.9 Dth/unit	2012 PECI Energy Model Estimate
Direct Vent natural gas fireplace	4.1 Dth/unit	PECI Energy Model (REM/Design v. 12.61)
Smart Thermostat	4.0 Dth/unit	2014 PECI Energy Model Estimate
ThermWise® Business Rebates		
Measure	Annual Savings	Source
Gas Storage Water Heater .67 EF	3.03 Dth/unit	Calculation based upon difference between baseline and minimum efficiency energy factor
Gas Storage Water Heater (>.75 kBtu)	0.29 Dth/unit	
Tankless Gas Water Heaters	0.14 Dth/unit	ENERGY STAR® Residential Water Heaters Specification as of 1/5/09 and Final Criteria Analysis
Commercial Clothes Washer	2.6 Dth/unit	ENERGY STAR® Commercial Clothes Washer Calculator
Low Flow Pre-Rinse Spray Valve	10.8 Dth/unit	California Urban Water Conservation Council, Rinse & Save Program Evaluation 2005
92% AFUE natural gas furnace	16.6 Dth/unit	2013 PECI Energy Model Estimate
95% AFUE natural gas furnace	18.1 Dth/unit	ENERGY STAR® Furnace Calculator
95% AFUE natural gas furnace with ECM	18.1 Dth/unit	ENERGY STAR® Furnace Calculator
98% AFUE natural gas furnace with ECM	21.8 Dth/unit	2016 Nexant Energy Model Estimate
Gas Boiler (Hot Water) Tier 1	0.18 Dth/unit	ENERGY STAR® Boiler Calculator
Gas Boiler (Hot Water) Tier 2 ≥ 300,000 < 2,500,000	0.34 Dth/unit	ENERGY STAR® Boiler Calculator
Gas Boiler (Hot Water) ≥ 2,500,000 BTU/h	0.31 Dth/unit	ENERGY STAR® Boiler Calculator
Gas Boiler (steam) Tier 1	0.18 Dth/unit	ENERGY STAR® Boiler Calculator

*See Cadmus Phase II Evaluation

Gas Boiler(Steam) (Except Natural Draft) ≥ 300,000 Btu/h	0.07 Dth/unit	ENERGY STAR® Boiler Calculator
Gas Boiler (Steam) (Natural Draft) ≥ 300,000 Btu/h	0.12 Dth/unit	ENERGY STAR® Boiler Calculator
Direct Contact Water Heater	0.23 Dth/unit	PG&E -CPUC 2004-2005 / Single Family Rebate Program
Condensing Gas Water Heater	10.2 Dth/unit	2016 Nexant Energy Model Estimate
Hybrid Water Heater	10.2 Dth/unit	PECI Energy Model (REM/Design v. 12.61)
Combined Space / Water Heater	18.7 Dth/unit	2014 Nexant Engineering Estimate
Residential Clothes Washers Tier 1 (MEF2.2)	.67 Dth/unit	2014 Nexant Engineering Estimate
Unit Heater (NonCondensing)	0.06 Dth/unit	PG&E 2004 and ACEEE 2003 Reports
Unit Heater (Condensing)	0.17 Dth/unit	
Infrared Heating System	0.48 Dth/system	1) Gas Networks Savings Estimates 2) GDS Report 3) ASHRAE Research #4643
Modulating Infrared Heaters (NC or Replacing Non IR)	.55 Dth/unit	2014 Nexant Engineering Estimate
Modulating Infrared Heaters (Replacing Non IR)	.07 Dth/unit	2014 Nexant Engineering Estimate
Condensing RTU's	.41 Dth/unit	2014 Nexant Engineering Estimate
Boiler Outside Air Reset Control	74.1 Dth/unit	GDS Report 2004 CA Statewide Gas Potential Study Kema-Xenergy 2003
Boiler Tune-up – Tier 1	9.8 Dth/unit	2013 Nexant Engineering Estimate
Boiler Tune-up – Tier 2	48.86 Dth/unit	GDS Report 2004 CA Statewide Gas Potential Study Kema-Xenergy 2003
Boiler Tune-up – Tier 3	72.0 Dth/unit	2013 Nexant Engineering Estimate
Smart Thermostat	.007 Dth/sq. ft.	2016 Nexant Energy Model Estimate
Gas Fryer	40.4 Dth/unit	ENERGY STAR® Gas Fryer Calculator
Steam Cooker	35.3 Dth/unit	ENERGY STAR® Steam Cooker Calculator
Convection Oven	16.15 Dth/per vat	PG&E -CPUC 2006-2008 / Single Family Rebate Program
Combination Oven	40.3 Dth/unit	PG&E -CPUC 2006-2008 / Single Family Rebate Program

*See Cadmus Phase II Evaluation

Griddle	8.8 Dth/unit	PG&E -CPUC 2006-2008 / Single Family Rebate Program
Wall Insulation (retrofit)	0.004 Dth/ sq. ft.	DOE-2 modeling against ASHRAE 90.1-2004 Baseline
Roof Insulation (retrofit)	0.0031 Dth/ sq. ft.	DOE-2 modeling against ASHRAE 90.1-2004 Baseline
Charbroiler	75 Dth/unit	2015 Nexant Energy Model Estimate
Conveyor Oven	88.40 Dth/unit	2015 Nexant Energy Model Estimate
Gas Dryer Moisture Sensor	11.20 Dth/unit	2015 Nexant Energy Model Estimate
Modulating Gas Dryer	32 Dth/unit	2015 Nexant Energy Model Estimate
Two Stage Infrared Heaters	.50 Dth/unit	2015 Nexant Energy Model Estimate
Solar Water Heater – Pool (business)	68.90 Dth/unit	2015 Nexant Energy Model Estimate
Demand Control Ventilation	.0068 Dth/ sq. ft.	2016 Nexant Energy Model Estimate
Custom Measures	1,000 Dth/project	2014 Nexant Engineering Estimate
ThermWise® Builder Rebates		
SINGLE FAMILY		
Measure	Annual Savings	Source
HERS Index 62 or lower	5.2 Dth/unit	2016 CLEAResult Energy Model Estimate
HERS Index 55 or lower	10.4 Dth/unit	2016 CLEAResult Energy Model Estimate
HERS Index 48 or lower	15.6 Dth/unit	2016 CLEAResult Energy Model Estimate
ENERGY STAR® Bonus	2.78 Dth/unit	2016 CLEAResult Energy Model Estimate
92% AFUE natural gas furnace	9.48 Dth/unit	2013 PECEI Energy Model Estimate
95% AFUE natural gas furnace	11.2 Dth/unit	PECEI Energy Model (REM/Design v. 12.61)
95% AFUE natural gas furnace with ECM	11.2 Dth/unit	PECEI Energy Model (REM/Design v. 12.61)
98% AFUE natural gas furnace with ECM	12.4 Dth/unit	2013 PECEI Energy Model Estimate
Gas Storage Water Heater .67 EF	2.86 Dth/unit	2010 Deemed savings reduced by realization rate*
Tankless Water Heater Tier 1	6.71 Dth/unit	PECEI Energy Model (REM/Design v. 12.61)
Tankless Water Heater Tier 2	8.56 Dth/unit	PECEI Energy Model (REM/Design v. 12.61)

*See Cadmus Phase II Evaluation

Condensing Storage Water Heater	8.68 Dth/unit	PECI Energy Model (REM/Design v. 12.61)
Hybrid Water Heater	8.68 Dth/unit	PECI Energy Model (REM/Design v. 12.61)
Gas Boiler Tier 1	12.08 Dth/unit	PECI Energy Model (REM/Design v. 12.61)
Gas Boiler Tier 2	16.11 Dth/unit	PECI Energy Model (REM/Design v. 12.61)
Solar Assisted Gas Water Heating (domestic)	17.5 Dth/unit	PECI Energy Model (REM/Design v. 12.61)
Solar Assisted Gas Water Heating (pool)	68.9 Dth/unit	2012 PECI Engineering Estimate
2X6 R-23 Walls	5.4 Dth/unit	2016 CLEAResult Energy Model Estimate
Windows R-5	0.029 Dth/per sq. ft.	PECI Energy Model (REM/Design v. 12.61)
Smart Thermostat	4.3 Dth/unit	2014 PECI Energy Model Estimate
MULTIFAMILY		
Measure	Annual Savings	Source
HERS Index 62 or lower	2.3 Dth/unit	2016 CLEAResult Energy Model Estimate
HERS Index 55 or lower	4.6 Dth/unit	2016 CLEAResult Energy Model Estimate
HERS Index 48 or lower	6.9 Dth/unit	2016 CLEAResult Energy Model Estimate
ENERGY STAR® Bonus	1.13 Dth/unit	2016 CLEAResult Energy Model Estimate
92% AFUE natural gas furnace	5.6 Dth/unit	2013 PECI Energy Model Estimate
95% AFUE natural gas furnace	6.5 Dth/unit	PECI Energy Model (REM/Design v. 12.61)
95% AFUE natural gas furnace with ECM	6.5 Dth/unit	PECI Energy Model (REM/Design v. 12.61)
98% AFUE natural gas furnace with ECM	7.1 Dth/unit	2013 PECI Energy Model Estimate
Gas Storage Water Heater .67 EF	1.39 Dth/unit	2010 Deemed savings reduced by realization rate*
Tankless Water Heater Tier 1	4.0 Dth/unit	PECI Energy Model (REM/Design v. 12.61)
Tankless Water Heater Tier 2	5.4 Dth/unit	PECI Energy Model (REM/Design v. 12.61)
Condensing Storage Water Heater	5.4 Dth/unit	PECI Energy Model (REM/Design v. 12.61)
Hybrid Water Heater	5.4 Dth/unit	PECI Energy Model (REM/Design v. 12.61)
Gas Boiler Tier 1	12.08 Dth/unit	PECI Energy Model (REM/Design v. 12.61)
Gas Boiler Tier 2	16.11 Dth/unit	PECI Energy Model (REM/Design v. 12.61)
Solar Assisted Gas Water Heating (domestic)	17.5 Dth/unit	PECI Energy Model (REM/Design v. 12.61)
Solar Assisted Gas Water Heating (pool)	68.9 Dth/unit	2012 PECI Engineering Estimate

*See Cadmus Phase II Evaluation

Windows R-5	0.021 Dth/unit	PECI Energy Model (REM/Design v. 12.61)
Smart Thermostat	1.7 Dth/unit	2014 PECI Energy Model Estimate
ThermWise® Home Energy Plan		
Measure	Annual Savings	Source
Kitchen Sink Aerator	1.32 Dth/unit	2010 Nexant Engineering Calculation
Pipe Insulation	1.4 Dth/ system	DOE Rebuild America Reenergize Energy Efficiency Guidebook
Faucet Aerator	0.44 Dth/unit	DOE Rebuild America Reenergize Energy Efficiency Guidebook
Low Flow Shower Head	5.79 Dth/unit	Nexant 2006 Market Study Report
ThermWise® Weatherization Rebates		
SINGLE FAMILY		
Measure	Annual Savings	Source
Windows – R-5	0.0698 Dth/ sq. ft.	Nexant 2011 Engineering Calculation
Wall Insulation	0.0053 Dth/ sq. ft.	2010 Deemed savings reduced by realization rate*
Attic Insulation Tier 1	0.0053 Dth/ sq. ft.	2010 Deemed savings reduced by realization rate*
Attic Insulation Tier 2	0.0013 Dth/ sq. ft.	2010 Deemed savings reduced by realization rate*
Floor Insulation	0.0068 Dth/ sq. ft.	2010 Deemed savings reduced by realization rate*
Duct Sealing & Duct Insulation	13.48 Dth/ System	Nexant 2011 Engineering Calculation
Air Sealing	0.0048 Dth/system	Nexant 2011 Engineering Calculation
MULTIFAMILY		
Measure	Annual Savings	Source
Windows – R-5	0.0698 Dth/ sq. ft.	Nexant 2011 Engineering Calculation
Wall Insulation	0.0053 Dth/ sq. ft.	2010 Deemed savings reduced by realization rate*

*See Cadmus Phase II Evaluation

Attic Insulation Tier 1	0.0053 Dth/ sq. ft.	2010 Deemed savings reduced by realization rate*
Attic Insulation Tier 2	0.0013 Dth/ sq. ft.	2010 Deemed savings reduced by realization rate*
Floor Insulation	0.0068 Dth/ sq. ft.	2010 Deemed savings reduced by realization rate*
Duct Sealing & Duct Insulation	8 Dth/ system	Nexant 2011 Engineering Calculation

Low Income Assistance Program

Measure	Annual Savings	Source
95% AFUE natural gas furnace (with & without ECM)	20.50 Dth/unit	PECI Energy Model (REM/Design v. 12.61)
98% AFUE natural gas furnace with ECM	20.50 Dth/unit	2015 PECI Energy Model Estimate

Note: An approved non-profit or governmental organization may apply for rebates under the ThermWise® Appliance and Weatherization programs for qualifying measures listed in sections 2.10 and 2.14 of the Tariff.

ThermWise® Energy Comparison Report

Measure	Annual Savings	Source
Energy Comparison Report	0.91 Dth/report	2016 Questar Gas Model Estimate

MEASURE LIFE

ThermWise® Appliance Rebates

SINGLE FAMILY

Measure	Lifetime	Source
92% AFUE natural gas furnace	18	2013 PECI estimate
95% AFUE natural gas furnace (with & without ECM)	18	2011 PECI estimate
98% AFUE natural gas furnace with ECM	18	2013 PECI estimate

*See Cadmus Phase II Evaluation

Gas Storage Water Heaters	13	2011 PEI estimate
Tankless Water Heaters	20	2011 PEI estimate
Condensing Storage Water Heater	13	2011 PEI estimate
Hybrid Water Heater	15	2011 PEI estimate
Gas Boilers	20	2011 PEI estimate
Solar Assisted Gas Water Heaters	20	2011 PEI estimate
Direct Vent Natural Gas Fireplace	20	2011 PEI estimate
Smart Thermostat	15	2014 PEI estimate
MULTIFAMILY		
Measure	Lifetime	Source
92% AFUE natural gas furnace	18	2013 PEI estimate
95% AFUE natural gas furnace (with & without ECM)	18	2011 PEI estimate
98% AFUE natural gas furnace with ECM	18	2013 PEI estimate
Gas Storage Water Heaters	13	2011 PEI estimate
Tankless Water Heaters	20	2011 PEI estimate
Condensing Storage Water Heater	13	2011 PEI estimate
Hybrid Water Heater	15	2011 PEI estimate
Gas Boilers	20	2011 PEI estimate
Solar Assisted Gas Water Heaters	20	2011 PEI estimate
Direct Vent Natural Gas Fireplace	20	2011 PEI estimate
Smart Thermostat	15	2014 PEI estimate
ThermWise® Business Rebates		
Measure	Lifetime	Source
Gas Storage Water Heaters	15	Calculation based upon difference between baseline and minimum efficiency energy factor
Tankless Gas Water Heaters	15	ENERGY STAR Residential Water Heaters Specification as of 1/5/09 and Final Criteria Analysis
Commercial Clothes Washer	10	ENERGY STAR Commercial Clothes Washer Calculator

*See Cadmus Phase II Evaluation

Low Flow Pre-Rinse Spray Valve	5	California Urban Water Conservation Council, Rinse & Save Program Evaluation 2005
92% AFUE natural gas furnace	20	2013 Nexant estimate
95% AFUE natural gas furnace (with & without ECM)	20	ENERGY STAR Furnace Calculator
98% AFUE natural gas furnace with ECM	18	2013 PECE estimate
Boilers (hot water)	20	ENERGY STAR Boiler Calculator
Gas Boiler (hot water) \geq 2,500,000 Btu/h	15	2014 Nexant estimate
Boilers (steam)	20	ENERGY STAR Boiler Calculator
Gas Boiler (Steam) Except Natural Draft	15	2014 Nexant estimate
Gas Boiler (Steam) Natural Draft	15	2014 Nexant estimate
Direct Contact Water Heater	20	PG&E -CPUC 2004-2005 / Single Family Rebate Program
Condensing Gas Water Heater	15	PECE Energy Model (REM/Design v. 12.61)
Hybrid Water Heater	15	PECE Energy Model (REM/Design v. 12.61)
Combined Space / Water Heater	10	2014 Nexant estimate
Unit Heaters	18	PG&E 2004 and ACEEE 2003 Reports
Infrared Heating System	17	1) Gas Networks Savings Estimates, 2) GDS Report, 3) ASHRAE Research #4643
Modulating Infrared Heaters (NC or Replacing Non IR)	17	2014 Nexant estimate
Modulating Infrared Heaters (Replacing Non IR)	17	2014 Nexant estimate
Condensing RTU's	15	2014 Nexant estimate
Boiler Outside Air Reset Control	20	GDS Report 2004 CA Statewide Gas Potential Study Kema-Xenergy 2003
Boiler Tune-up (tiers 1, 2, & 3)	2	GDS Report 2004 CA Statewide Gas Potential Study Kema-Xenergy 2003
Smart Thermostat	15	2014 PECE estimate
Gas Fryer	8	ENERGY STAR® Gas Fryer Calculator
Steam Cooker	10	ENERGY STAR® Steam Cooker Calculator
Convection Oven	12	PG&E -CPUC 2006-2008 / Single Family Rebate Program

*See Cadmus Phase II Evaluation

Combination Oven	12	PG&E -CPUC 2006-2008 / Single Family Rebate Program
Griddle	12	PG&E -CPUC 2006-2008 / Single Family Rebate Program
Wall Insulation (retrofit)	35	DOE-2 modeling against ASHRAE 90.1-2004 Baseline
Roof Insulation (retrofit)	35	DOE-2 modeling against ASHRAE 90.1-2004 Baseline
Charbroiler	10	2015 PECEI Energy Model Estimate
Conveyor Oven	12	2015 PECEI Energy Model Estimate
Gas Dryer Moisture Sensor	10	2015 PECEI Energy Model Estimate
Modulating Gas Dryer	10	2015 PECEI Energy Model Estimate
Two Stage Infrared Heaters	17	2015 PECEI Energy Model Estimate
Solar Water Heater – Pool (business)	20	2015 PECEI Energy Model Estimate
Demand Control Ventilation	10	2016 Nexant Energy Model Estimate
ThermWise® Builder Rebates		
SINGLE FAMILY		
Measure	Lifetime	Source
HERS Index 62 or lower	30	2016 CLEARResult Energy Model Estimate
HERS Index 55 or lower	30	2016 CLEARResult Energy Model Estimate
HERS Index 48 or lower	30	2016 CLEARResult Energy Model Estimate
ENERGY STAR® Bonus	30	2016 CLEARResult Energy Model Estimate
92% AFUE natural gas furnace	18	2013 PECEI estimate
95% AFUE natural gas furnace (with & without ECM)	18	2011 PECEI estimate
98% AFUE natural gas furnace with ECM	18	2013 PECEI estimate
Gas Storage Water Heaters	13	2011 PECEI estimate
Tankless Water Heaters	20	2011 PECEI estimate
Condensing Storage Water Heater	13	2011 PECEI estimate
Hybrid Water Heater	15	2011 PECEI estimate
Residential Gas Boilers	20	2011 PECEI estimate
Solar Assisted Gas Water Heaters	20	2011 PECEI estimate
2X6 R-23 Walls	30	2011 PECEI estimate
Windows – R-5	30	2011 Nexant estimate

*See Cadmus Phase II Evaluation

Smart Thermostat	15	2014 PECEI estimate
MULTIFAMILY		
Measure	Lifetime	Source
HERS Index 62 or lower	30	2016 CLEAResult Energy Model Estimate
HERS Index 55 or lower	30	2016 CLEAResult Energy Model Estimate
HERS Index 48 or lower	30	2016 CLEAResult Energy Model Estimate
ENERGY STAR® Bonus	30	2016 CLEAResult Energy Model Estimate
92% AFUE natural gas furnace	18	2013 PECEI estimate
95% AFUE natural gas furnace (with & without ECM)	18	2011 PECEI estimate
98% AFUE natural gas furnace with ECM	18	2013 PECEI estimate
Gas Storage Water Heaters	13	2011 PECEI estimate
Tankless Water Heaters	20	2011 PECEI estimate
Condensing Storage Water Heater	13	2011 PECEI estimate
Hybrid Water Heater	15	2011 PECEI estimate
Gas Boilers	20	2011 PECEI estimate
Solar Assisted Gas Water Heaters	20	2011 PECEI estimate
Windows – R-5	30	2011 Nexant estimate
Smart Thermostat	15	2014 PECEI estimate
ThermWise® Home Energy Plan		
Measure	Lifetime	Source
Kitchen Sink Aerator	10	DOE Rebuild America Reenergize Energy Efficiency Guidebook
Pipe Insulation	10	DOE Rebuild America Reenergize Energy Efficiency Guidebook
Faucet Aerator	10	DOE Rebuild America Reenergize Energy Efficiency Guidebook
Low Flow Shower Head	10	Nexant 2006 Market Study Report
ThermWise® Weatherization Rebates		
SINGLE FAMILY		
Measure	Lifetime	Source
Windows – R-5	30	2011 Nexant estimate
Wall Insulation	35	RMP Home Energy Savings Program Filing 2006

*See Cadmus Phase II Evaluation

Attic Insulation	35	RMP Home Energy Savings Program Filing 2006
Floor Insulation	35	RMP Home Energy Savings Program Filing 2006
Duct Sealing & Duct Insulation	20	RMP Home Energy Savings Program Filing 2006
Air Sealing	20	Nexant 2011 Engineering Calculation
MULTIFAMILY		
Measure	Lifetime	Source
Windows	25	RMP Home Energy Savings Program Filing 2006
Windows – R-5	30	2011 Nexant estimate
Wall Insulation	35	RMP Home Energy Savings Program Filing 2006
Attic Insulation	35	RMP Home Energy Savings Program Filing 2006
Floor Insulation	35	RMP Home Energy Savings Program Filing 2006
Duct Sealing & Duct Insulation	20	RMP Home Energy Savings Program Filing 2006
Low Income Assistance Program		
Measure	Lifetime	Source
95% AFUE natural gas furnace (with & without ECM)	18	2011 PECE estimate
98% AFUE natural gas furnace with ECM	18	2015 PECE Energy Model Estimate
ThermWise® Energy Comparison Report		
Measure	Lifetime	Source
Program Measures	1	2014 Questar Gas Energy Comparison Report estimate

INCREMENTAL COST

ThermWise® Appliance Rebates		
SINGLE FAMILY		
Measure	Incremental Cost	Source

*See Cadmus Phase II Evaluation

92% AFUE natural gas furnace	\$238/unit	2014 PECl estimate
95% AFUE natural gas furnace	\$182/unit	2014 PECl estimate
95% AFUE natural gas furnace with ECM	\$873/unit	2016 CLEAResult Energy Model Estimate
98% AFUE natural gas furnace with ECM	\$1,105/unit	2014 PECl estimate
Gas Storage Water Heater .67 EF	\$161/unit	2014 PECl estimate
Tankless Gas Water Heater Tier 1	\$263/unit	2014 PECl estimate
Tankless Gas Water Heater Tier 2	\$517/unit	2014 PECl estimate
Condensing Storage Water Heater	\$1,082/unit	2014 PECl estimate
Hybrid Water Heater	\$1,413/unit	2014 PECl estimate
Gas Boiler Tier 1	\$452/unit	2014 PECl estimate
Gas Boiler Tier 2	\$1,123/unit	2014 PECl estimate
Solar Assisted Gas Water Heating (domestic)	\$4,500/unit	2014 PECl estimate
Solar Assisted Gas Water Heating (pool)	\$2,250/unit	2014 PECl estimate
Direct Vent natural gas fireplace	\$500/unit	2014 PECl estimate
Smart Thermostat	\$220/unit	2014 PECl estimate
MULTIFAMILY		
Measure	Incremental Cost	Source
92% AFUE natural gas furnace	\$238/unit	2014 PECl estimate
95% AFUE natural gas furnace	\$182/unit	2014 PECl estimate
95% AFUE natural gas furnace with ECM	\$873/unit	2014 PECl estimate
98% AFUE natural gas furnace with ECM	\$1,328/unit	2014 PECl estimate
Gas Storage Water Heater .67 EF	\$161/unit	2014 PECl estimate
Tankless Water Heater Tier 1	\$263/unit	2014 PECl estimate
Tankless Water Heater Tier 2	\$517/unit	2014 PECl estimate
Condensing Storage Water Heater	\$1,082/unit	2014 PECl estimate
Hybrid Water Heater	\$1,413/unit	2014 PECl estimate
Gas Boiler Tier 1	\$452/unit	2014 PECl estimate

*See Cadmus Phase II Evaluation

Gas Boiler Tier 2	\$1,123/unit	2014 PECE estimate
Solar Assisted Gas Water Heating (domestic)	\$4,500/unit	2014 PECE estimate
Solar Assisted Gas Water Heating (pool)	\$2,250/unit	2014 PECE estimate
Direct Vent natural gas fireplace	\$500/unit	2014 PECE estimate
Smart Thermostat	\$220/unit	2014 PECE estimate
ThermWise® Business Rebates		
Measure	Incremental Cost	Source
Gas Storage Water Heater .67 EF	\$400/unit	ENERGY STAR Residential Water Heaters Specification as of 1/5/09 and Final Criteria Analysis
Gas Storage Water Heater (>.75 kBtu)	\$6.78/kBtu	PG&E -CPUC 2004-2005 / Single Family Rebate Program
Tankless Gas Water Heaters	\$4.24/kBtu	CA Statewide Gas Potential Study (Kema-Xenergy, 2003)
Commercial Clothes Washer	\$300/unit	Energy Star Commercial Clothes Washer Calculator, confirmed with CEE
Low Flow Pre-Rinse Spray Valve	\$32/unit	California Urban Water Conservation Council, Rinse & Save Program Evaluation, 2005
92% AFUE natural gas furnace	\$277/unit	2013 Questar Gas furnace survey
95% AFUE natural gas furnace	\$370/unit	2013 Questar Gas furnace survey
95% AFUE natural gas furnace with ECM	\$400/unit	2013 Questar Gas furnace survey
98% AFUE natural gas furnace with ECM	\$1,105/unit	2013 Questar Gas furnace survey
Boilers (hot water)	\$5.08/kBTU	CA Statewide Gas Potential Study (Kema-Xenergy, 2003)
	\$6.50/kBTU	
Boilers (steam)	\$4.22/kBTU	2014 Nexant Engineering Estimate
	\$5.08/kBTU	CA Statewide Gas Potential Study (Kema-Xenergy, 2003)
	\$5.39/kBTU	2014 Nexant Engineering Estimate
Direct Contact Water Heater	\$2.17/kBTU	PG&E -CPUC 2004-2005 / Single Family Rebate Program
Condensing Storage Water Heater	\$1,150/unit	PECE Energy Model (REM/Design v. 12.61)
Hybrid Water Heater	\$1,238/unit	PECE Energy Model (REM/Design v. 12.61)
Combined Space / Water Heater	\$4,645/unit	2014 Nexant Engineering Estimate
Unit Heater (Non Condensing)	\$2.50/kBTU	Analysis of Standard Options for Unit Heaters and Duct Furnaces (PG&E 2004)
Unit Heater (Condensing)	\$12.00/kBTU	
Infrared Heating System	\$11.43/kBTU	Cost review based upon Vendor Costs (Grainger)

*See Cadmus Phase II Evaluation

Modulating Infrared	\$25/unit	2014 Nexant Engineering Estimate
	\$75/unit	
Condensing RTU's	\$25/unit	2014 Nexant Engineering Estimate
Boiler Outside Air Reset Control	\$835/unit	2004-2005 California DEER Database
Boiler Tune-up – Tier 1	\$300	2013 Nexant Engineering Estimate
Boiler Tune-up – Tier 2	\$600	CA Statewide Gas Potential Study (Kema-Xenergy, 2003)
Boiler Tune-up – Tier 2	\$800	2013 Nexant Engineering Estimate
Smart Thermostat	\$0.23/sq. ft.	2014 Nexant Engineering Estimate
Gas Fryer	\$3,796/unit	ENERGY STAR® Gas Fryer Calculator
Steam Cooker	\$6,221/unit	ENERGY STAR Steam Cooker Calculator
Convection Oven	\$1,572/per vat	PG&E -CPUC 2006-2008 / Single Family Rebate Program
Combination Oven	\$21,797/unit	PG&E -CPUC 2006-2008 / Single Family Rebate Program
Griddle	\$4,575/unit	PG&E -CPUC 2006-2008 / Single Family Rebate Program
Charbroiler	\$7,500	2015 PEGI Energy Model Estimate
Conveyor Oven	\$7,500	2015 PEGI Energy Model Estimate
Gas Dryer Moisture Sensor	\$199	2015 PEGI Energy Model Estimate
Modulating Gas Dryer	\$525	2015 PEGI Energy Model Estimate
Two Stage Infrared Heaters	\$.083	2015 PEGI Energy Model Estimate
Solar Water Heater – Pool (business)	\$22.50	2015 PEGI Energy Model Estimate
Wall Insulation (retrofit)	\$0.06 sq. ft.	Database for Energy Efficient Resources (DEER), California Energy Commission (CEC), and California Public Utilities Commission (CPUC). 2006.
	\$0.64 sq. ft.	
Roof Insulation (retrofit)	\$0.07 sq. ft.	Database for Energy Efficient Resources (DEER), California Energy Commission (CEC), and California Public Utilities Commission (CPUC). 2006.
	\$0.20 sq. ft.	
Demand Control Ventilation	.50 sq. ft.	2016 Nexant Energy Model Estimate
Custom Measures	\$8,000/project	2012 Estimate
ThermWise® Builder Rebates		
SINGLE FAMILY		
Measure	Incremental Cost	Source

*See Cadmus Phase II Evaluation

HERS Index 62 or lower	\$858/unit	2016 CLEAResult Energy Model Estimate
HERS Index 55 or lower	\$1,715/unit	2016 CLEAResult Energy Model Estimate
HERS Index 48 or lower	\$2,573/unit	2016 CLEAResult Energy Model Estimate
ENERGY STAR® Bonus	\$429/unit	2016 CLEAResult Energy Model Estimate
92% AFUE natural gas furnace	\$238/unit	2014 PEI estimate
95% AFUE natural gas furnace	\$182/unit	2014 PEI estimate
95% AFUE natural gas furnace with ECM	\$400/unit	2014 PEI estimate
98% AFUE natural gas furnace with ECM	\$1,328/unit	2014 PEI estimate
Gas Storage Water Heater .67 EF	\$161/unit	2014 PEI estimate
Tankless Gas Water Heater Tier 1	\$263/unit	2014 PEI estimate
Tankless Gas Water Heater Tier 2	\$517/unit	
Condensing Storage Water Heater	\$1,082/unit	2014 PEI estimate
Hybrid Water Heater	\$1,413/unit	2014 PEI estimate
Gas Boiler Tier 1	\$452/unit	2014 PEI estimate
Gas Boiler Tier 2	\$161/unit	2014 PEI estimate
Solar Assisted Gas Water Heating (domestic)	\$4,500/unit	2011 PEI estimate
Solar Assisted Gas Water Heating (pool)	\$2,250/unit	2012 PEI estimate
2X6 R-23 Walls	\$1,000/unit	2016 CLEAResult Energy Model Estimate
Windows – R-5	\$4/ sq. ft.	2011 Nexant estimate
Smart Thermostat	\$220/unit	2014 Nexant estimate

MULTIFAMILY

Measure	Incremental Cost	Source
HERS Index 62 or lower	\$340/unit	2016 CLEAResult Energy Model Estimate
HERS Index 55 or lower	\$681/unit	2016 CLEAResult Energy Model Estimate
HERS Index 48 or lower	\$1,021/unit	2016 CLEAResult Energy Model Estimate
ENERGY STAR® Bonus	\$170/unit	2016 CLEAResult Energy Model Estimate
92% AFUE natural gas furnace	\$238/unit	2014 PEI Estimate

*See Cadmus Phase II Evaluation

95% AFUE natural gas furnace	\$182/unit	2014 PECl Estimate
95% AFUE natural gas furnace with ECM	\$873/unit	2014 PECl Estimate
98% AFUE natural gas furnace with ECM	\$1,105/unit	2014 PECl Estimate
Gas Storage Water Heater .67 EF	\$161/unit	2014 PECl Estimate
Tankless Gas Water Heater Tier 1	\$350/unit	2014 PECl estimate
Tankless Gas Water Heater Tier 2	\$601/unit	
Condensing Storage Water Heater	\$1,082/unit	2014 PECl estimate
Hybrid Water Heater	\$1,413/unit	2014 PECl estimate
Gas Boiler Tier 1	\$452/unit	2014 PECl estimate
Gas Boiler Tier 2	\$1,123/unit	2014 PECl estimate
Solar Assisted Gas Water Heating (domestic)	\$4,500/unit	2011 PECl estimate
Solar Assisted Gas Water Heating (pool)	\$2,250/unit	2012 PECl estimate
Windows – R-5	\$6/ sq. ft.	2011 Nexant estimate
Smart Thermostat	\$220/unit	2014 PECl estimate
ThermWise® Home Energy Plan		
Measure	Incremental Cost	Source
Kitchen Sink Aerator	\$2.65/unit	Niagara Conservation
Pipe Insulation	\$3.35/unit	US Department of Energy's Rebuild America Reenergize Energy Efficiency Guidebook
Faucet Aerator	\$2.75/unit	Niagara Conservation
Low Flow Shower Head	\$4/unit	Nexant 2006 Market Study Report
ThermWise® Weatherization Rebates		
SINGLE FAMILY		
Measure	Incremental Cost	Source
Windows – R-5	\$6.00/sq.ft.	2011 Nexant estimate
Wall Insulation	\$0.64/sq.ft .	RMP Home Energy Savings Program Filing 1
Attic Insulation	Tier 1 - \$0.34/sq.ft .	2009 Weatherization Participant Data and Insulation Vendor Estimates
	Tier 2 - \$0.11/sq.ft.	

*See Cadmus Phase II Evaluation

Floor Insulation	\$0.42/sq.ft.	RMP Home Energy Savings Program Filing 1
Duct Sealing & Duct Insulation	\$657/system	RMP Home Energy Savings Program Filing 1 & Lawrence Berkeley National Laboratory Home Energy Saver (Salt Lake City)
Air Sealing	\$0.40/sq.ft.	2011 Nexant estimate
MULTIFAMILY		
Measure	Incremental Cost	Source
Windows – R-5	\$6.00/sq.ft.	2011 Nexant estimate
Wall Insulation	\$0.64/sq.ft.	RMP Home Energy Savings Program Filing 1
Attic Insulation	Tier 1 - \$0.34/sq.ft.	2009 Weatherization Participant Data and Insulation Vendor Estimates
	Tier 2 - \$0.11/sq.ft.	
Floor Insulation	\$0.42/sq.ft.	RMP Home Energy Savings Program Filing 1
Duct Sealing & Duct Insulation	\$273/system	RMP Home Energy Savings Program Filing 1 & Lawrence Berkeley National Laboratory Home Energy Saver (Salt Lake City)
Low Income Assistance Program		
Measure	Incremental Cost	Source
95% AFUE natural gas furnace	\$182/unit	2013 Questar Gas furnace survey
95% AFUE natural gas furnace with ECM	\$400/unit	2013 Questar Gas furnace survey
98% AFUE natural gas furnace with ECM	\$1,105/unit	2015 PECE Energy Model Estimate
ThermWise® Energy Comparison Report		
Measure	Incremental Cost	Source
Program Measures	\$1.61/project	2014 Questar Gas Energy Comparison Report estimate

*See Cadmus Phase II Evaluation