

**Date:** March 31, 2010  
**To:** John Rush  
Don Jones Jr.  
**From:** Brian Hedman  
**Re:** Utah Home Energy Savings 2010 Measure Cost Effectiveness

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The tables below present the cost effectiveness findings of the Utah Home Energy Savings prospective measures based on 2010 costs and savings estimates provided by PacifiCorp in Attachment M in the tab labeled 2010 cost effectiveness inputs. The Utility discount rate is from the 2008 PacifiCorp Integrated Resource Plan.

Measures were grouped according to the end-use. Cost effectiveness was tested using the 2008 IRP 7% load factor residential cooling decrement for cooling measures, the 2008 IRP 60% load factor residential lighting decrement for lighting measures and the 2008 IRP 46% load factor east residential whole house decrement for other measures. Table 1 lists common modeling inputs.

**Table 1: Home Energy Savings  
Inputs**

Parameter	Value
Discount Rate	7.4%
Line Loss	9.72%
Residential Energy Rate (\$/kWh)	\$0.0857

**Table 2: Home Energy Savings  
Measure Level Costs and Savings**

	Program Costs	Utility Admin	Evaluation	Incentives	Total Utility Costs	Net Participant Incremental Cost	Gross kWh Savings	Realization Rate	Adjusted Gross Savings	Net to Gross	Net kWh Savings	Meas. Life
Twister CFL (weighted average savings, incentive and measure cost) - per unit				\$0.87	\$0.87	\$2.91	32.62	97%	31.64	82%	25.95	5
Specialty CFL (weighted average savings, incentive and measure cost) - per unit				\$1.90	\$1.90	\$4.40	36.04	97%	34.96	82%	28.66	5
Ceiling fan (new savings, measure cost and measure life per updated (2009) Energy Star Ceiling fan calculator) - per unit				\$20.00	\$20.00	\$70.52	159.00	100%	159.00	82%	130.38	10
Ceiling fan (new savings, measure cost and measure life adjusted to 5 years to align with other lighting) - per unit				\$20.00	\$20.00	\$70.52	159.00	100%	159.00	82%	130.38	5
Fixture (updated savings and measure costs from RTF) - per unit				\$20.00	\$20.00	\$16.40	49.64	100%	49.64	82%	40.70	15
Fixture (updated savings and measure costs from RTF & measure life adjusted to align with other lighting) - per unit				\$20.00	\$20.00	\$16.40	49.64	100%	49.64	82%	40.70	5
Washing machines - 2.0 - 2.45 MEF - electric water heat only				\$50.00	\$50.00	\$227.96	132.61	100%	132.61	82%	108.74	14

	Program Costs	Utility Admin	Evaluation	Incentives	Total Utility Costs	Net Participant Incremental Cost	Gross kWh Savings	Realization Rate	Adjusted Gross Savings	Net to Gross	Net kWh Savings	Meas. Life
Washing machines - 2.46+ MEF - electric water heat only				\$75.00	\$75.00	\$260.76	161.69	100%	161.69	82%	132.58	14
Washing machine - (1.72-1.99 MEF) - most common configuration using 1.26 MEF baseline -gas DHW, electric dryer, water treatment savings - per unit as reported in 2009				\$50.00	\$50.00	\$159.90	188.00	100%	188.00	82%	154.16	14
Washing machine - (2.0+ MEF) - most common configuration using 1.26 MEF baseline -gas DHW, electric dryer, water treatment savings - per unit as reported in 2009				\$75.00	\$75.00	\$182.04	211.00	100%	211.00	82%	173.02	14
Washing machine - (1.72-1.99 MEF) - most common configuration. Revised savings for 1.66 MEF baseline -gas DHW, electric dryer, no water treatment savings - proforma per unit				\$50.00	\$50.00	\$159.90	42.74	100%	42.74	82%	35.05	14
Washing machine - (2.0+ MEF) - most common configuration revised savings 1.66 MEF baseline - gas DHW, electric dryer, no water treatment savings - proforma per unit				\$75.00	\$75.00	\$182.04	94.56	100%	94.56	82%	77.54	14
Clothes washer recycling - electric water heating only				\$25.00	\$25.00	\$0.00	784.00	100%	784.00	82%	642.88	6

	Program Costs	Utility Admin	Evaluation	Incentives	Total Utility Costs	Net Participant Incremental Cost	Gross kWh Savings	Realization Rate	Adjusted Gross Savings	Net to Gross	Net kWh Savings	Meas. Life
Clothes washer recycling - 2009 savings - all fuels DHW				\$25.00	\$25.00	\$0.00	120.00	100%	120.00	82%	98.40	6
Dishwasher - EF -0.72 + and electric water heat				\$20.00	\$20.00	\$20.50	48.00	100%	48.00	82%	39.36	9
Dishwasher - EF -0.72 + and weighted average gas/electric water heat based on prior participation -proforma per unit				\$20.00	\$20.00	\$20.50	23.13	100%	23.13	82%	18.97	9
Refrigerator Energy Star - proposed savings, measure cost, measure life				\$20.00	\$20.00	\$12.30	47.46	100%	47.46	82%	38.91	20
Refrigerator Energy Star - current savings, measure cost, measure life				\$20.00	\$20.00	\$81.18	98.00	100%	98.00	82%	80.36	19
Electric water heater - proposed savings, measure cost, measure life				\$50.00	\$50.00	\$76.26	117.15	100%	117.15	82%	96.07	12
Electric water heater - current savings, measure cost, measure life				\$50.00	\$50.00	\$27.88	91.00	100%	91.00	82%	74.62	10
R-19 (Tier one -electric cooling) attic insulation - per SF				\$0.08	\$0.08	\$0.16	0.13	75%	0.09	82%	0.08	30
R-30 (Tier Two -electric cooling) attic insulation - per SF				\$0.15	\$0.15	\$0.25	0.16	75%	0.12	82%	0.10	30

	Program Costs	Utility Admin	Evaluation	Incentives	Total Utility Costs	Net Participant Incremental Cost	Gross kWh Savings	Realization Rate	Adjusted Gross Savings	Net to Gross	Net kWh Savings	Meas. Life
2009 attic insulation (electric cooling) - total gross savings divided by all reported SF. Apply realization rate. Use shorter measure life. Evaluate using current incentive and reported 2009 measure costs				\$0.20	\$0.20	\$0.27	0.16	75%	0.12	82%	0.10	30
Windows (weighted average of electric cooled homes with gas and electric heat) - per SF				\$0.50	\$0.50	\$0.51	0.79	100%	0.79	82%	0.65	30
Windows (2009 savings using actual average of electric cooled homes with gas and electric heat) - per SF. Current incentives & costs. Shorter measure life				\$0.95	\$0.95	\$0.59	0.19	100%	0.19	82%	0.15	30
Room air conditioners - proposed savings, measure cost, measure life				\$30.00	\$30.00	\$41.00	98.57	100%	98.57	82%	80.83	9
Room air conditioners - current savings, measure cost, measure life				\$30.00	\$30.00	\$123.00	91.50	100%	91.50	82%	75.03	9
Tune-up: air conditioner				\$20.00	\$20.00	\$177.12	62.00	100%	62.00	82%	50.84	5
Tune-up: heat pump				\$100.00	\$100.00	\$177.12	534.00	100%	534.00	82%	437.88	5

	Program Costs	Utility Admin	Evaluation	Incentives	Total Utility Costs	Net Participant Incremental Cost	Gross kWh Savings	Realization Rate	Adjusted Gross Savings	Net to Gross	Net kWh Savings	Meas. Life
Air conditioning tune-up - current average of air conditioners and heat pump combined				\$125.00	\$125.00	\$177.12	67.70	100%	67.70	82%	55.51	5
Duct sealing & insulation: electric cooling				\$200.00	\$200.00	\$307.50	612.37	100%	612.37	82%	502.14	9
Duct sealing and insulation: electric heating & cooling				\$350.00	\$350.00	\$615.00	3776.77	100%	3776.77	82%	3096.95	20
Duct sealing - electric cooling (100% of the 2009 participation) - stand alone current savings, costs & incentive				\$200.00	\$200.00	\$174.25	84.30	100%	84.30	82%	69.13	20
Duct insulation - electric cooling (100% of the 2009 participation) - stand alone current savings, costs & incentive				\$100.00	\$100.00	\$92.66	439.00	100%	439.00	82%	359.98	20

**Table 3: Twister CFL (weighted average savings, incentive and measure cost) - per unit**

			AC: IRP 60% LF Decrement	
	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$2.91	\$7.95	\$5.04	2.732
Total Resource Cost Test (TRC) No Adder	\$2.91	\$7.23	\$4.32	2.484
Utility Cost Test (UCT)	\$0.87	\$7.23	\$6.36	8.342
Rate Impact Test (RIM)	\$10.26	\$7.23	(\$3.03)	0.705
Participant Cost Test (PCT)	\$2.04	\$11.52	\$9.48	5.637
Discounted Participant Payback (years)			0.81	

**Table 4: Specialty CFL (weighted average savings, incentive and measure cost) - per unit**

			AC: IRP 60% LF Decrement	
	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$4.40	\$8.79	\$4.39	1.999
Total Resource Cost Test (TRC) No Adder	\$4.40	\$7.99	\$3.59	1.817
Utility Cost Test (UCT)	\$1.90	\$7.99	\$6.09	4.204
Rate Impact Test (RIM)	\$12.21	\$7.99	(\$4.22)	0.654
Participant Cost Test (PCT)	\$2.50	\$12.73	\$10.24	5.102
Discounted Participant Payback (years)			0.89	

**Table 5: Ceiling fan (new savings, measure cost and measure life per updated (2009) Energy Star Ceiling fan calculator) - per unit**

			AC: IRP 60% LF Decrement	
	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$70.52	\$88.68	\$18.16	1.258
Total Resource Cost Test (TRC) No Adder	\$70.52	\$80.62	\$10.10	1.143
Utility Cost Test (UCT)	\$20.00	\$80.62	\$60.62	4.031
Rate Impact Test (RIM)	\$103.70	\$80.62	(\$23.08)	0.777
Participant Cost Test (PCT)	\$50.52	\$103.76	\$53.24	2.054
Discounted Participant Payback (years)			4.30	

**Table 6:** Ceiling fan (new savings, measure cost and measure life adjusted to 5 years to align with other lighting) - per unit

			AC: IRP 60% LF Decrement	
	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$70.52	\$39.96	(\$30.56)	0.567
Total Resource Cost Test (TRC) No Adder	\$70.52	\$36.33	(\$34.19)	0.515
Utility Cost Test (UCT)	\$20.00	\$36.33	\$16.33	1.817
Rate Impact Test (RIM)	\$66.11	\$36.33	(\$29.78)	0.550
Participant Cost Test (PCT)	\$50.52	\$57.91	\$7.39	1.146
Discounted Participant Payback (years)			4.30	

**Table 7:** Fixture (updated savings and measure costs from RTF) - per unit

			AC: IRP 60% LF Decrement	
	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$16.40	\$40.67	\$24.27	2.480
Total Resource Cost Test (TRC) No Adder	\$16.40	\$36.97	\$20.57	2.254
Utility Cost Test (UCT)	\$20.00	\$36.97	\$16.97	1.849
Rate Impact Test (RIM)	\$54.47	\$36.97	(\$17.50)	0.679
Participant Cost Test (PCT)	(\$3.60)	\$43.72	\$47.32	NA
Discounted Participant Payback (years)			(0.91)	

**Table 8:** Fixture (updated savings and measure costs from RTF & measure life adjusted to align with other lighting) - per unit

			AC: IRP 60% LF Decrement	
	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$16.40	\$12.48	(\$3.92)	0.761
Total Resource Cost Test (TRC) No Adder	\$16.40	\$11.34	(\$5.06)	0.692
Utility Cost Test (UCT)	\$20.00	\$11.34	(\$8.66)	0.567
Rate Impact Test (RIM)	\$33.44	\$11.34	(\$22.10)	0.339
Participant Cost Test (PCT)	(\$3.60)	\$18.08	\$21.68	NA
Discounted Participant Payback (years)			(0.91)	



**Table 9: Washing machines - 2.0 - 2.45 MEF - electric water heat only**

			AC: IRP 46% LF Decrement	
	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$227.96	\$101.15	(\$126.81)	0.444
Total Resource Cost Test (TRC) No Adder	\$227.96	\$91.96	(\$136.00)	0.403
Utility Cost Test (UCT)	\$50.00	\$91.96	\$41.96	1.839
Rate Impact Test (RIM)	\$137.83	\$91.96	(\$45.87)	0.667
Participant Cost Test (PCT)	\$177.96	\$111.31	(\$66.65)	0.625
Discounted Participant Payback (years)			-	

**Table 10: Washing machines - 2.46+ MEF - electric water heat only**

			AC: IRP 46% LF Decrement	
	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$260.76	\$123.33	(\$137.43)	0.473
Total Resource Cost Test (TRC) No Adder	\$260.76	\$112.12	(\$148.64)	0.430
Utility Cost Test (UCT)	\$75.00	\$112.12	\$37.12	1.495
Rate Impact Test (RIM)	\$181.12	\$112.12	(\$69.00)	0.619
Participant Cost Test (PCT)	\$185.76	\$135.71	(\$50.05)	0.731
Discounted Participant Payback (years)			-	

**Table 11: Washing machine - (1.72-1.99 MEF) - most common configuration using 1.26 MEF baseline -gas DHW, electric dryer, water treatment savings - per unit as reported in 2009**

			AC: IRP 46% LF Decrement	
	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$159.90	\$143.40	(\$16.50)	0.897
Total Resource Cost Test (TRC) No Adder	\$159.90	\$130.36	(\$29.54)	0.815
Utility Cost Test (UCT)	\$50.00	\$130.36	\$80.36	2.607
Rate Impact Test (RIM)	\$175.95	\$130.36	(\$45.59)	0.741
Participant Cost Test (PCT)	\$109.90	\$157.80	\$47.90	1.436
Discounted Participant Payback (years)			8.72	

**Table 12:** Washing machine - (2.0+ MEF) - most common configuration using 1.26 MEF baseline -gas DHW, electric dryer, water treatment savings - per unit as reported in 2009

			AC: IRP 46% LF Decrement	
	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$182.04	\$160.94	(\$21.10)	0.884
Total Resource Cost Test (TRC) No Adder	\$182.04	\$146.31	(\$35.73)	0.804
Utility Cost Test (UCT)	\$75.00	\$146.31	\$71.31	1.951
Rate Impact Test (RIM)	\$215.06	\$146.31	(\$68.75)	0.680
Participant Cost Test (PCT)	\$107.04	\$177.11	\$70.07	1.655
Discounted Participant Payback (years)			7.34	

**Table 13:** Washing machine - (1.72-1.99 MEF) - most common configuration. Revised savings for 1.66 MEF baseline - gas DHW, electric dryer, no water treatment savings - proforma per unit

			AC: IRP 46% LF Decrement	
	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$159.90	\$32.60	(\$127.30)	0.204
Total Resource Cost Test (TRC) No Adder	\$159.90	\$29.64	(\$130.26)	0.185
Utility Cost Test (UCT)	\$50.00	\$29.64	(\$20.36)	0.593
Rate Impact Test (RIM)	\$75.97	\$29.64	(\$46.33)	0.390
Participant Cost Test (PCT)	\$109.90	\$35.87	(\$74.03)	0.326
Discounted Participant Payback (years)			-	

**Table 14:** Washing machine - (2.0+ MEF) - most common configuration revised savings 1.66 MEF baseline -gas DHW, electric dryer, no water treatment savings - proforma per unit

			AC: IRP 46% LF Decrement	
	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$182.04	\$72.13	(\$109.91)	0.396
Total Resource Cost Test (TRC) No Adder	\$182.04	\$65.57	(\$116.47)	0.360
Utility Cost Test (UCT)	\$75.00	\$65.57	(\$9.43)	0.874
Rate Impact Test (RIM)	\$134.92	\$65.57	(\$69.35)	0.486
Participant Cost Test (PCT)	\$107.04	\$79.37	(\$27.67)	0.742
Discounted Participant Payback (years)			-	

**Table 15: Clothes washer recycling -electric water heating only**

			AC: IRP 46% LF Decrement	
	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.00	\$243.23	\$243.23	NA
Total Resource Cost Test (TRC) No Adder	\$0.00	\$221.11	\$221.11	NA
Utility Cost Test (UCT)	\$25.00	\$221.11	\$196.11	8.845
Rate Impact Test (RIM)	\$298.03	\$221.11	(\$76.91)	0.742
Participant Cost Test (PCT)	(\$25.00)	\$335.06	\$360.06	NA
Discounted Participant Payback (years)			(0.40)	

**Table 16: Clothes washer recycling - 2009 savings - all fuels DHW**

			AC: IRP 46% LF Decrement	
	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.00	\$37.23	\$37.23	NA
Total Resource Cost Test (TRC) No Adder	\$0.00	\$33.84	\$33.84	NA
Utility Cost Test (UCT)	\$25.00	\$33.84	\$8.84	1.354
Rate Impact Test (RIM)	\$65.33	\$33.84	(\$31.49)	0.518
Participant Cost Test (PCT)	(\$25.00)	\$51.28	\$76.28	NA
Discounted Participant Payback (years)			(2.61)	

**Table 17: Dishwasher - EF -0.72 + and electric water heat**

			AC: IRP 46% LF Decrement	
	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$20.50	\$23.61	\$3.11	1.152
Total Resource Cost Test (TRC) No Adder	\$20.50	\$21.47	\$0.97	1.047
Utility Cost Test (UCT)	\$20.00	\$21.47	\$1.47	1.073
Rate Impact Test (RIM)	\$42.24	\$21.47	(\$20.78)	0.508
Participant Cost Test (PCT)	\$0.50	\$28.81	\$28.31	57.613
Discounted Participant Payback (years)			0.13	

**Table 18:** Dishwasher - EF -0.72 + and weighted average gas/electric water heat based on prior participation - proforma per unit

			AC: IRP 46% LF Decrement	
	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$20.50	\$11.38	(\$9.12)	0.555
Total Resource Cost Test (TRC) No Adder	\$20.50	\$10.35	(\$10.15)	0.505
Utility Cost Test (UCT)	\$20.00	\$10.35	(\$9.65)	0.517
Rate Impact Test (RIM)	\$30.01	\$10.35	(\$19.66)	0.345
Participant Cost Test (PCT)	\$0.50	\$13.88	\$13.38	27.766
Discounted Participant Payback (years)			0.27	

**Table 19:** Refrigerator Energy Star - proposed savings, measure cost, measure life

			AC: IRP 46% LF Decrement	
	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$12.30	\$47.79	\$35.49	3.885
Total Resource Cost Test (TRC) No Adder	\$12.30	\$43.44	\$31.14	3.532
Utility Cost Test (UCT)	\$20.00	\$43.44	\$23.44	2.172
Rate Impact Test (RIM)	\$64.37	\$46.66	(\$17.71)	0.725
Participant Cost Test (PCT)	(\$7.70)	\$50.38	\$58.08	NA
Discounted Participant Payback (years)			(2.03)	

**Table 20:** Refrigerator Energy Star - current savings, measure cost, measure life

			AC: IRP 46% LF Decrement	
	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$81.18	\$95.21	\$14.03	1.173
Total Resource Cost Test (TRC) No Adder	\$81.18	\$86.55	\$5.37	1.066
Utility Cost Test (UCT)	\$20.00	\$86.55	\$66.55	4.328
Rate Impact Test (RIM)	\$101.29	\$86.55	(\$14.74)	0.854
Participant Cost Test (PCT)	\$61.18	\$100.82	\$39.64	1.648
Discounted Participant Payback (years)			9.46	

**Table 21:** Electric water heater - proposed savings, measure cost, measure life

			AC: IRP 46% LF Decrement	
	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$76.26	\$77.51	\$1.25	1.016
Total Resource Cost Test (TRC) No Adder	\$76.26	\$70.46	(\$5.80)	0.924
Utility Cost Test (UCT)	\$50.00	\$70.46	\$20.46	1.409
Rate Impact Test (RIM)	\$118.63	\$70.46	(\$48.17)	0.594
Participant Cost Test (PCT)	\$26.26	\$87.90	\$61.64	3.347
Discounted Participant Payback (years)			2.94	

**Table 22:** Electric water heater -current savings, measure cost, measure life

			AC: IRP 46% LF Decrement	
	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$27.88	\$50.11	\$22.23	1.797
Total Resource Cost Test (TRC) No Adder	\$27.88	\$45.56	\$17.68	1.634
Utility Cost Test (UCT)	\$50.00	\$45.56	(\$4.44)	0.911
Rate Impact Test (RIM)	\$95.25	\$45.56	(\$49.69)	0.478
Participant Cost Test (PCT)	(\$22.12)	\$59.38	\$81.50	NA
Discounted Participant Payback (years)			(3.05)	

**Table 23:** R-19 (Tier one -electric cooling) attic insulation - per SF

			AC: IRP 7% LF Decrement	
	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.16	\$0.21	\$0.04	1.273
Total Resource Cost Test (TRC) No Adder	\$0.16	\$0.19	\$0.03	1.157
Utility Cost Test (UCT)	\$0.08	\$0.19	\$0.11	2.372
Rate Impact Test (RIM)	\$0.18	\$0.19	\$0.01	1.082
Participant Cost Test (PCT)	\$0.08	\$0.12	\$0.04	1.464
Discounted Participant Payback (years)			15.49	

**Table 24:** R-30 (Tier Two -electric cooling) attic insulation - per SF

			AC: IRP 7% LF Decrement	
	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.25	\$0.27	\$0.03	1.110
Total Resource Cost Test (TRC) No Adder	\$0.25	\$0.25	\$0.00	1.009
Utility Cost Test (UCT)	\$0.15	\$0.25	\$0.10	1.655
Rate Impact Test (RIM)	\$0.27	\$0.25	(\$0.02)	0.914
Participant Cost Test (PCT)	\$0.10	\$0.16	\$0.06	1.676
Discounted Participant Payback (years)			12.79	

**Table 25:** 2009 attic insulation (electric cooling) - total gross savings divided by all reported SF. Apply realization rate. Use shorter measure life. Evaluate using current incentive and reported 2009 measure costs

			AC: IRP 7% LF Decrement	
	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.27	\$0.26	(\$0.01)	0.953
Total Resource Cost Test (TRC) No Adder	\$0.27	\$0.24	(\$0.04)	0.867
Utility Cost Test (UCT)	\$0.20	\$0.24	\$0.04	1.182
Rate Impact Test (RIM)	\$0.31	\$0.24	(\$0.08)	0.758
Participant Cost Test (PCT)	\$0.07	\$0.15	\$0.08	2.107
Discounted Participant Payback (years)			9.48	

**Table 26:** Windows (weighted average of electric cooled homes with gas and electric heat) - per SF

			AC: IRP 7% LF Decrement	
	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.51	\$1.77	\$1.26	3.457
Total Resource Cost Test (TRC) No Adder	\$0.51	\$1.61	\$1.10	3.143
Utility Cost Test (UCT)	\$0.50	\$1.61	\$1.11	3.217
Rate Impact Test (RIM)	\$1.32	\$1.61	\$0.29	1.218
Participant Cost Test (PCT)	\$0.01	\$1.04	\$1.03	88.202
Discounted Participant Payback (years)			0.19	

**Table 27:** Windows (2009 savings using actual average of electric cooled homes with gas and electric heat) - per SF.  
Current incentives & costs. Shorter measure life

			AC: IRP 7% LF Decrement	
	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.59	\$0.42	(\$0.17)	0.717
Total Resource Cost Test (TRC) No Adder	\$0.59	\$0.38	(\$0.20)	0.651
Utility Cost Test (UCT)	\$0.95	\$0.38	(\$0.57)	0.401
Rate Impact Test (RIM)	\$1.09	\$0.38	(\$0.71)	0.351
Participant Cost Test (PCT)	(\$0.36)	\$0.25	\$0.61	NA
Discounted Participant Payback (years)			(24.36)	

**Table 28:** Room air conditioners - proposed savings, measure cost, measure life

			AC: IRP 7% LF Decrement	
	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$41.00	\$85.52	\$44.52	2.086
Total Resource Cost Test (TRC) No Adder	\$41.00	\$77.75	\$36.75	1.896
Utility Cost Test (UCT)	\$30.00	\$77.75	\$47.75	2.592
Rate Impact Test (RIM)	\$76.44	\$77.75	\$1.31	1.017
Participant Cost Test (PCT)	\$11.00	\$59.16	\$48.16	5.378
Discounted Participant Payback (years)			1.42	

**Table 29:** Room air conditioners -current savings, measure cost, measure life

			AC: IRP 7% LF Decrement	
	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$123.00	\$79.39	(\$43.61)	0.645
Total Resource Cost Test (TRC) No Adder	\$123.00	\$72.17	(\$50.83)	0.587
Utility Cost Test (UCT)	\$30.00	\$72.17	\$42.17	2.406
Rate Impact Test (RIM)	\$72.96	\$72.17	(\$0.79)	0.989
Participant Cost Test (PCT)	\$93.00	\$54.91	(\$38.09)	0.590
Discounted Participant Payback (years)			-	

**Table 30: Tune-up: air conditioner**

			AC: IRP 7% LF Decrement	
	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$177.12	\$27.74	(\$149.38)	0.157
Total Resource Cost Test (TRC) No Adder	\$177.12	\$25.22	(\$151.90)	0.142
Utility Cost Test (UCT)	\$20.00	\$25.22	\$5.22	1.261
Rate Impact Test (RIM)	\$37.14	\$25.22	(\$11.92)	0.679
Participant Cost Test (PCT)	\$157.12	\$22.58	(\$134.54)	0.144
Discounted Participant Payback (years)			-	

**Table 31: Tune-up: heat pump**

			AC: IRP 7% LF Decrement	
	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$177.12	\$238.94	\$61.82	1.349
Total Resource Cost Test (TRC) No Adder	\$177.12	\$217.22	\$40.10	1.226
Utility Cost Test (UCT)	\$100.00	\$217.22	\$117.22	2.172
Rate Impact Test (RIM)	\$252.58	\$217.22	(\$35.36)	0.860
Participant Cost Test (PCT)	\$77.12	\$194.48	\$117.36	2.522
Discounted Participant Payback (years)			1.85	

**Table 32: Air conditioning tune-up - current average of air conditioners and heat pump combined**

			AC: IRP 7% LF Decrement	
	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$177.12	\$30.29	(\$146.83)	0.171
Total Resource Cost Test (TRC) No Adder	\$177.12	\$27.54	(\$149.58)	0.155
Utility Cost Test (UCT)	\$125.00	\$27.54	(\$97.46)	0.220
Rate Impact Test (RIM)	\$136.61	\$27.54	(\$109.07)	0.202
Participant Cost Test (PCT)	\$52.12	\$24.66	(\$27.46)	0.473
Discounted Participant Payback (years)			-	



**Table 33:** Duct sealing & insulation: electric cooling

			AC: IRP 7% LF Decrement	
	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$307.50	\$531.31	\$223.81	1.728
Total Resource Cost Test (TRC) No Adder	\$307.50	\$483.01	\$175.51	1.571
Utility Cost Test (UCT)	\$200.00	\$483.01	\$283.01	2.415
Rate Impact Test (RIM)	\$487.57	\$483.01	(\$4.56)	0.991
Participant Cost Test (PCT)	\$107.50	\$367.51	\$260.01	3.419
Discounted Participant Payback (years)			2.27	

**Table 34:** Duct sealing and insulation: electric heating & cooling

			AC: IRP 7% LF Decrement	
	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$615.00	\$6,660.04	\$6,045.04	10.829
Total Resource Cost Test (TRC) No Adder	\$615.00	\$6,054.58	\$5,439.58	9.845
Utility Cost Test (UCT)	\$350.00	\$6,054.58	\$5,704.58	17.299
Rate Impact Test (RIM)	\$3,613.71	\$6,054.58	\$2,440.88	1.675
Participant Cost Test (PCT)	\$265.00	\$4,009.54	\$3,744.54	15.130
Discounted Participant Payback (years)			0.88	

**Table 35:** Duct sealing - electric cooling (100% of the 2009 participation) - stand alone current savings, costs & incentive

			AC: IRP 7% LF Decrement	
	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$174.25	\$148.66	(\$25.59)	0.853
Total Resource Cost Test (TRC) No Adder	\$174.25	\$135.14	(\$39.11)	0.776
Utility Cost Test (UCT)	\$200.00	\$135.14	(\$64.86)	0.676
Rate Impact Test (RIM)	\$259.61	\$135.14	(\$124.46)	0.521
Participant Cost Test (PCT)	(\$25.75)	\$89.50	\$115.25	NA
Discounted Participant Payback (years)			NA	

**Table 36:** Duct insulation - electric cooling (100% of the 2009 participation) - stand alone current savings, costs & incentive

	AC: IRP 7% LF Decrement			
	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$92.66	\$774.14	\$681.48	8.355
Total Resource Cost Test (TRC) No Adder	\$92.66	\$703.77	\$611.11	7.595
Utility Cost Test (UCT)	\$100.00	\$703.77	\$603.77	7.038
Rate Impact Test (RIM)	\$510.45	\$755.84	\$245.40	1.481
Participant Cost Test (PCT)	(\$7.34)	\$466.06	\$473.40	NA
Discounted Participant Payback (years)			NA	