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***VIA ELECTRONIC FILING  
AND OVERNIGHT DELIVERY***

Washington Utilities and Transportation Commission  
P.O. Box 47250  
1300 S. Evergreen Park Drive SW  
Olympia, WA 98504-7250

Attention: David W. Danner  
Executive Director and Secretary

**Re: Docket UE-100170  
2011 Annual Report on Conservation Acquisition**

Pursuant to Docket No. UE-100170, Order 02, Ordering Paragraph 8(g), please find enclosed an original and two (2) copies of PacifiCorp's, d.b.a Pacific Power & Light Company (PacifiCorp or Company) 2011 Annual Report on Conservation Acquisition, including an evaluation of cost-effectiveness and comparison of budgets to actual expenditures and the systems benefits charge.

It is respectfully requested that all inquiries regarding this filing be addressed to:

By Email (preferred): [datarequest@pacificorp.com](mailto:datarequest@pacificorp.com)

By regular mail: Data Request Response Center  
PacifiCorp  
825 NE Multnomah, Suite 2000  
Portland, OR 97232

If you have any informal inquiries regarding this matter, please contact Carla Bird, Regulatory Manager, at (503) 813-5269.

Sincerely,

William R. Griffith  
Vice President, Regulation

Enclosure

Pacific Power

2011 Annual Report  
on Conservation  
Acquisition -  
Washington

3/30/2012

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## Introduction

Pacific Power & Light Company (“Pacific Power” or the “Company”) works with its customers to reduce the need for investment in supply side resources and infrastructure by reducing energy and peak consumption through cost-effective, energy efficiency programs.

The Company currently offers six energy efficiency programs in Washington approved by the Washington Utilities and Transportation Commission (“Commission”), as well as receives energy savings and market transformation benefits through its affiliation with the Northwest Energy Efficiency Alliance (“NEEA”). The expenditures associated with these programs are recovered through the System Benefits Charge, Schedule 191 (“Schedule 191”).

This report provides details on program results, expenditures and Schedule 191 revenue for the performance period between January 1, 2011 through December 31, 2011. As shown in Table 1 below, in 2011 the Company acquired 49,983,694 kWh/year of resources through its energy efficiency program activity or a total of 5.71 aMW in Washington (at generation).<sup>1</sup> Overall, the total portfolio performance was cost effective at a benefit to cost ratio of 2.74.<sup>2</sup>

**Table 1: 2011 Total Portfolio Performance**

Total Revenues Collected					\$ 8,819,537
Expenditures (Includes NEEA and Company Initiatives)					\$ 9,096,661
kWh/Yr Savings (Gross - At Gen, includes NEEA Savings)					49,983,694
aMW Savings (Gross - At Gen)					5.71
	PTRC	TRC	UCT	RIM	PCT
Cost Effectiveness (Five Tests)	2.74	2.50	3.91	0.97	3.52
Levelized Cost (\$/kWh)	0.038	0.038	0.023		
Lifecycle Revenue Impact (\$/kWh)	\$ 0.000017420				

<sup>1</sup> Savings reported are preliminary. Verified savings will be provided for the 2010 - 2011 calendar years as part of the Company’s 2010 - 2011 biennium report due June 1, 2012.

<sup>2</sup> Cost effectiveness is determined by total resource cost test, adjusted by 10 percent and inclusive of quantifiable non-energy benefits.

## Advisory Group Meetings and Communications

Consistent with the conditions set forth in Docket UE-100170, Order 02, Pacific Power seeks input regarding its energy efficiency programs from the Washington Demand-side Management Advisory Group (“DSM Advisory Group”). This group includes representatives from a variety of constituent organizations. Pacific Power met and/or communicated with the DSM Advisory Group throughout 2011 related to the following matters:

### On March 18, 2011:

- The Company provided an overview of the performance of its energy efficiency programs in 2010;
- An overview of how the Company will deliver on its energy efficiency goals in Washington through a reorganization of the company’s Demand-side Management Group;
- An introduction to the Wattsmart energy efficiency communications campaign intended to increase awareness of, and participation in, the Company’s programs;
- A discussion of upcoming work as required by Initiative 937 (“I-937”);
  - An update on the Distribution Efficiency Initiative (“DEI”) study being conducted by the Company to assess DEI potential in its Washington service territory.
- An update on the Company’s program evaluations for 2010;
- An overview of the Evaluation, Measurement and Verification (“EM&V”) framework the Company uses when evaluating its programs;
- A discussion of changes being assessed for the Home Energy Savings program and the Energy FinAnswer program; and
- A discussion of new energy efficiency programs being considered by the Company.

### On August 4, 2011:

- A discussion of the Energy Education in Schools program, stakeholder concerns and possible options for 2012 - 2013;
- An overview of proposed changes to the Home Energy Savings Program;
- A discussion of I-937 milestones and work schedules;
- An update on the evaluation, measurement, and verification (EM&V) framework outline describing how the Company intends to conduct its EM&V activities; and
- An overview of the potential assessment and Integrated Resource Plan (“IRP”) results.

### On August 12, 2011:

- A review of the measures and savings assumptions used in the development of the Company’s potential assessment continued from prior discussions;
- A comparison of potential assessment assumptions to regional assumptions;
- Additional detail on proposed adjustments related to the IRP selections and the magnitude and direction of each;

- A discussion on identification of additional energy efficiency opportunities; and
- An initial discussion on conservation and business plan documents and requirements.

On August 19, 2011:

- Continued discussions on possible solutions to the Energy Education in Schools program EM&V concerns;
- Review of the draft EM&V framework document;
- Initial review of the 2011 IRP results and adjustments and the basis of the 2012 – 2021 conservation forecast and biennial target;
- A discussion of the Conservation Plan;
- An overview of the Business Plan contents and programs; and
- A discussion of the role Northwest Energy Efficiency Alliance (“NEEA”) plays towards the achievement of the biennial target savings.

On August 26, 2011:

- A review of final adjustments (including compact florescent lamp (“CFL”) adjustments) and the impact the adjustments have on the conservation forecast and biennial targets (less DEI and production efficiency);
- A status update on the Company’s Conservation Plan filing;
- A discussion of the filing process, post September 15th amendments, and other procedural matters leading up to the revised forecast and Conservation Plan filed by January 31, 2012;
- A review of the Company’s EM&V framework; and
- A discussion on the Energy Education in Schools program for the 2011 - 2012 school year.

On August 31, 2011:

- A final discussion of the EM&V framework document prior to its inclusion in the September 15, 2011 preliminary biennium conservation plan ;
- A discussion of the Company’s proposed plan for the Energy Education in School Programs for the 2011 - 2012 school year;
- A discussion of the 2012 - 2013 Biennial Conservation Plan; and
- A discussion of proposed changes and savings assumptions to the Home Energy Savings program.

On October 19, 2011:

- A discussion of planned modifications to the Home Energy Savings program.

On November 3, 2011:

- A discussion of the DEI conservation voltage regulation basics;
- A discussion to describe the method used to quantify DEI projects as they relate to the Biennial Conservation Potential;
- A discussion of the challenges the Company will face in evaluating DEI savings;
- A presentation of the initial DEI conservation forecast for 2012 - 2013; and

- A presentation of a draft DEI implementation timeline for the 2012 - 2013 Biennial Conservation Plan.

On November 22, 2011:

- A discussion of the planned modifications to the FinAnswer Express program.

On December 8, 2011:

An overview of DEI as follows:

- Updated potential results and economic screening of projects;
- Identified methodology used to study 2012 circuits; Reviewed challenges in measurement and verification;
- Revised ten-year forecast and biennial target, range concept/pilot plan discussed; and
- Revised project implementation timeline.

An overview of Production Efficiency as follows:

- Reviewed I-937 conservation definition in the context of production efficiency;
- Provided data on plants serving Company's Washington customers;
- Reviewed method used to identify cost-effective production efficiency projects;
- Outlined typical plant efficiency conservation measures;
- Discussed plant by plant findings and potentials;
- Discussed challenges related to joint ownership and multi-state cost-recovery; and
- Provided estimate of production efficiency ten-year potential before adjustments.

On December 15, 2011:

- Discussed the refined ten-year conservation potential and 2012 - 2013 target for production efficiency to opportunities at plants wholly owned by Pacific Power;
- Provided revised conservation potential forecast for production efficiency;
- Discussed a plan to address joint ownership/cost recovery challenges before next biennium; and
- Reviewed proposed cost-recovery mechanisms/considerations.

The Company also participated in the Washington Conservation Working Group effort which occurred from February to June of 2011.



## Demand-side Management Filings

Following are dates and descriptions of DSM filings made by Pacific Power in the calendar year 2011:

<b>Date</b>	<b>Filing Information/Request</b>
March 31, 2011	2010 Annual Report on Conservation Acquisition
April 29, 2011	Schedule 191 System Benefits Charge Adjustment. Pacific Power did not propose an adjustment to the SBC in this filing
August 12, 2011	Semi-annual report containing DSM expenditures and SBC collections from January 2011 to June 2011
September 1, 2011	Projected cumulative ten-year conservation potential, excluding information related to DEI and production efficiency potential in non-hydro generation facilities, for the period of 2012 through 2021
September 15, 2011	Report on its Ten-year Achievable Conservation Potential and Biennial Conservation Target for 2012 and 2013
December 29, 2011	Projected cumulative ten-year conservation potential, for the period of 2012 through 2021

## Tariff modifications

No tariff modifications occurred in calendar year 2011.

## 2011 Performance and Activity

In 2011, Pacific Power achieved total savings of 49,983,694 kWh/year, or 5.71 aMW in the State of Washington (at generation).<sup>3</sup> Table 2 below shows savings by program and by sector.<sup>4</sup>

**Table 2: 2011 Performance and Activity<sup>5</sup>**

Program	Units	kWh/Yr Savings (at site)	kWh/Yr Savings (at generator)	aMW Savings (at gen)	Systems Benefits Charge Expenditures
Low Income Weatherization (114)	133	244,720	266,419	0.03	\$ 507,032
Energy Education in Schools (113)	4,067	2,246,408	2,445,597	0.28	\$ 234,481
Refrigerator Recycling (107)	2,016	2,891,232	3,147,598	0.36	\$ 316,400
Home Energy Savings (118)	29,483	10,250,902	11,159,850	1.27	\$ 1,684,112
Northwest Energy Efficiency Alliance*	0	11,388,000	12,397,774	1.42	\$ 1,010,951
CFL Adjustment (See Note 2 Below)		(594,829)	(647,572)	(0.07)	\$ -
<b>Total Residential</b>	<b>35,699</b>	<b>26,426,433</b>	<b>28,769,665</b>	<b>3.29</b>	<b>\$ 3,752,975</b>
Energy FinAnswer (125)	2	237,601	258,341	0.03	\$ 183,101
FinAnswer Express (115)	183	6,465,302	7,029,658	0.80	\$ 1,398,280
<b>Total Commercial</b>	<b>185</b>	<b>6,702,903</b>	<b>7,287,999</b>	<b>0.83</b>	<b>\$ 1,581,381</b>
Energy FinAnswer (125)	31	9,750,808	10,486,311	1.20	\$ 1,821,938
FinAnswer Express (115)	25	3,198,458	3,439,718	0.39	\$ 558,501
<b>Total Industrial</b>	<b>56</b>	<b>12,949,266</b>	<b>13,926,029</b>	<b>1.59</b>	<b>\$ 2,380,440</b>
<b>Total</b>		<b>46,078,602</b>	<b>49,983,694</b>	<b>5.71</b>	<b>\$ 7,714,795</b>
Additional residential expenditures for administration related to prior programs					\$ 2,675
Company Initiatives (include Distribution Efficiency and Production Efficiency)					\$ 586,031
Energy Education in Schools					\$ 195,446
New Programs					\$ 3,748
Outreach and Communication					\$ 278,232.71
Portfolio - Evaluation EM&V					\$ 315,732.58
<b>Total System Benefits Charge expenditures</b>					<b>\$ 9,096,661</b>

\* Northwest Energy Efficiency Alliance number is considered "preliminary".

<sup>3</sup> Savings reported are preliminary. Verified savings will be provided for the 2010 - 2011 calendar years as part of the Company's June 1, 2012, 2010 - 2011 biennium report.

<sup>4</sup> To remain consistent with the Northwest Power and Conservation Council's regional power plan, the savings values in this table are shown prior to any net-to-gross adjustment. The values at generation include line losses between the customer site and the generation source. The Company's assumed line losses by sector are 8.87 percent for residential, 8.73 percent for commercial and 7.54 percent for industrial. These values are based on the Company's 2007 Transmission and Distribution Loss Study by Management Applications Consulting published in October 2008.

<sup>5</sup> CFL Adjustment: The Energy Education Program savings reflects 594,829 kWh of savings at site related to installation of additional CFLs that are purchased by participants. This amount is adjusted out of the Residential portfolio results to avoid potentially double counting the savings in both the Energy Education program and Home Energy Savings program.

### **Major Trends and Activities**

In 2011, the Company realized an increase in overall energy efficiency savings of 20 percent compared to 2010. At a sector level, the residential sector savings increased 42 percent on a kWh/year basis compared to 2010. The commercial sector savings delivered approximately 29 percent less kWh/year savings than in 2010. The industrial savings increased 24 percent in 2011 compared to 2010.

Expenditures related to program delivery increased in 2011 as compared to 2010. Overall portfolio expenditures increased by 18 percent compared to 2010, energy efficiency programs increased 2 percent and NEEA expenditures increased 5 percent in 2011 compared to 2010. At a sector level, residential energy efficiency expenditures increased by 2 percent while expenditures for commercial decreased by less than 1 percent and industrial increased by 4 percent. Other factors that impacted the overall increase from 2010 to 2011 is the cost associated with the Company Initiatives and Outreach and Communication.

The increase in residential savings was primarily driven from preliminary NEEA results.<sup>6</sup>

### **Program Evaluations**

In 2011, the Company hired an external evaluator to complete process and impact evaluations. The evaluation for the three residential programs; Home Energy Savings, See ya later, refrigerator® and Energy Education in Schools were still being reviewed at the end of the year.

The Company spent \$315,733 on third-party program impact and process evaluations which represented 3.5 percent of the 2011 annual program expenditures. In Docket UE-100170, Order 02, spending requirements were set for EM&V activities to ensure adequate attention and resources are expended to verify conservation program results. Consistent with the requirements of Order 02, Pacific Power was expected to spend between four (4) and six (6) percent of its conservation budget on these activities over the biennium. Consistent with the Company's EM&V framework developed in 2011, that was developed in conjunction with the DSM Advisory Group, program evaluation costs will be treated as portfolio level costs in 2011 and will not be assigned to programs for purpose of determining the cost effectiveness.

In compliance with Docket UE-100170, Order 02, Pacific Power will perform EM&V activities on a rotation schedule of selected programs such that all programs are evaluated on a timely and relevant basis. Evaluations are scheduled to be performed every two years; there may be deviations from this schedule as a result of new or changing programs or external influence.

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<sup>6</sup> NEEA savings for this report were calculated based on baseline assumptions in place when biennium targets were established.

## 2011 Business Plan Budget Compared to Actual

The Company, consistent with requirements under Docket UE-100170, Order 02, Ordering Paragraph (8)(c), provides Table 3 which compares the Company's 2011 business plan budget to actual 2011 program performance.

In 2011, the Company delivered preliminary results of 49,983,694 kWh in first year energy savings against the 2011 business plan forecast savings of 36,183,565 kWh, a positive variance of approximately 38 percent.

**Table 3: Washington Business Plan Budget compared to Actual**

Program	2011 PacifiCorp Washington Business Plan Budget				2011 PacifiCorp Washington DSM Actual			
	kWh/Yr Savings (at site)	kWh/Yr Savings (at generator)	Gross aMW Savings (at gen)	Estimated Systems Benefit Expenditures	kWh/Yr Savings (at site)	kWh/Yr Savings (at generator)	Gross aMW Savings (at gen)	Systems Benefits Charge Expenditures
Low Income Weatherization (114)	240,000	260,950	0.03	\$ 780,000	244,720	266,419	0.03	\$ 507,032
Energy Education in Schools (113)	2,400,000	2,609,496	0.30	\$ 450,000	2,246,408	2,445,597	0.28	\$ 234,481
Refrigerator Recycling (107)	4,446,248	4,834,361	0.55	\$ 399,153	2,891,232	3,147,598	0.36	\$ 316,400
Home Energy Savings (118)	10,204,155	11,094,875	1.27	\$ 1,267,844	10,250,902	11,159,850	1.27	\$ 1,684,112
CFL Adjustment	(1,000,000)	(1,087,290)	(0.12)		(594,829)	(647,572)	(0.07)	\$ -
<b>Total Residential</b>	<b>16,290,403</b>	<b>17,712,392</b>	<b>2.03</b>	<b>\$ 2,896,997</b>	<b>15,038,433</b>	<b>16,371,891</b>	<b>1.87</b>	<b>\$ 2,742,024</b>
Energy FinAnswer (125)	600,000	645,258	0.07	\$ 350,000	237,601	258,341	0.03	\$ 183,101
FinAnswer Express (115)	2,415,000	2,597,163	0.30	\$ 900,000	6,465,302	7,029,658	0.80	\$ 1,398,280
<b>Total Commercial</b>	<b>3,015,000</b>	<b>3,242,421</b>	<b>0.37</b>	<b>\$ 1,250,000</b>	<b>6,702,903</b>	<b>7,287,999</b>	<b>0.83</b>	<b>\$ 1,581,381</b>
Energy FinAnswer (125)	8,900,000	9,689,163	1.11	\$ 2,500,000	9,750,808	10,486,311	1.20	\$ 1,821,938
FinAnswer Express (115)	1,500,000	1,633,005	0.19	\$ 350,000	3,198,458	3,439,718	0.39	\$ 558,501
<b>Total Industrial</b>	<b>10,400,000</b>	<b>11,322,168</b>	<b>1.30</b>	<b>\$ 2,850,000</b>	<b>12,949,266</b>	<b>13,926,029</b>	<b>1.59</b>	<b>\$ 2,380,440</b>
Customer outreach and communication				\$ 250,000				\$ 278,233
<b>Total - current Company programs</b>	<b>29,705,403</b>	<b>32,276,981</b>	<b>3.70</b>	<b>\$ 7,246,997</b>	<b>34,690,602</b>	<b>37,585,920</b>	<b>4.29</b>	<b>\$ 6,982,077</b>
Northwest Energy Efficiency Alliance (NEEA)		12,111,877	1.38	\$ 1,113,000	11388000	12,397,774	1.42	\$ 1,010,951
Potential study update								\$ 156,067
Distribution efficiency				\$ 220,000				\$ 429,965
Production efficiency				TBD				
<b>Total including Company programs, NEEA and other company initiatives</b>		<b>36,183,565</b>	<b>4.12</b>	<b>8,579,997</b>	<b>46,078,602</b>	<b>49,983,694</b>	<b>5.71</b>	<b>\$ 8,579,059</b>
Additional residential expenditures for administration related to prior programs				\$ 1,000				\$ 2,675
<b>Total System Benefits Charge expenditures</b>				<b>\$ 8,580,997</b>				<b>\$ 8,581,734</b>

## Residential Energy Efficiency Programs and Activity

### Home Energy Savings Incentive Program (Schedule 118)

The Home Energy Savings program, Schedule 118 (“Schedule 118”) was first approved in 2006 and provides a broad framework to deliver incentives for more efficient products and services for Washington residential customers with a new or existing home, multi-family unit or manufactured home. The Company uses a third party to administer this program. Schedule 118 and the program web site at [www.homeenergysavings.net](http://www.homeenergysavings.net) operate in tandem to inform customers and contractors of the offerings and qualifications for incentives.

Measures eligible for incentives include clothes washers, clothes washer recycling, refrigerators, water heaters, dishwashers, lighting (both CFLs and fixtures), heating and cooling equipment and services, insulation, windows and miscellaneous equipment such as ceiling fans. In addition, the program includes a Builder Option Package as well as stand-alone measures for new homes.

Incentives are provided in three ways: post-purchase delivery to the customer for the majority of measures, post-purchase mid-market delivery to contractors after measure installation and through a manufacturer buy-down for CFLs. Buy-downs result in lower retail prices for customers at the point of purchase as opposed to post-purchase incentives that customers must submit an application to receive.

Program results for 2011 are provided in Table 4 below.

**Table 4: 2011 Home Energy Savings Program Performance**

kWh/Yr Savings 2011 (Gross - At Gen)	10,512,277				
kWh/Yr Savings 2011 (At Site)	9,656,073				
Expenditures	\$ 1,684,112				
Incentives Paid	\$ 951,524				
	PTRC	TRC	UCT	RIM	PCT
Cost Effectiveness (Five Tests)	2.51	2.31	3.81	0.92	2.89
Levelized Cost (\$/kWh)	\$ 0.049	\$ 0.049	\$ 0.025		
Lifecycle Revenue Impact (\$/kWh)	0.000006849				
Discounted Participant Payback (years)	2.52				

## 2011 Program Performance

Measure level details and participation are included in the below table:

**Table 5: 2011 Home Energy Savings Measure Performance**

Home Energy Savings Measures	Unit Measure	# of Units	Participants	kWh/Yr Savings (Gross - At Site)
Clothes Washer-Tier One (1.72 - 1.99 MEF)	Units	19	19	4,756
Clothes Washer-Tier Two (2.0 + MEF)	Units	2,236	2,236	647,687
Dishwasher	Units	666	665	37,299
Electric Water Heater	Units	163	162	14,784
Evaporative Cooler	Units	-	-	-
Refrigerator	Units	847	847	82,583
Room AC	Units	77	77	7,046
Room AC Recycling	Units	-	-	-
Insulation: Attic	Sq Feet	602,314	475	299,274
Insulation: Floor	Sq Feet	124,972	131	144,485
Insulation: Wall	Sq Feet	79,375	87	75,223
Windows	Sq Feet	46,758	310	50,675
CAC/HP Tune up	Projects	19	19	2,930
CAC (15 SEER)	Units	23	23	4,715
CAC Install	Units	9	9	432
CAC Sizing	Units	6	6	864
Duct Sealing-Electric	Projects	28	27	23,558
Duct Sealing-Gas	Projects	12	12	3,962
Heat Pump Best Practices Installation	Units	41	40	20,147
Heat Pump Conversion	Units	75	72	387,360
Heat Pump Upgrade	Projects	72	71	107,539
CAC w/install & sizing	Units	-	-	-
New Homes CFL's	Homes	2	2	1,862
Dishwasher	Units	10	2	405
Duct Sealing-Electric	Projects	1	1	840
Energy Star BOP Bundle (HP)	Projects	82	14	299,587
Heat Pump	Units	1	-	1,753
Heat Pump Best Practices Installation	Units	-	-	-
Insulation: Attic	Sq Feet	3,996	2	500
Refrigerator	Units	9	1	882
Windows	Sq Feet	1,081	1	549
Ceiling Fans	Units	30	24	3,210
Fixtures	Units	93	59	8,556
CFLs-Specialty Bulbs	Bulbs	87,920	8,790	2,697,203
CFLs-Twisters	Bulbs	152,977	15,300	4,725,408
<b>Totals</b>		<b>1,103,914</b>	<b>29,483</b>	<b>9,656,073</b>
kWh/Yr Savings at Generation				10,512,277

**Program Changes**

There were no Home Energy Savings program changes in 2011. Modifications to the Home Energy Savings program were discussed with the DSM Advisory Group on numerous occasions throughout the year with the final discussion on October 19, 2011. The modifications will become effective April 16, 2012.

**Program Evaluations**

A process and impact evaluation was completed in 2011 for the Home Energy Savings program for program years 2009 - 2010. The results of this evaluation are available on Pacific Power's website at: <http://www.pacificorp.com/es/dsm/washington.html>

## Refrigerator Recycling (Schedule 107)

The refrigerator recycling program, operating as the See ya later, refrigerator® program, was first approved effective April 1, 2005. This program aims to decrease residential refrigeration loads by reducing the number of inefficient secondary and primary refrigerator and freezer models in operation. With this program, the Company offers all residential customers in Washington the opportunity to receive a \$30 incentive in exchange for turning in their old but working refrigerators and/or freezers for recycling. Each customer can recycle up to two units, refrigerators and/or freezers, per household. In addition, a kit with instant energy saving measures from CFLs is provided to each participating customer. This kit includes two 13-watt CFLs, a refrigerator thermometer card, energy savings educational materials and information on other Pacific Power efficiency programs relevant to residential customers.

Program results for 2011 are provided in Table 6 below.

**Table 6: See ya later, refrigerator® 2011 Program Performance**

kWh Savings 2011 (Gross - At Gen)	3,147,598				
kWh Savings 2011 (At Site)	2,891,232				
Expenditures	\$ 316,400				
Incentives Paid	\$ 60,480				
	PTRC	TRC	UCT	RIM	PCT
Cost Effectiveness (Five Tests)	3.85	3.50	2.83	0.76	N/A
Levelized Cost (\$/kWh)	\$ 0.022	\$ 0.022	\$ 0.027		
Lifecycle Revenue Impact (\$/kWh)	\$ 0.000009761				
Discounted Participants Payback (years)	N/A				

Details on participation and savings are provided in the table below.

**Table 7: See ya later, refrigerator® 2011 Results**

Refrigerator Recycling Measure	Unit Count	Per Unit Savings (kWh/Yr)	Gross Savings (kWh/Yr)
Refrigerator	1,624	1,250	2,030,000
Freezer	392	1,853	726,376
<b>Total Units Recycled</b>	<b>2,016</b>		<b>2,756,376</b>
Energy Savings Kits	1,873	72	134,856
		<b>Total (At Site)</b>	<b>2,891,232</b>
		<b>Total (At Generation)</b>	<b>3,147,598</b>



In 2011, the program recycled 2,016 units (81 percent refrigerators and 19 percent freezers) by 1,873 households. According to the program delivery vendor, the program recycled more than 126 tons (252,000 lbs) of steel, 4 tons (8,064 lbs) tons of aluminum and copper, 20 tons (40,320 lbs) of plastics and prevented landfill deposits that would cover an entire football field more than two and a half feet deep. In addition, the Chlorofluorocarbons (greenhouse gases) collected and destroyed during recycling equates to approximately 5 tons of carbon dioxide equivalents per unit, equivalent to the annual emissions of the average car in the US. The average age of the units recycled was 29 years with electricity consumption approximately 3-4 times greater than new units purchased today.

### **Program Evaluations**

A process and impact evaluation was completed in 2011 for the See ya later, refrigerator® program for program years 2009 – 2010. The results of this evaluation are available on Pacific Power's website at:

<http://www.pacificorp.com/es/dsm/washington.html>

## Low Income Weatherization (Schedule 114)

Pacific Power partners with three local non-profit agencies, Blue Mountain Action Council in Walla Walla, Northwest Community Action Center in Toppenish and Opportunities Industrialization Center of Washington in Yakima to provide weatherization services to income-qualifying households throughout its Washington service territory. The leveraging of Pacific Power funding along with Washington MatchMaker Program funds allows the agencies to provide these energy efficiency services to more households at no cost to participating customers. The Company provides rebates to partnering agencies for 50 percent of the cost of services while MatchMaker funds are available, and covers 100 percent of costs when these state funds are depleted. All homes were funded at the 50 percent level in 2011. Participants qualify if they are homeowners or renters residing in single-family homes, manufactured homes or apartments. Approximately 6,900 homes have been completed since the program began in the mid-1980s.

Program results for 2011 are provided in Table 8 below.

**Table 8: Low Income Weatherization Performance**

kWh/Yr Savings (at Site)	244,720					
kWh/Yr Savings (at Gen)	266,419					
Expenditures - Total	\$ 507,032					
Participation - Total # of Completed/Treated Homes	133					
<u>Number of Homes Receiving Specific Measures</u>						
Ceiling Insulation	82					
Floor Insulation	114					
Wall Insulation	44					
Weather-stripping	93					
Duct Insulation/Sealing	78					
Attic Ventilation	73					
Water Pipe Insulation and Sealing	118					
Water Heater Replacement	5					
Programmable Thermostats	27					
Home Repairs	52					
Ground Cover	77					
<u>Number of Units Installed of Specific Measures</u>						
Replacement Windows	3					
Thermal Doors	7					
Faucet Aerators	92					
Showerheads	105					
Compact Fluorescent Light bulbs (CFL)	963					
Replacement Refrigerators	19					
		PTRC	TRC	UCT	RIM	PCT
Cost Effectiveness (Five Tests)		1.190	1.120	0.730	0.460	N/A
Levelized Cost (\$/kWh)		0.1471	0.1471	0.1471		
Lifecycle Revenue Impact (\$/kWh)	\$ 0.000005584					
Discounted Participants Payback (years)	N/A					

## Energy Education in Schools (Schedule 113)

The energy education curriculum was developed for sixth grade classrooms by three partnering agencies (Blue Mountain Action Council in Walla Walla, Northwest Community Action Center in Toppenish and Opportunities Industrialization Center of Washington in Yakima). The agencies employ certified teachers to work with school administrators, teachers and students. They provide a minimum of three one-hour energy education sessions on topics such as electricity generation, conservation and efficiency tips. Students receive a kit of measures including a CFL, a refrigerator/freezer temperature card, an electroluminescent nightlight, a shower timer, a hot water temperature card, a kitchen faucet aerator and a wall plate thermometer. A low flow showerhead is provided to those students where a water flow test indicates this need.

During the 2010 - 2011 school year, 4,067 students completed the course of which 3,488 listed Pacific Power as their electric service provider. The estimated annual savings for measure installation of 644 at site kWh per household. The Company believes the educational aspect of the program resulted in additional savings of approximately 437 at site kWh per participating household as a result of behavioral changes in energy use. However, due to difficulty verifying the behavior savings, they have not been included in the results in Table 9 and are not being reported for the purpose of either the achievement of the Company's 2011 energy savings or towards the cost-effectiveness analysis of the program.

Table 9 includes savings from measure installations.

**Table 9: Energy Education Performance<sup>7</sup>**

<b>2010 -2011 School Year</b>					
kWh/Yr Savings (at Site)	2,246,408				
kWh/Yr Savings (Gross - At Gen)	2,445,597				
Expenditures - Total	\$ 234,481				
Number of Pacific Power Students	3,488				
	PTRC	TRC	UCT	RIM	PCT
Cost Effectiveness (Five Tests)	6.71	6.16	4.92	0.89	N/A
Levelized Cost (\$/kWh)	\$ 0.0149	\$ 0.0149	\$ 0.0167		
Lifecycle Revenue Impact (\$/kWh)	\$ 0.000004877				
Discounted Participants Payback (years)	N/A				

<sup>7</sup> Expenditures include only those related to the 2010 - 2011 school year. The Company is funding the 2011 - 2012 school year as referenced in Docket UE-100170 Order 02, paragraph (7), sub article (d). Related kWh savings for the 2011 - 2012 will not be claimed.

Installed measure savings and the calculation of program cost-effectiveness in Table 9 above for the program include additional CFLs purchased by participating households. However, there is a high probability that these additional CFLs were purchased at retailers selling CFLs that were discounted as a result of the Home Energy Savings Incentive Program. To avoid double counting of these savings towards the Company's 2011 program performance, the savings associated with the additional CFL purchases were removed from the residential portfolio results and related cost-effectiveness calculations. The savings associated with these additional CFL installations were identified in the Washington Energy Education program assessment<sup>8</sup> to be approximately 594,829 at site kWh for the 2010 - 2011 school year.

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<sup>8</sup> "Assessment of Washington Energy Education In Schools- 2010 - 2011 Program Year", January 27, 2012 by The Cadmus Group.

## Non-Residential Energy Efficiency Programs and Activity

### FinAnswer Express (Schedule 115)

The FinAnswer Express program is available to commercial, industrial, and agricultural customers in Pacific Power's Washington service territory. The program includes an expedited energy analysis and offers incentives for qualifying high-efficiency measures based on the equipment installed and listed in the program incentive tables (\$/fixture, \$/motor, \$/ton of cooling, etc.). The program also includes custom incentives and technical analysis services for measures not listed in the program incentive tables that improve electric energy efficiency. The current program offers incentives for lighting, motors, heating ventilation and air conditioning ("HVAC"), building envelope, food service equipment, appliances, irrigation, dairy/farm equipment, small compressed air, and other measures. Incentives are available for both retrofit projects and new construction/major renovation projects. The program is marketed primarily via trade allies, Pacific Power staff, and a combination of other Company outreach efforts including print and radio advertising. This program began as Small Retrofit Incentive and Retrofit Incentive (Schedules 115 and 116) in November 2000 and was improved and renamed FinAnswer Express (Schedule 115) in May 2004. It was last modified November 20, 2010. *Note: February 24, 2012 is the next planned update.*

Program expenditures, kWh savings and incentives paid are outlined in the table below:

**Table 10: 2011 FinAnswer Express Program Performance**

kWh/Yr Savings 2011 (Gross - At Gen)	10,469,376				
kWh/Yr Savings 2011 (At Site)	9,663,760				
Expenditures	\$ 1,956,781				
Incentives Paid	\$ 986,757				
		PTRC	TRC	UCT	RIM
Cost Effectiveness (Five Tests)		2.40	2.18	4.49	1.05
Levelized Cost (\$/kWh)	\$ 0.042	\$ 0.042	\$ 0.021		
Lifecycle Revenue Impact (\$/kWh)	\$ (0.00000856)				
Discounted Participant Payback (years)	3.54				

Details of program savings by measure type are provided in the table below:

**Table 11: FinAnswer Express Savings by Measure Type**

Appliance	91	0.0%
HVAC	98,421	1.0%
Compressed Air	145,035	1.5%
Building Envelope	14,766	0.2%
Dairy & Farm	177,205	1.8%
Food Services	178,680	1.8%
Lighting	8,840,200	91.5%
Motor	13,240	0.1%
Other	110,271	1.1%
Refrigeration	4,875	0.1%
Irrigation	80,977	0.8%
<b>Total</b>	<b>9,663,761</b>	

### **Major Trends and Activities**

During 2011, the Company continued to support the Pacific Power Energy Efficiency Alliance, a trade ally network which provides support to lighting, motor, HVAC and other contractors and distributors who participate in offering the Company's energy efficiency programs. Contractors, distributors and others are recruited, approved and trained on the Company's programs. Upon approval, trade allies are listed on the Company's program website as a participating vendor and provided with training and program information to help them help Pacific Power customers.

Each year, training events are held for trade allies working with the FinAnswer Express program. The events were held February 15 and 16, 2011, in Yakima and Walla Walla locations. The events were attended by over 110 trade allies/participants and provided information about program changes, recognized outstanding trade allies, and provided sales training on energy efficiency incentives within their business models. Cascade Natural Gas attended and provided information on available incentives. On March 1, 2011, lighting trade allies attended a regional technical training in the Tri-cities area sponsored by Bonneville Power Administration's Northwest Trade Ally Network and Pacific Power to further improve lighting energy efficiency knowledge.

A dedicated team of technical and outreach specialists support trade allies throughout the year by conducting on-site program trainings, responding to inquiries from customers and trade allies, and publishing an educational newsletter. The Company increased the focus on industrial and agricultural measures in 2011 by adding a technical outreach specialist for irrigation, dairy/farm and small compressed air trade allies.

In 2011, the Company added content to the web page specifically for trade allies at [www.pacificpower.net/alliance](http://www.pacificpower.net/alliance). This page includes service area maps, a link to program information, announcements for upcoming events, resources (updated Light Emitting

Diode policy), and current and past newsletters. Of special note was an addition of a T12 information flyer for allies to provide to their customers on the pending 2012 federal standards change with linear fluorescent lamps and to help promote lighting upgrades with appropriate accurate information. This information is also contained on a customer facing page at [www.pacificpower.net/lightingstandards](http://www.pacificpower.net/lightingstandards).

Some of the Company's program paid advertising in 2011 also focused on the topic of upgrading linear fluorescent lighting. The goal is to encourage customers to upgrade now rather than wait until after the standards change. By upgrading ahead of the standards change, customers can start saving money on their electric bills sooner and benefit from better lighting. The Company's project management staff continued outreach and provided technical services and FinAnswer Express incentives for customer energy efficiency projects.

#### **Program Changes**

There were no FinAnswer Express program changes in 2011. Modifications to the FinAnswer Express program were discussed with the DSM Advisory Group on several occasions throughout the year with a final discussion occurring on November 22, 2011. The modifications became effective on February 24, 2012.

#### **Program Evaluations**

A process and impact evaluation will be completed during 2012 for FinAnswer Express program for program years 2009 – 2011.

## Energy FinAnswer (Schedule 125)

The Energy FinAnswer program serves commercial, industrial, and agricultural customers for retrofits and new construction. The program includes a vendor neutral investment grade energy analysis and cash incentives equal to \$0.15 per kWh annual energy savings plus \$50 per kW average monthly demand savings (up to 60 percent of project costs). There is a cap to prevent incentives from bringing the payback for a project below one year and a cap for lighting energy savings per project because lighting-only projects are included in FinAnswer Express. The program includes a commissioning requirement and post-installation verification. There are design assistance services and special incentives available for new construction and major renovation projects where energy code applies. The program is marketed primarily via Pacific Power account managers, trade allies, Energy FinAnswer consultants and project staff. Other leads are received via word-of-mouth or past participants returning for additional projects and a combination of other Company outreach efforts.

Program results for 2011 are provided in Table 12 below.

**Table 12: Energy FinAnswer Program Performance**

kWh/Yr Savings 2011 (Gross - At Gen)	10,744,653					
kWh/Yr Savings 2011 (At Site)	9,988,409					
Expenditures	\$ 2,005,039					
Incentives Paid	\$ 1,168,205					
		PTRC	TRC	UCT	RIM	PCT
Cost Effectiveness (Five Tests)		2.20	2.00	4.32	1.10	2.00
Levelized Cost (\$/kWh)	\$ 0.045	\$ 0.045	\$ 0.021			
Lifecycle Revenue Impact (\$/kWh)	\$ (0.00001681)					
Discounted Participant Payback (years)	4.46					

Details of program savings by measure type (at site) are provided in Table 13 below.

**Table 13: Energy FinAnswer Savings by Measure Type**

Additional Measures	1,130,805	11.3%
Building Shell	4,601	0.0%
Compressed Air	174,590	1.7%
Controls	7,614	0.1%
HVAC	948,153	9.5%
Lighting	43,719	0.4%
Motors	1,246,832	12.5%
Refrigeration	6,432,095	64.4%
<b>Total</b>	<b>9,988,409</b>	



**Major Trends or Activities**

Energy FinAnswer continues to experience strong participation from the fruit storage and processing industry. Energy FinAnswer program also saw an increase in program activity with K-12 schools across the service territory.

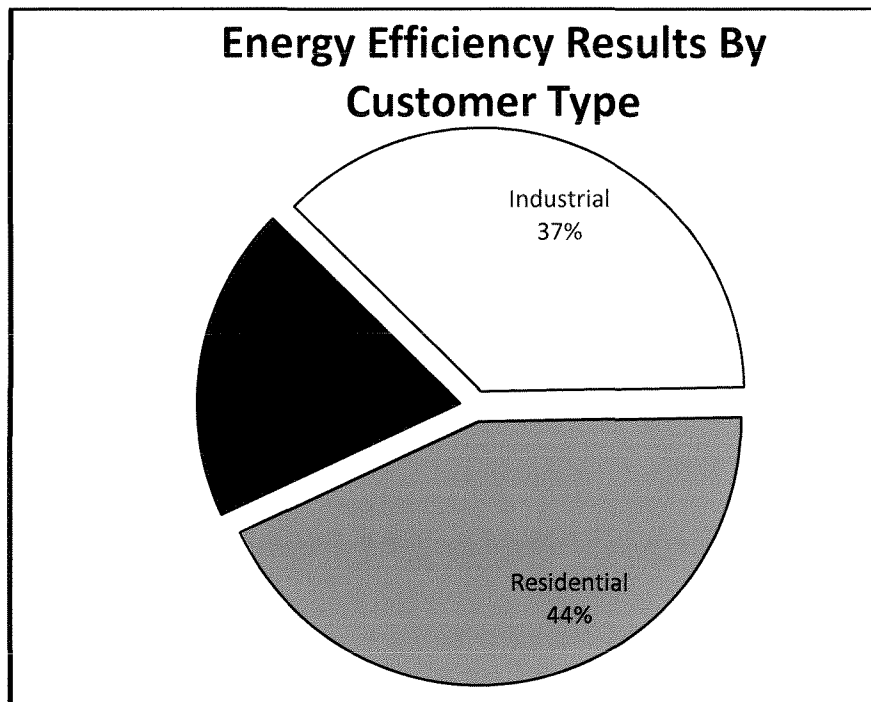
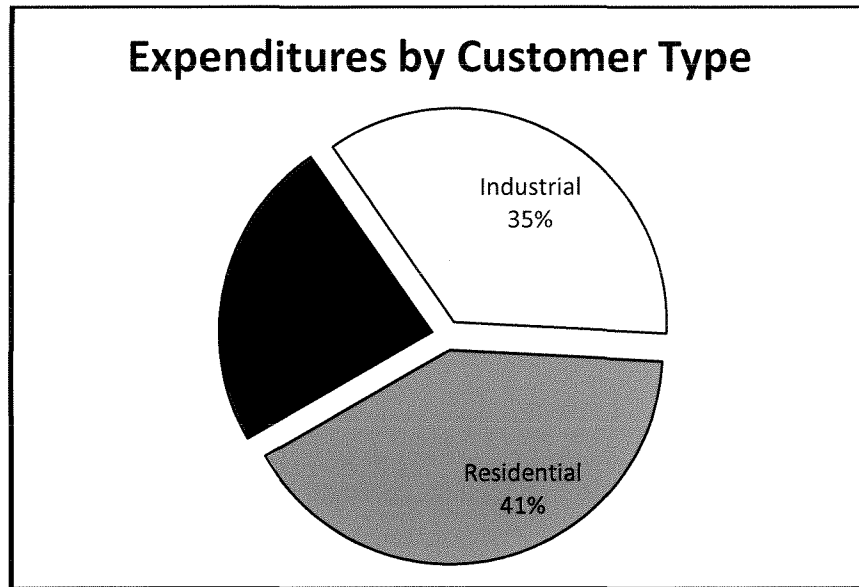
**Program Changes**

No program changes are planned at this time.

**Program Evaluations**

A process and impact evaluation will be completed during 2012 for the Energy FinAnswer program for program years 2009 – 2011.

## Overall Portfolio Expenditures and Results<sup>9</sup>



<sup>9</sup> In the Northwest regional power plan, savings potential for refrigerated warehouses is included in the industrial sector. This is consistent with the Company's reporting for savings from this segment. Electric sales are identified as commercial.

## System Benefits Charge Balancing Account Summary

Demand-side Management activities are funded through Schedule 191, System Benefits Charge. Expenditures are charged as incurred and collected from the Systems Benefit Charge. The balancing account is the mechanism used for managing the revenue collected and expenses incurred in the provision of Demand-side Management programs. The balancing account activity for 2011 is included in this report consistent with Ordering Paragraph 8(g), Order 02, Docket UE-100170 and is outlined in Table 14 below.

**Table 14: System Benefit Charge Balancing Account Summary**

		carrying charge rate:		8.80%			
State of Washington				Balance 12/31/10			
SBC Summary -- Balancing Account				389,961			
	Deferred Expenditures	Schedule 191 Revenue Collected	Carrying Charge	Accumulative Balance	Accrued Costs	Accrual Basis Accumulative Balance	
Jan-11	310,217	(928,882)	0.00	(228,704)			
Feb-11	641,244	(788,235)	0.00	(375,695)			
Mar-11	549,283	(752,154)	0.00	(578,567)			
Apr-11	833,947	(670,893)	0.00	(415,512)			
May-11	915,225	(627,375)	0.00	(127,663)			
Jun-11	1,188,629	(613,361)	0.00	447,605			
Jul-11	530,890	(665,270)	0.00	313,226			
Aug-11	463,567	(741,493)	0.00	35,300			
Sep-11	1,160,618	(734,959)	0.00	460,958			
Oct-11	593,860	(660,989)	0.00	393,829			
Nov-11	512,095	(734,641)	0.00	171,283			
Dec-11	1,495,951	(901,285)	0.00	765,949	530,996		1,296,944
<b>Total 2011</b>	<b>9,195,525</b>	<b>(8,819,537)</b>	<b>0</b>				

### Column Explanations:

Deferred Expenditures: Monthly expenditures for all program activities, including funding for the Northwest Energy Efficiency Alliance.

Revenue Collected: Revenue collected through Schedule 191, System Benefits Charge.

Carrying Charge: Monthly charge based on "Accumulative Balance" of the account, accrued when cumulative revenue exceeds cumulative expenditures. On July 29, 2010 in Docket UE-001457, the Commission ordered that the carrying charge on negative balances (balances owing to customers) be eliminated going forward.

Accumulative Balance: Current balance of the account. A running total of account activities. If more is collected in "Revenue" than is spent for a given month, the

“Accumulated Balance” will be increased by the net amount. A negative accumulative balance means cumulative revenue exceeds cumulative expenditures; positive accumulative balance means cumulative expenditures exceed cumulative revenue.

Accrued Costs: Program costs incurred during the period not yet posted.

Accrual Basis Accumulative Balance: Current balance of account including accrued costs.

During calendar year 2011, the under-collected balance in the System Benefits Charge account increased by \$376,000 and with accrued costs, the account increased by approximately \$907,000. Therefore, Pacific Power spent approximately \$376,000 and with accrued costs \$907,000 more than was collected for program delivery during the year.

## Cost Effectiveness

The cost effectiveness of individual programs operated by the Company for 2011 is calculated using actual expenditures and reported savings. Cost effectiveness is provided at the individual program, residential energy efficiency portfolio, residential energy efficiency portfolio with non-energy benefits, non-residential energy efficiency portfolio, non-residential energy efficiency portfolio with non-energy benefits, overall demand-side management program portfolio levels, and overall demand-side management program portfolio with non-energy benefits. Deemed savings estimates, where applicable, were the same as those used in the planning estimates and filed forecasts, unless more recent estimates were available from evaluations.

Energy savings shown in this report are gross savings and the impact of line losses is indicated with an “at site” or “at generation” designation. Line losses are based on the Company’s 2007 line loss study. All cost effectiveness calculations will assume a Net-to-gross ratio of 1.0 consistent with the Council’s methodology. The energy savings attributed to each program are shaped according to specific end-use savings (the hourly calculation of when energy is used for the various end-use measures from which the savings are derived). Program costs and the value of the energy savings are then compared on a present value basis with the Company’s 2011 IRP calculated decrement values for demand-side resource savings and avoided capacity investments. The energy efficiency resource decrement values are fully shaped to represent the 8,760 hourly values that exist within a calendar year. By matching the hourly savings with the hourly avoided costs, both energy and capacity impacts of energy efficiency savings are recognized.

The five California Standard Practice Manual cost effectiveness tests as modified in the Northwest were utilized in the cost benefit analysis.

### Key Assumptions for Cost Effectiveness Calculations

Cost effectiveness calculations for programs and measures (or measure groups) within each program will be detailed in the following tables.

Global assumptions used in all cost effectiveness calculations include:

<b>Assumption</b>	<b>Value</b>	<b>Source</b>
Discount Rate	7.17%	2011 IRP - Company WACC after Tax
Line Losses (Washington Specific)		
Residential	8.87%	2007 MAC Line Loss Study
Commercial	8.73%	2007 MAC Line Loss Study
Industrial	7.54%	2007 MAC Line Loss Study

Key elements that go into the cost effectiveness calculation for each program include:

- KW/kWh Savings at Gross
- Administrative expenses
- Incentives paid
- Total utility costs – including administration and evaluation
- Gross customer costs
- Net To Gross ratio
- Measure life
- IRP decrement value

The overall demand-side management portfolio and component sectors were all cost effective on all cost tests.

**Table 15: Portfolio and Sector Cost Effectiveness Summary**

	Cost Effectiveness Test				
	PTRC	TRC	UCT	RIM	PCT
2011 Total Portfolio Including NEEA and CFL Adjustment	2.63	2.39	3.91	0.96	3.37
2011 Commercial and Industrial Energy Efficiency Portfolio	2.29	2.09	4.41	1.08	2.20
Residential Energy Efficiency Portfolio (including NEEA and CFL Adjustment)	3.81	3.46	4.76	0.94	5.96
Total Portfolio Including NEEA, CFL Adjustment, and Non-Energy Benefits	2.74	2.50	3.91	0.97	3.52
2011 C&I Energy Efficiency Portfolio with Non-Energy Benefits	2.29	2.09	4.41	1.08	2.20
Residential Energy Efficiency Portfolio with Non-Energy Benefits (including NEEA and CFL Adjustment)	4.10	3.75	4.76	0.94	6.43

Results of the cost effectiveness analysis, as conducted by The Cadmus Group are included Appendix 1. Please refer to the Cost Effectiveness Appendix 1 to this report for more information on the cost effectiveness tests and the assumptions and inputs.

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## **Appendices**

Appendix 1 – Cost Effectiveness Details

# Appendix 1

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## Cost Effectiveness 2011 Annual Report on Conservation Acquisition-Washington

Pacific Power  
3/30/2012



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## Total Portfolio

**Date:** March 23, 2012  
**To:** Shawn Grant  
**From:** Aaron Jenniges and Niko Drake-McLaughlin  
**Re:** Washington 2011 DSM Portfolio Cost Effectiveness

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The tables below present the cost effectiveness analysis for the Washington Energy Efficiency Portfolio based on 2011 costs and savings estimates provided by PacifiCorp in a spreadsheet entitled "WA Tables and Charts Final CE inputs 031612." The Utility discount rate is from the 2011 PacifiCorp Integrated Resource Plan. Individual program cost effectiveness is provided in separate memos.

The portfolio is cost effective from all perspectives, except for the RIM.

**Table 1: Common Inputs**

Parameter	Value
Discount Rate	7.17%
Residential Line Loss	8.87%
Commercial Line Loss	8.73%
Industrial Line Loss	7.54%
Residential Energy Rate (\$/kWh) (base year 2010)	\$0.0767
Commercial Energy Rate (\$/kWh) (base year 2010)	\$0.0688
Industrial Energy Rate (\$/kWh) (base year 2010)	\$0.0577
Inflation Rate <sup>1</sup>	1.8%

**Table 2: CFL Adjustment**

Program	Value
kWh	(594,829)
Incremental Cost	(\$37,342)

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<sup>1</sup> Used to escalate future year energy rates.

**Table 3: NEEA**

Program	Value
kWh	11,388,000
Incremental Cost	\$1,275,734

**Table 4: 2011 Total Portfolio Including NEEA and CFL Adjustment**

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.038	\$15,279,778	\$40,250,034	\$24,970,257	2.63
Total Resource Cost Test (TRC) No Adder	\$0.038	\$15,279,778	\$36,563,378	\$21,283,600	2.39
Utility Cost Test (UCT)	\$0.023	\$9,361,447	\$36,563,378	\$27,201,931	3.91
Rate Impact Test (RIM)		\$37,895,510	\$36,563,378	(\$1,332,133)	0.96
Participant Cost Test (PCT)		\$9,540,860	\$32,156,593	\$22,615,733	3.37
Lifecycle Revenue Impacts (\$/kWh)				\$0.00001753	

**Table 5: 2011 C&I Energy Efficiency Portfolio**

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.044	\$8,370,974	\$19,204,509	\$10,833,535	2.29
Total Resource Cost Test (TRC) No Adder	\$0.044	\$8,370,974	\$17,458,645	\$9,087,671	2.09
Utility Cost Test (UCT)	\$0.021	\$3,961,823	\$17,458,645	\$13,496,822	4.41
Rate Impact Test (RIM)		\$16,216,389	\$17,458,645	\$1,242,256	1.08
Participant Cost Test (PCT)		\$6,563,813	\$14,409,228	\$7,845,414	2.20
Lifecycle Revenue Impacts (\$/kWh)				(\$0.00002537)	

**Table 6: 2011 Residential Energy Efficiency Portfolio  
(including NEEA and CFL Adjustment)**

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.027	\$5,526,938	\$21,045,525	\$15,518,588	3.81
Total Resource Cost Test (TRC) No Adder	\$0.027	\$5,526,938	\$19,104,733	\$13,577,796	3.46
Utility Cost Test (UCT)	\$0.019	\$4,017,758	\$19,104,733	\$15,086,975	4.76
Rate Impact Test (RIM)		\$20,297,256	\$19,104,733	(\$1,192,523)	0.94
Participant Cost Test (PCT)		\$2,977,047	\$17,747,365	\$14,770,318	5.96
Lifecycle Revenue Impacts (\$.kWh)				\$0.00001569	

The following tables reflect the cost-effectiveness analysis with non-energy benefits.

**Table 7: 2011 Total Portfolio Including NEEA, CFL Adjustment, and Non-Energy Benefits**

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.038	\$15,279,778	\$41,857,542	\$26,577,765	2.74
Total Resource Cost Test (TRC) No Adder	\$0.038	\$15,279,778	\$38,170,886	\$22,891,108	2.50
Utility Cost Test (UCT)	\$0.023	\$9,361,447	\$36,571,890	\$27,210,443	3.91
Rate Impact Test (RIM)		\$37,895,510	\$36,571,890	(\$1,323,621)	0.97
Participant Cost Test (PCT)		\$9,540,860	\$33,554,242	\$24,013,382	3.52
Lifecycle Revenue Impacts (\$.kWh)				\$0.00001742	

**Table 8: 2011 C&I Energy Efficiency Portfolio with Non-Energy Benefits**

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.044	\$8,370,974	\$19,204,509	\$10,833,535	2.29
Total Resource Cost Test (TRC) No Adder	\$0.044	\$8,370,974	\$17,458,645	\$9,087,671	2.09
Utility Cost Test (UCT)	\$0.021	\$3,961,823	\$17,458,645	\$13,496,822	4.41
Rate Impact Test (RIM)		\$16,216,389	\$17,458,645	\$1,242,256	1.08
Participant Cost Test (PCT)		\$6,563,813	\$14,409,228	\$7,845,414	2.20
Lifecycle Revenue Impacts (\$.kWh)				(\$0.00002537)	

**Table 9: 2011 Residential Energy Efficiency Portfolio with Non-Energy Benefits  
(including NEEA and CFL Adjustment)**

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.027	\$5,526,938	\$22,653,033	\$17,126,096	4.10
Total Resource Cost Test (TRC) No Adder	\$0.027	\$5,526,938	\$20,712,241	\$15,185,304	3.75
Utility Cost Test (UCT)	\$0.019	\$4,017,758	\$19,113,245	\$15,095,487	4.76
Rate Impact Test (RIM)		\$20,297,256	\$19,113,245	(\$1,184,011)	0.94
Participant Cost Test (PCT)		\$2,977,047	\$19,145,014	\$16,167,968	6.43
Lifecycle Revenue Impacts (\$.kWh)				\$0.00001558	

The tables below summarize the non-energy benefits for the Low Income, Home Energy Savings and Energy Education programs.

**Table 10: Low Income Weatherization Non-Energy Benefits**

Non-Energy Benefit	Program Impact	Perspective Adjusted
Mobility	\$18,620	TRC
Arrearage	\$8,512	UCT, RIM, TRC
Economic	\$182,726	TRC
<b>Total</b>	<b>\$209,858</b>	

**Table 11: Home Energy Savings (Appliance) Non-Energy Benefits**

Non-Energy Benefit	Non-Energy Benefits per Measure	Total Installs	Measure Life	Total Present Value Benefits
Clothes Washer – Tier One (1.72 – 1.99 MEF)	\$45.74	19	14	\$8,063
Clothes Washer – Tier Two (2.0+ MEF)	\$60.26	2,236	14	\$1,250,070
Dishwasher	\$0.31	666	9	\$1,409
New Homes Dishwashers	\$0.31	10	12	\$26
<b>Total</b>				<b>\$1,259,568</b>

**Table 12: Energy Education Non-Energy Benefits**

Non-Energy Benefit	Non-Energy Benefits per Measure	Total Installs	Measure Life	Total Present Value Benefits
Showerheads	\$6.62	2,014	8.0	\$84,771
Aerators	\$3.49	3,488	5.0	\$53,310
Total Benefits				\$138,082

## Home Energy Savings

**Date:** March 23, 2012  
**To:** Shawn Grant  
**From:** Aaron Jenniges and Niko Drake-McLaughlin  
**Re:** Washington Home Energy Savings 2011 Program Cost Effectiveness

The tables below present the cost effectiveness findings of the Washington Home Energy Savings program based on 2011 costs and savings estimates provided by PacifiCorp in a spreadsheet entitled “WA Tables and Charts Final CE inputs 031612.” The Utility discount rate is from the 2011 PacifiCorp Integrated Resource Plan.

Cost effectiveness was tested using the 2011 IRP west residential lighting, whole house, or cooling load factor decrements, depending on the measure group. Table 1 lists modeling inputs.

**Table 1: Home Energy Savings  
Inputs**

Parameter	Value
Discount Rate	7.17%
Line Loss	8.87%
Residential Energy Rate (\$/kWh) (base year 2010)	\$0.0767
Inflation Rate <sup>2</sup>	1.8%

**Table 2: Home Energy Savings  
Annual Program Costs**

	Program Costs	Utility Admin	Evaluation	Incentives	Total Utility Costs	Net Participant Incremental Cost
Lighting	\$50,234	\$12,955	\$0	\$249,182	\$312,371	\$1,014,320
Appliance	\$192,024	\$49,521	\$0	\$267,750	\$509,295	\$632,104
Home Improvement	\$135,731	\$35,003	\$0	\$275,307	\$446,041	\$548,466
HVAC	\$131,406	\$33,888	\$0	\$75,910	\$241,204	\$226,051
New Construction	\$73,000	\$18,826	\$0	\$83,375	\$175,200	\$162,323
Total	\$582,395	\$150,193	\$0	\$951,524	\$1,684,111	\$2,583,264

<sup>2</sup> Used to escalate future year energy rates.

**Table 3: Home Energy Savings  
Savings by Measure Type**

	Gross kWh Savings	Realization Rate	Adjusted Gross Savings	Net to Gross Percentage	Net kWh Savings	Measure Life	Load Factor Decrement
Lighting	7,422,611	84%	6,234,993	100%	6,234,993	6.60	Lighting
Appliance	805,920	137%	1,104,110	100%	1,104,110	14.55	Whole House
Home Improvement	569,658	102%	581,051	100%	581,051	45.00	Cooling
HVAC	551,508	92%	507,387	100%	507,387	18.03	Cooling
New Construction	306,377	70%	214,464	100%	214,464	20.98	Cooling
Total	9,656,073		8,642,005		8,642,005		

**Table 4: Home Energy Savings**

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.049	\$3,315,852	\$7,057,902	\$3,742,050	2.13
Total Resource Cost Test (TRC) No Adder	\$0.049	\$3,315,852	\$6,416,274	\$3,100,423	1.94
Utility Cost Test (UCT)	\$0.025	\$1,684,112	\$6,416,274	\$4,732,162	3.81
Rate Impact Test (RIM)		\$6,936,719	\$6,416,274	(\$520,444)	0.92
Participant Cost Test (PCT)		\$2,583,264	\$6,204,131	\$3,620,867	2.40
Lifecycle Revenue Impacts (\$/kWh)				\$0.000006849	
Discounted Participant Payback (years)				2.52	

**Table 5: Lighting (West Res Lighting 48% LF Decrement)**

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0276	\$1,077,509	\$3,495,810	\$2,418,302	3.24
Total Resource Cost Test (TRC) No Adder	\$0.0276	\$1,077,509	\$3,178,009	\$2,100,501	2.95
Utility Cost Test (UCT)	\$0.0080	\$312,371	\$3,178,009	\$2,865,638	10.17
Rate Impact Test (RIM)		\$3,248,625	\$3,178,009	(\$70,616)	0.98
Participant Cost Test (PCT)		\$1,014,320	\$3,185,436	\$2,171,116	3.14
Discounted Participant Payback (years)				1.56	



**Table 6: Appliance (West Res Whole House 49% LF Decrement)**

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0753	\$873,649	\$1,189,169	\$315,520	1.36
Total Resource Cost Test (TRC) No Adder	\$0.0753	\$873,649	\$1,081,063	\$207,414	1.24
Utility Cost Test (UCT)	\$0.0439	\$509,295	\$1,081,063	\$571,768	2.12
Rate Impact Test (RIM)		\$1,434,052	\$1,081,063	(\$352,989)	0.75
Participant Cost Test (PCT)		\$632,104	\$1,192,507	\$560,403	1.89
Discounted Participant Payback (years)				4.11	

**Table 7: Home Improvement (West Res Cooling 7% LF Decrement)**

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0879	\$719,200	\$1,180,712	\$461,511	1.64
Total Resource Cost Test (TRC) No Adder	\$0.0879	\$719,200	\$1,073,374	\$354,174	1.49
Utility Cost Test (UCT)	\$0.0545	\$446,041	\$1,073,374	\$627,333	2.41
Rate Impact Test (RIM)		\$1,124,056	\$1,073,374	(\$50,682)	0.95
Participant Cost Test (PCT)		\$548,466	\$953,322	\$404,856	1.74
Discounted Participant Payback (years)				5.77	

**Table 8: HVAC (West Res Cooling 7% LF Decrement)**

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0648	\$391,345	\$828,958	\$437,613	2.12
Total Resource Cost Test (TRC) No Adder	\$0.0648	\$391,345	\$753,598	\$362,253	1.93
Utility Cost Test (UCT)	\$0.0399	\$241,204	\$753,598	\$512,394	3.12
Rate Impact Test (RIM)		\$734,136	\$753,598	\$19,462	1.03
Participant Cost Test (PCT)		\$226,051	\$568,842	\$342,791	2.52
Discounted Participant Payback (years)				3.70	

**Table 9: New Construction (West Res Cooling 7% LF Decrement)**

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0950	\$254,149	\$363,253	\$109,104	1.43
Total Resource Cost Test (TRC) No Adder	\$0.0950	\$254,149	\$330,230	\$76,081	1.30
Utility Cost Test (UCT)	\$0.0655	\$175,201	\$330,230	\$155,029	1.88
Rate Impact Test (RIM)		\$395,850	\$330,230	(\$65,620)	0.83
Participant Cost Test (PCT)		\$162,323	\$304,024	\$141,701	1.87
Discounted Participant Payback (years)				4.56	

The results above do not reflect non-energy benefits. Appliances in this program have significant non-energy benefits (water). Those benefits, by measure, are outlined in the table below.

**Table 10: Non-Energy Benefits**

Non-Energy Benefit	Non-Energy Benefits per Measure	Total Installs	Measure Life	Total Present Value Benefits
Clothes Washer – Tier One (1.72 – 1.99 MEF)	\$45.74	19	14	\$8,063
Clothes Washer – Tier Two (2.0+ MEF)	\$60.26	2,236	14	\$1,250,070
Dishwasher	\$0.31	666	9	\$1,409
New Homes Dishwashers	\$0.31	10	12	\$26
<b>Total</b>				<b>\$1,259,568</b>

When these non-energy benefits are incorporated in the cost-effectiveness analysis for appliances, the TRC improves to 2.68, as shown in Table 11.

**Table 11: 2010- Appliance with Non-Energy Benefits**

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0753	\$873,649	\$2,448,737	\$1,575,088	2.80
Total Resource Cost Test (TRC) No Adder	\$0.0753	\$873,649	\$2,340,631	\$1,466,982	2.68
Utility Cost Test (UCT)	\$0.0439	\$509,295	\$1,081,063	\$571,768	2.12
Rate Impact Test (RIM)		\$1,434,052	\$1,081,063	(\$352,989)	0.75
Participant Cost Test (PCT)		\$632,104	\$2,452,075	\$1,819,971	3.88
Discounted Participant Payback (years)				4.11	

Similarly, the overall program TRC improves to 2.31 when non-energy benefits are included, as shown in table 12.

**Table 12: Home Energy Savings with Non-Energy Benefits**

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0490	\$3,315,852	\$8,317,470	\$5,001,618	2.51
Total Resource Cost Test (TRC) No Adder	\$0.0490	\$3,315,852	\$7,675,842	\$4,359,990	2.31
Utility Cost Test (UCT)	\$0.0250	\$1,684,112	\$6,416,274	\$4,732,162	3.81
Rate Impact Test (RIM)		\$6,936,719	\$6,416,274	(\$520,444)	0.92
Participant Cost Test (PCT)		\$2,583,264	\$7,463,699	\$4,880,435	2.89
Lifecycle Revenue Impacts (\$/kWh)				\$0.000006849	
Discounted Participant Payback (years)				2.52	

## See ya later, refrigerator<sup>®</sup>

**Date:** March 23, 2012  
**To:** Shawn Grant  
**From:** Aaron Jenniges and Niko Drake-McLaughlin  
**Re:** Washington See ya later, refrigerator<sup>®</sup> 2011 Program Cost Effectiveness

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The tables below present the cost effectiveness findings of the Washington See-Ya-Later Refrigerator program based on 2011 costs and savings estimates provided by PacifiCorp in a spreadsheet entitled “WA Tables and Charts Final CE inputs 031612.” The Utility discount rate is from the 2011 PacifiCorp Integrated Resource Plan.

Cost effectiveness was tested using the 2011 IRP west residential whole house load factor decrement. Table 1 lists modeling inputs.

The program is cost effective from the TRC, UCT and PCT perspectives.

**Table 1: See ya later, refrigerator<sup>®</sup>  
Inputs**

Parameter	Value
Discount Rate	7.17%
Line Loss	8.87%
Residential Energy Rate (\$/kWh) (base year 2010)	\$0.0767
Inflation Rate <sup>3</sup>	1.8%

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<sup>3</sup> Used to escalate future year energy rates.

**Table 2: See ya later, refrigerator®  
Annual Program Costs and Savings**

	Program Costs	Utility Admin	Evaluation	Incentives	Total Utility Costs	Net Participant Incremental Cost
Refrigerators	\$168,574	\$32,207	\$0	\$48,720	\$249,501	\$0
Freezers	\$32,782	\$6,263	\$0	\$11,760	\$50,805	\$0
Kits	\$13,511	\$2,581	\$0	\$0	\$16,093	\$0
Total	\$214,868	\$41,052	\$0	\$60,480	\$316,400	\$0

**Table 3: See ya later, refrigerator®  
Savings by Measure Type**

	Gross kWh Savings	Realization Rate	Adjusted Gross Savings	Net to Gross Percentage	Net kWh Savings	Measure Life
Refrigerators	2,030,000	92%	1,867,600	100%	1,867,600	5
Freezers	726,376	50%	363,188	100%	363,188	5
Kits	134,856	111%	149,690	100%	149,690	6.6
Total	2,891,232		2,380,478		2,380,478	

**Table 4: See ya later, refrigerator® (West Res Whole House 49% LF Decrement)**

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.022	\$255,919	\$986,099	\$730,180	3.85
Total Resource Cost Test (TRC) No Adder	\$0.022	\$255,919	\$896,454	\$640,535	3.50
Utility Cost Test (UCT)	\$0.027	\$316,399	\$896,454	\$580,055	2.83
Rate Impact Test (RIM)		\$1,174,786	\$896,454	(\$278,332)	0.76
Participant Cost Test (PCT)		\$0	\$918,867	\$918,867	N/A
Lifecycle Revenue Impacts (\$/kWh)				\$0.000009761	
Discounted Participant Payback (years)				N/A	

**Table 5: Refrigerators (West Res Whole House 49% LF Decrement)**

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0226	\$200,781	\$754,781	\$554,000	3.76
Total Resource Cost Test (TRC) No Adder	\$0.0226	\$200,781	\$686,165	\$485,384	3.42
Utility Cost Test (UCT)	\$0.0281	\$249,501	\$686,165	\$436,664	2.75
Rate Impact Test (RIM)		\$909,120	\$686,165	(\$222,955)	0.75
Participant Cost Test (PCT)		\$0	\$708,339	\$708,339	N/A
Discounted Participant Payback (years)				N/A	

**Table 6: Freezers (West Res Whole House 49% LF Decrement)**

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0226	\$39,045	\$146,781	\$107,735	3.76
Total Resource Cost Test (TRC) No Adder	\$0.0226	\$39,045	\$133,437	\$94,392	3.42
Utility Cost Test (UCT)	\$0.0294	\$50,805	\$133,437	\$82,632	2.63
Rate Impact Test (RIM)		\$179,080	\$133,437	(\$45,643)	0.75
Participant Cost Test (PCT)		\$0	\$140,035	\$140,035	N/A
Discounted Participant Payback (years)				N/A	

**Table 7: Kits (West Res Whole House 49% LF Decrement)**

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0172	\$16,092	\$84,537	\$68,445	5.25
Total Resource Cost Test (TRC) No Adder	\$0.0172	\$16,092	\$76,852	\$60,759	4.78
Utility Cost Test (UCT)	\$0.0172	\$16,092	\$76,852	\$60,759	4.78
Rate Impact Test (RIM)		\$86,586	\$76,852	(\$9,734)	0.89
Participant Cost Test (PCT)		\$0	\$70,494	\$70,494	N/A
Discounted Participant Payback (years)				N/A	

## Low Income

**Date:** March 23, 2012  
**To:** Shawn Grant  
**From:** Aaron Jenniges and Niko Drake-McLaughlin  
**Re:** Washington Low Income Weatherization 2011 Program Cost Effectiveness

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The tables below present the cost effectiveness findings of the Washington Low Income Weatherization program based on 2011 costs and savings estimates provided by PacifiCorp in a spreadsheet entitled “WA Tables and Charts Final CE inputs 031612.” The Utility discount rate is from the 2011 PacifiCorp Integrated Resource Plan.

Cost effectiveness was tested using the 2011 IRP west residential whole house load factor decrement. Table 1 lists modeling inputs.

The program is not cost effective from the TRC, UCT or RIM perspectives.

**Table 1: Low Income Weatherization Inputs**

Parameter	Value
Discount Rate	7.17%
Line Loss	8.87%
Residential Energy Rate (\$/kWh) (base year 2010)	\$0.0767
Inflation Rate <sup>4</sup>	1.8%

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<sup>4</sup> Used to escalate future year energy rates.

**Table 2: Low Income Weatherization  
Annual Program Costs**

	Program Costs	Utility Admin	Evaluation	Incentives	Total Utility Costs	Net Participant Incremental Cost
Low Income weatherization	\$60,186	\$15,721	\$0	\$431,125	\$507,032	\$0
Total	\$60,186	\$15,721	\$0	\$431,125	\$507,032	\$0

**Table 3: Low Income Weatherization  
Savings by Measure Type**

	Gross kWh Savings	Realization Rate	Adjusted Gross Savings	Net to Gross Percentage	Net kWh Savings	Measure Life
Low Income weatherization	244,720	100%	244,720	100%	244,720	30
Total	244,720		244,720		244,720	

**Table 4: Low Income Weatherization (West Res Whole House 49% LF Decrement)**

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.1471	\$507,032	\$395,735	(\$111,297)	0.78
Total Resource Cost Test (TRC) No Adder	\$0.1471	\$507,032	\$359,759	(\$147,273)	0.71
Utility Cost Test (UCT)	\$0.1471	\$507,032	\$359,759	(\$147,273)	0.71
Rate Impact Test (RIM)		\$792,590	\$359,759	(\$432,831)	0.45
Participant Cost Test (PCT)		\$0	\$716,683	\$716,683	N/A
Lifecycle Revenue Impacts (\$/kWh)				\$0.000005696	
Discounted Participant Payback (years)				N/A	

However, these results do not incorporate the non-energy benefits that were analyzed in the 2006 program evaluation, including the Program's impact on forced mobility, arrearages, and economic impacts. These benefits are presented in Table 5.

**Table 5: Total Program Non-Energy Benefits**

Non-Energy Benefit	Program Impact	Perspective Adjusted
Mobility	\$18,620	TRC
Arrearage	\$8,512	UCT, RIM, TRC
Economic	\$182,726	TRC
<b>Total</b>	<b>\$209,858</b>	

When these benefits are included in the analysis the Program becomes more cost effective. As presented in Table 6, the Program passes the TRC test with a benefit cost ratio of 1.12.



**Table 6: Low Income Weatherization with Non Energy Benefits**

All Measures	AC: IRP 35% LF Decrement				
	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.1471	\$507,032	\$605,593	\$98,561	1.19
Total Resource Cost Test (TRC) No Adder	\$0.1471	\$507,032	\$569,617	\$62,585	1.12
Utility Cost Test (UCT)	\$0.1471	\$507,032	\$368,271	(\$138,761)	0.73
Rate Impact Test (RIM)		\$792,590	\$368,271	(\$424,319)	0.46
Participant Cost Test (PCT)		\$0	\$716,683	\$716,683	N/A
Lifecycle Revenue Impacts (\$/kWh)				\$0.000005584	
Discounted Participant Payback (years)				N/A	

## Energy Education

**Date:** March 23, 2012  
**To:** Shawn Grant  
**From:** Aaron Jenniges and Niko Drake-McLaughlin  
**Re:** Washington Energy Education 2011 Program Cost Effectiveness

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The tables below present the cost effectiveness findings of the Washington Energy Education program based on 2011 costs and savings estimates provided by PacifiCorp in a spreadsheet entitled “WA Tables and Charts Final CE inputs 031612.” The Utility discount rate is from the 2011 PacifiCorp Integrated Resource Plan.

Cost effectiveness was tested using the 2011 IRP west residential whole house load factor decrement. Table 1 lists modeling inputs.

The program is cost effective from the TRC, UCT and PCT perspectives.

**Table 1: Energy Education  
Inputs**

Parameter	Value
Discount Rate	7.17%
Line Loss	8.87%
Residential Energy Rate (\$/kWh) (base year 2010)	\$0.0767
Inflation Rate <sup>5</sup>	1.8%

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<sup>5</sup> Used to escalate future year energy rates.

**Table 2: Energy Education  
Annual Program Costs**

	Program Costs	Utility Admin	Evaluation	Incentives	Total Utility Costs	Net Participant Incremental Cost
Energy Education	\$173,959	\$35,784	\$0	\$24,738	\$234,481	\$0
Total	\$173,959	\$35,784	\$0	\$24,738	\$234,481	\$0

**Table 3: Energy Education  
Savings**

	Gross kWh Savings	Realization Rate	Adjusted Gross Savings	Net to Gross Percentage	Net kWh Savings	Measure Life
Energy Education	2,246,408	100%	2,246,408	100%	2,246,408	6.57
Total	2,246,408		2,246,408		2,246,408	

**Table 4: Energy Education (West Res Whole House 49% LF Decrement)**

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0149	\$209,743	\$1,268,651	\$1,058,908	6.05
Total Resource Cost Test (TRC) No Adder	\$0.0149	\$209,743	\$1,153,319	\$943,576	5.50
Utility Cost Test (UCT)	\$0.0167	\$234,481	\$1,153,319	\$918,838	4.92
Rate Impact Test (RIM)		\$1,292,385	\$1,153,319	(\$139,066)	0.89
Participant Cost Test (PCT)		\$0	\$1,082,642	\$1,082,642	N/A
Lifecycle Revenue Impacts (\$/kWh)				\$0.000004877	
Discounted Participant Payback (years)				N/A	

The results above do not reflect non-energy benefits. Showerheads and faucet aerators in this program have significant water benefits. Those benefits, by measure, are outlined in the table below.

**Table 5: Non-Energy Benefits**

Non-Energy Benefit	Non-Energy Benefits per Measure	Total Installs	Measure Life	Total Present Value Benefits
Showerheads	\$6.62	2,014	8.0	\$84,771
Aerators	\$3.49	3,488	5.0	\$53,310
Total Benefits				\$138,082

When these non-energy benefits are incorporated in the cost-effectiveness analysis for appliances, the TRC improves to 6.16, as shown in Table 6.

**Table 6: Energy Education with Non-Energy Benefits**

All Measures	AC: IRP 35% LF Decrement				
	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0149	\$209,743	\$1,406,733	\$1,196,990	6.71
Total Resource Cost Test (TRC) No Adder	\$0.0149	\$209,743	\$1,291,401	\$1,081,658	6.16
Utility Cost Test (UCT)	\$0.0167	\$234,481	\$1,153,319	\$918,838	4.92
Rate Impact Test (RIM)		\$1,292,385	\$1,153,319	(\$139,066)	0.89
Participant Cost Test (PCT)		\$0	\$1,220,724	\$1,220,724	N/A
Lifecycle Revenue Impacts (\$/kWh)				\$0.000004877	
Discounted Participant Payback (years)				N/A	

## FinAnswer Express

**Date:** March 23, 2012  
**To:** Shawn Grant  
**From:** Aaron Jenniges and Niko Drake-McLaughlin  
**Re:** Washington FinAnswer Express 2011 Program Cost Effectiveness

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The tables below present the cost effectiveness findings of the Washington FinAnswer Express program based on 2011 costs and savings estimates provided by PacifiCorp in a spreadsheet entitled “WA Tables and Charts Final CE inputs 031612.” The Utility discount rate is from the 2011 PacifiCorp Integrated Resource Plan.

Cost effectiveness was tested using the 2011 IRP west system load factor decrement. Table 1 lists modeling inputs.

The program is cost effective from all perspectives.

**Table 1: FinAnswer Express  
Inputs**

Parameter	Value
Discount Rate	7.17%
Commercial Line Loss	8.73%
Industrial Line Loss	7.54%
Commercial Energy Rate (\$/kWh) (base year 2010)	\$0.0688
Industrial Energy Rate (\$/kWh) (base year 2010)	\$0.0577
Inflation Rate <sup>6</sup>	1.8%

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<sup>6</sup> Used to escalate future year energy rates.

**Table 2: FinAnswer Express  
Annual Program Costs**

	Program Costs	Utility Admin	Evaluation	Incentives	Total Utility Costs	Net Participant Incremental Cost
Appliance	\$6	\$4	\$0	\$50	\$60	\$351
HVAC	\$4,849	\$2,900	\$0	\$16,512	\$24,260	\$36,716
Compressed Air	\$8,297	\$5,483	\$0	\$21,930	\$35,710	\$70,355
Building Envelope	\$980	\$586	\$0	\$8,822	\$10,389	\$19,954
Dairy & Farm	\$11,763	\$7,033	\$0	\$22,700	\$41,496	\$116,565
Food Services	\$11,861	\$7,092	\$0	\$26,410	\$45,362	\$133,796
Lighting	\$544,434	\$344,526	\$0	\$866,560	\$1,755,520	\$2,557,976
Motor	\$1,350	\$825	\$0	\$6,721	\$8,897	\$8,474
Other	\$6,151	\$4,225	\$0	\$10,337	\$20,714	\$101,347
Refrigeration	\$324	\$193	\$0	\$720	\$1,237	\$257
Irrigation	\$4,424	\$3,018	\$0	\$5,695	\$13,137	\$18,515
Total	\$594,439	\$375,885	\$0	986,457	\$1,956,781	3,064,306

**Table 3: FinAnswer Express  
Savings by Measure Type**

	Gross kWh Savings	Realization Rate	Adjusted Gross Savings	Net to Gross Percentage	Net kWh Savings	Measure Life
Appliance	91	100%	91	100%	91	14
HVAC	98,421	72%	70,863	100%	70,863	14
Compressed Air	145,035	97%	140,684	100%	140,684	14
Building Envelope	14,766	97%	14,323	100%	14,323	14
Dairy & Farm	177,205	97%	171,889	100%	171,889	14
Food Services	178,680	97%	173,319	100%	173,319	14
Lighting	8,840,200	98%	8,663,396	100%	8,663,396	14
Motor	13,240	154%	20,390	100%	20,390	14
Other	110,271	100%	110,271	100%	110,271	14
Refrigeration	4,875	97%	4,729	100%	4,729	14
Irrigation	80,977	97%	78,548	100%	78,548	14
Total	9,663,761		9,448,502		9,448,502	

**Table 4: Load Factor Decrement (West System 71%)**

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.042	\$4,034,632	\$9,668,258	\$5,633,626	2.40
Total Resource Cost Test (TRC) No Adder	\$0.042	\$4,034,632	\$8,789,326	\$4,754,693	2.18
Utility Cost Test (UCT)	\$0.021	\$1,956,783	\$8,789,326	\$6,832,543	4.49
Rate Impact Test (RIM)		\$8,370,309	\$8,789,326	\$419,016	1.05
Participant Cost Test (PCT)		\$3,064,306	\$7,399,983	\$4,335,677	2.41
Lifecycle Revenue Impacts (\$/kWh)				(\$0.00000856)	
Discounted Participant Payback (years)				3.54	

**Table 5: Appliance (West System 71%)**

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.3935	\$361	\$92	(\$270)	0.25
Total Resource Cost Test (TRC) No Adder	\$0.3935	\$361	\$83	(\$278)	0.23
Utility Cost Test (UCT)	\$0.0654	\$60	\$83	\$23	1.39
Rate Impact Test (RIM)		\$125	\$83	(\$42)	0.66
Participant Cost Test (PCT)		\$351	\$115	(\$236)	0.33
Discounted Participant Payback (years)				-	

**Table 6: HVAC (West System 71%)**

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0622	\$44,465	\$72,961	\$28,496	1.64
Total Resource Cost Test (TRC) No Adder	\$0.0622	\$44,465	\$66,328	\$21,863	1.49
Utility Cost Test (UCT)	\$0.0339	\$24,261	\$66,328	\$42,067	2.73
Rate Impact Test (RIM)		\$75,083	\$66,328	(\$8,755)	0.88
Participant Cost Test (PCT)		\$36,716	\$67,334	\$30,618	1.83
Discounted Participant Payback (years)				3.96	

**Table 7: Compressed Air (West System 71%)**

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0597	\$84,135	\$141,095	\$56,960	1.68
Total Resource Cost Test (TRC) No Adder	\$0.0597	\$84,135	\$128,268	\$44,133	1.52
Utility Cost Test (UCT)	\$0.0253	\$35,710	\$128,268	\$92,559	3.59
Rate Impact Test (RIM)		\$127,351	\$128,268	\$918	1.01
Participant Cost Test (PCT)		\$70,355	\$113,571	\$43,216	1.61
Discounted Participant Payback (years)				6.16	

**Table 8: Building Envelope (West System 71%)**

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.1489	\$21,520	\$14,747	(\$6,773)	0.69
Total Resource Cost Test (TRC) No Adder	\$0.1489	\$21,520	\$13,406	(\$8,113)	0.62
Utility Cost Test (UCT)	\$0.0719	\$10,388	\$13,406	\$3,018	1.29
Rate Impact Test (RIM)		\$20,661	\$13,406	(\$7,254)	0.65
Participant Cost Test (PCT)		\$19,954	\$19,095	(\$859)	0.96
Discounted Participant Payback (years)				10.21	

**Table 9: Dairy and Farm (West System 71%)**

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0781	\$135,361	\$163,845	\$28,484	1.21
Total Resource Cost Test (TRC) No Adder	\$0.0781	\$135,361	\$148,950	\$13,589	1.10
Utility Cost Test (UCT)	\$0.0239	\$41,496	\$148,950	\$107,454	3.59
Rate Impact Test (RIM)		\$164,773	\$148,950	(\$15,822)	0.90
Participant Cost Test (PCT)		\$116,565	\$145,977	\$29,411	1.25
Discounted Participant Payback (years)				7.36	



**Table 10: Food Services (West System 71%)**

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0874	\$152,749	\$175,744	\$22,996	1.15
Total Resource Cost Test (TRC) No Adder	\$0.0874	\$152,749	\$159,768	\$7,019	1.05
Utility Cost Test (UCT)	\$0.0259	\$45,363	\$159,768	\$114,405	3.52
Rate Impact Test (RIM)		\$169,666	\$159,768	(\$9,898)	0.94
Participant Cost Test (PCT)		\$133,796	\$150,713	\$16,917	1.13
Discounted Participant Payback (years)				8.28	

**Table 10: Lighting (West System 71%)**

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0396	\$3,446,936	\$8,891,678	\$5,444,742	2.58
Total Resource Cost Test (TRC) No Adder	\$0.0396	\$3,446,936	\$8,083,344	\$4,636,408	2.35
Utility Cost Test (UCT)	\$0.0202	\$1,755,520	\$8,083,344	\$6,327,824	4.60
Rate Impact Test (RIM)		\$7,631,872	\$8,083,344	\$451,472	1.06
Participant Cost Test (PCT)		\$2,557,976	\$6,742,912	\$4,184,935	2.64
Discounted Participant Payback (years)				3.11	

**Table 11: Motor (West System 71%)**

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0519	\$10,650	\$20,121	\$9,471	1.89
Total Resource Cost Test (TRC) No Adder	\$0.0519	\$10,650	\$18,292	\$7,642	1.72
Utility Cost Test (UCT)	\$0.0433	\$8,897	\$18,292	\$9,395	2.06
Rate Impact Test (RIM)		\$23,208	\$18,292	(\$4,916)	0.79
Participant Cost Test (PCT)		\$8,474	\$21,032	\$12,558	2.48
Discounted Participant Payback (years)				1.27	

**Table 12: Other (West System 71%)**

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.1013	\$111,724	\$108,977	(\$2,747)	0.98
Total Resource Cost Test (TRC) No Adder	\$0.1013	\$111,724	\$99,070	(\$12,654)	0.89
Utility Cost Test (UCT)	\$0.0188	\$20,714	\$99,070	\$78,356	4.78
Rate Impact Test (RIM)		\$90,095	\$99,070	\$8,975	1.10
Participant Cost Test (PCT)		\$101,347	\$79,718	(\$21,629)	0.79
Discounted Participant Payback (years)				-	

**Table 13: Refrigeration (West System 71%)**

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0162	\$774	\$4,722	\$3,948	6.10
Total Resource Cost Test (TRC) No Adder	\$0.0162	\$774	\$4,293	\$3,519	5.55
Utility Cost Test (UCT)	\$0.0259	\$1,237	\$4,293	\$3,056	3.47
Rate Impact Test (RIM)		\$4,628	\$4,293	(\$335)	0.93
Participant Cost Test (PCT)		\$257	\$4,111	\$3,854	16.00
Discounted Participant Payback (years)				-	

**Table 14: Irrigation (West System 71%)**

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0330	\$25,957	\$74,275	\$48,318	2.86
Total Resource Cost Test (TRC) No Adder	\$0.0330	\$25,957	\$67,523	\$41,566	2.60
Utility Cost Test (UCT)	\$0.0167	\$13,137	\$67,523	\$54,386	5.14
Rate Impact Test (RIM)		\$62,848	\$67,523	\$4,674	1.07
Participant Cost Test (PCT)		\$18,515	\$55,406	\$36,891	2.99
Discounted Participant Payback (years)				2.77	

## Energy FinAnswer

**Date:** March 23, 2012  
**To:** Shawn Grant  
**From:** Aaron Jenniges and Niko Drake-McLaughlin  
**Re:** Washington Energy FinAnswer 2011 Program Cost Effectiveness

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The tables below present the cost effectiveness findings of the Washington Energy FinAnswer program based on 2011 costs and savings estimates provided by PacifiCorp in a spreadsheet entitled “WA Tables and Charts Final CE inputs 031612.” The Utility discount rate is from the 2011 PacifiCorp Integrated Resource Plan.

Cost effectiveness was tested using the 2011 IRP west system load factor decrement. Table 1 lists modeling inputs.

The program is cost effective from all perspectives.

**Table 1: Energy FinAnswer  
Inputs**

Parameter	Value
Discount Rate	7.17%
Commercial Line Loss	8.73%
Industrial Line Loss	7.54%
Commercial Energy Rate (\$/kWh) (base year 2010)	\$0.0688
Industrial Energy Rate (\$/kWh) (base year 2010)	\$0.0577
Inflation Rate <sup>7</sup>	1.8%

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<sup>7</sup> Used to escalate future year energy rates.

**Table 2: Energy FinAnswer  
Annual Program Costs**

	Program Costs	Utility Admin	Engineering	Incentives	Total Utility Costs	Net Participant Incremental Cost
Additional Measures	\$4,339	\$16,374	\$59,622	\$172,871	\$253,206	\$977,777
Building Shell	\$18	\$69	\$250	\$586	\$923	\$18,124
Compressed Air	\$573	\$2,163	\$7,877	\$25,689	\$36,302	\$89,677
Controls	\$30	\$114	\$414	\$1,622	\$2,180	\$5,922
HVAC	\$11,860	\$44,045	\$135,555	\$103,977	\$295,437	\$365,692
Lighting	\$635	\$2,357	\$7,173	\$6,787	\$16,952	\$20,479
Motors	\$3,650	\$13,773	\$50,152	\$166,684	\$234,259	\$459,955
Refrigeration	\$25,697	\$96,977	\$353,118	\$689,989	\$1,165,781	\$1,561,881
Total	\$46,802	\$175,871	\$614,161	\$1,168,205	\$2,005,039	\$3,499,507

**Table 3: Energy FinAnswer  
Savings by Measure Type**

	Gross kWh Savings	Realization Rate	Adjusted Gross Savings	Net to Gross Percentage	Net kWh Savings	Measure Life
Additional Measures	1,130,805	97%	1,096,881	100%	1,096,881	14
Building Shell	4,601	100%	4,601	100%	4,601	14
Compressed Air	174,590	83%	144,910	100%	144,910	14
Controls	7,614	100%	7,614	100%	7,614	14
HVAC	948,153	100%	948,153	100%	948,153	14
Lighting	43,719	101%	44,156	100%	44,156	14
Motors	1,246,832	74%	922,656	100%	922,656	14
Refrigeration	6,432,095	101%	6,496,416	100%	6,496,416	14
Total	9,988,409		9,665,386		9,665,386	

**Table 4: Energy FinAnswer – All Measures**

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.045	\$4,336,342	\$9,536,251	\$5,199,909	2.20
Total Resource Cost Test (TRC) No Adder	\$0.045	\$4,336,342	\$8,669,319	\$4,332,977	2.00
Utility Cost Test (UCT)	\$0.021	\$2,005,040	\$8,669,319	\$6,664,279	4.32
Rate Impact Test (RIM)		\$7,846,079	\$8,669,319	\$823,240	1.10
Participant Cost Test (PCT)		\$3,499,507	\$7,009,244	\$3,509,738	2.00
Lifecycle Revenue Impacts (\$/kWh)				(\$0.00001681)	
Discounted Participant Payback (years)				4.46	

**Table 5: Additional Measures**

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0967	\$1,058,112	\$1,077,886	\$19,774	1.02
Total Resource Cost Test (TRC) No Adder	\$0.0967	\$1,058,112	\$979,896	(\$78,216)	0.93
Utility Cost Test (UCT)	\$0.0231	\$253,206	\$979,896	\$726,690	3.87
Rate Impact Test (RIM)		\$912,957	\$979,896	\$66,939	1.07
Participant Cost Test (PCT)		\$977,777	\$832,622	(\$145,155)	0.85
Discounted Participant Payback (years)				11.37	

**Table 6: Building Shell**

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.4022	\$18,461	\$4,685	(\$13,776)	0.25
Total Resource Cost Test (TRC) No Adder	\$0.4022	\$18,461	\$4,259	(\$14,202)	0.23
Utility Cost Test (UCT)	\$0.0201	\$923	\$4,259	\$3,336	4.61
Rate Impact Test (RIM)		\$3,690	\$4,259	\$569	1.15
Participant Cost Test (PCT)		\$18,124	\$3,353	(\$14,771)	0.19
Discounted Participant Payback (years)				-	

**Table 7: Compressed Air Table**

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0694	\$100,290	\$142,400	\$42,110	1.42
Total Resource Cost Test (TRC) No Adder	\$0.0694	\$100,290	\$129,455	\$29,165	1.29
Utility Cost Test (UCT)	\$0.0251	\$36,302	\$129,455	\$93,153	3.57
Rate Impact Test (RIM)		\$123,462	\$129,455	\$5,993	1.05
Participant Cost Test (PCT)		\$89,677	\$112,849	\$23,172	1.26
Discounted Participant Payback (years)				7.11	

**Table 8: Controls Table**

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0853	\$6,480	\$7,482	\$1,002	1.15
Total Resource Cost Test (TRC) No Adder	\$0.0853	\$6,480	\$6,802	\$322	1.05
Utility Cost Test (UCT)	\$0.0287	\$2,180	\$6,802	\$4,622	3.12
Rate Impact Test (RIM)		\$6,760	\$6,802	\$42	1.01
Participant Cost Test (PCT)		\$5,922	\$6,202	\$280	1.05
Discounted Participant Payback (years)				8.95	

**Table 9: HVAC**

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.059	\$557,152	\$968,069	\$410,917	1.74
Total Resource Cost Test (TRC) No Adder	\$0.059	\$557,152	\$880,063	\$322,911	1.58
Utility Cost Test (UCT)	\$0.031	\$295,437	\$880,063	\$584,626	2.98
Rate Impact Test (RIM)		\$891,760	\$880,063	(\$11,697)	0.99
Participant Cost Test (PCT)		\$365,692	\$700,300	\$334,608	1.92
Discounted Participant Payback (years)				4.96	

**Table 10: Lighting**

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.069	\$30,644	\$45,133	\$14,489	1.47
Total Resource Cost Test (TRC) No Adder	\$0.069	\$30,644	\$41,030	\$10,386	1.34
Utility Cost Test (UCT)	\$0.038	\$16,952	\$41,030	\$24,078	2.42
Rate Impact Test (RIM)		\$44,990	\$41,030	(\$3,959)	0.91
Participant Cost Test (PCT)		\$20,479	\$34,825	\$14,346	1.70
Discounted Participant Payback (years)				5.62	

**Table 11: Motors**

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0573	\$527,530	\$906,678	\$379,148	1.72
Total Resource Cost Test (TRC) No Adder	\$0.0573	\$527,530	\$824,253	\$296,723	1.56
Utility Cost Test (UCT)	\$0.0254	\$234,259	\$824,253	\$589,994	3.52
Rate Impact Test (RIM)		\$789,218	\$824,253	\$35,035	1.04
Participant Cost Test (PCT)		\$459,955	\$721,643	\$261,688	1.57
Discounted Participant Payback (years)				5.21	

**Table 12: Refrigeration**

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0314	\$2,037,673	\$6,383,917	\$4,346,244	3.13
Total Resource Cost Test (TRC) No Adder	\$0.0314	\$2,037,673	\$5,803,561	\$3,765,888	2.85
Utility Cost Test (UCT)	\$0.0180	\$1,165,781	\$5,803,561	\$4,637,780	4.98
Rate Impact Test (RIM)		\$5,073,242	\$5,803,561	\$730,318	1.14
Participant Cost Test (PCT)		\$1,561,881	\$4,597,450	\$3,035,569	2.94
Discounted Participant Payback (years)				2.26	