



PacifiCorp Energy FinAnswer 2005-2008 Utah Program Evaluation

Prepared for
PacifiCorp

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1. Executive Summary

The Energy FinAnswer program includes a vendor neutral investment grade energy analysis and cash incentives calculated based on energy savings and project costs. The program includes a commissioning requirement and post-installation verification. Design assistance services and special incentives available for new construction and major renovation projects where energy code applies were added to the program in 2007.

Customers become eligible to participate if served under Pacific Power's general service commercial, industrial, or irrigation rate schedules. The program applies to retrofit projects as well as major renovations and the construction of new facilities.

PacifiCorp offers this program throughout the five state service territories where it manages demand-side management programs. Together these programs acquired more than 68,000 MWhs of first year energy savings in 2008. Within the state of Utah, this program was responsible for 44% of the savings that the utility realizes from commercial and industrial efficiency programs in 2008¹.

The Program was cost-effective from multiple perspectives in Utah, using 2005-2008 IRP decrement values.²

Expected savings and other program-related data were downloaded from Rocky Mountain Power's tracking database. Expected savings were those calculated for each installed project, and documented based on pre and post-installation conditions as determined by Rocky Mountain Power and its energy engineering contractors. Rocky Mountain Power provides detailed engineering studies that determine the savings potential for each project. Customers are responsible for installation and commissioning to ensure energy savings are achieved. At the completion of the project Rocky Mountain Power conducts a post-installation study to verify the achieved savings and project costs. The incentive paid is based on the savings and costs documented in the post-installation inspection report. These values were then entered in Rocky Mountain Power's database at the conclusion of each project.

Table 1 summarizes expected savings, evaluated savings, and the realization rate for 2005-2008 Utah participants. Savings were evaluated for each installed project.

¹ PacifiCorp manages demand-side management programs in five of its six state jurisdictions. Program in Oregon are managed by the Energy Trust of Oregon.

² The program did not pass the RIM test from 2005-2007, as is typically the case for energy efficiency programs.

Table 1. Energy Savings and Realization Rates

	No. Buildings	Expected Saving Estimates (kWh)	Evaluated Savings (kWh)	Realization Rates
Food Store	15	6,922,398	6,624,893	96%
Hospital	2	542,600	561,645	104%
Industrial	141	101,917,170	102,584,269	101%
Irrigation	2	26,538	25,056	94%
Lodging	7	1,077,300	1,083,033	101%
Office	40	15,280,494	13,798,860	90%
Other	23	7,329,846	6,898,965	94%
Other Health	4	1,263,169	1,131,778	90%
Recreation	3	3,902,821	3,923,486	101%
Retail	11	1,987,241	1,971,015	99%
School	16	8,420,753	8,476,303	101%
Service	6	1,641,291	1,597,718	97%
Warehouse	3	1,713,313	1,756,917	103%
Total	273	152,024,934	150,435,537	99%

Table 2 summarizes expected demand savings, evaluated demand savings, and realization rates.

Table 2. Demand Savings and Realization Rates

Sector	Expected Saving Estimates (kW)	Evaluated Savings (kW)	Realization Rates
Food Store	639	638	100%
Hospital	42	47	111%
Industrial	9,362	9,473	101%
Irrigation	2	2	101%
Lodging	159	155	97%
Office	2,732	2,640	97%
Other	959	959	100%
Other Health	308	298	97%
Recreation	98	98	100%
Retail	375	370	99%
School	1,330	1,376	103%
Service	477	467	98%
Warehouse	153	149	98%
Total	16,636	16,672	100%

To evaluate achieved energy savings, Cadmus performed site visits for 73 projects at 42 customer locations, covering 146 unique incentives. Cadmus also verified 76 additional projects, covering 174 unique incentives, by reviewing project documentation and speaking with facility staff. Verified projects represented 60 percent of expected savings.

Based on measurements and observations obtained from the site visits, in addition to data in the project files and conversations with facility staff, Cadmus calculated realization rates for both energy and demand savings.

Table 3 shows energy savings realization rates by measure type. Realization rates were highest for Controls measures (117%).

Table 3. Evaluated Energy Savings by Measure Type³

	Expected Saving Estimates (kWh)	Evaluated Savings Estimates (kWh)	Realization Rates
Additional Measures	26,950,189	27,247,099	101%
Air Compressors	35,003,623	34,347,811	98%
Building Shell	652,397	649,726	100%
Controls	10,356,130	12,091,548	117%
HVAC	40,542,202	40,270,552	99%
Lighting	13,807,099	11,784,116	85%
Motors	13,767,126	12,998,250	94%
Refrigeration	10,946,168	11,044,434	101%
Total	152,024,934	150,435,537	99%

Table 4 shows demand savings realization rates by measure type. Realization rates were highest for controls measures (139%).

Table 4. Evaluated Demand Savings by Measure Type

	Expected Saving Estimates (kW)	Evaluated Savings Estimates (kW)	Realization Rates
Additional Measures	2,452	2,433	99%
Air Compressors	2,331	2,319	99%
Building Shell	264	243	92%
Controls	594	829	139%
HVAC	6,948	6,792	98%
Lighting	2,043	2,045	100%
Motors	1,224	1,233	101%
Refrigeration	780	779	100%
Total	16,636	16,672	100%

Cadmus determined freeridership to be 13% through self-reporting surveys. For this evaluation freeridership was the only factor used to calculate the Net-to-Gross ratio⁴. After applying the Net-to-Gross ratio of 87 percent to the evaluated savings, the net program savings were 130,878,917 kWh.

Program cost-effectiveness was analyzed using Utah-specific assumptions.

³ PacifiCorp tries to be conservative in their saving estimates but realization rates include factors that are difficult to predict and are typically reflective of how the equipment is used once its installed, which is under direct customer control.

⁴ This method is consistent with the Model Energy Efficiency Program Impact Evaluation Guide authored by the EPA as part of the National Action Plan for Energy Efficiency.

Table 5. Cost-Effectiveness Summary for the Program in 2005 – IRP 65% & 49% LF Decrement⁶ – 13% Freeridership

Cost Effectiveness Test	Levelized \$ / kWh	Costs	Benefits	Net Benefits	Benefit / Cost Ratio
Total Resource + Conservation Adder (PTRC)	\$0.038	\$11,277,147	\$17,606,688	\$6,329,541	1.56
Total Resource No Adder (TRC)	\$0.038	\$11,277,147	\$16,006,080	\$4,728,933	1.42
Utility (UCT)	\$0.019	\$5,671,771	\$16,006,080	\$10,334,309	2.82
Ratepayer Impact (RIM)	\$0.067	\$19,854,279	\$16,006,080	-\$3,848,199	0.81
Participant (PCT)	\$0.029	\$8,734,741	\$17,311,873	\$8,577,132	1.98
Lifecycle Revenue Impact (dollars)				\$0.000017953	
Discounted Participant Payback (years)				4.64	

Table 6. Cost-Effectiveness Summary for the Program in 2006 – IRP 65% & 49% LF Decrement – 13% Freeridership

Cost Effectiveness Test	Levelized \$ / kWh	Costs	Benefits	Net Benefits	Benefit / Cost Ratio
Total Resource + Conservation Adder (PTRC)	\$0.051	\$13,568,094	\$17,845,758	\$4,277,664	1.31
Total Resource No Adder (TRC)	\$0.051	\$13,568,094	\$16,223,416	\$2,655,322	1.20
Utility (UCT)	\$0.019	\$5,007,650	\$16,223,416	\$11,215,766	3.24
Ratepayer Impact (RIM)	\$0.072	\$19,053,694	\$16,223,416	-\$2,830,279	0.85
Participant (PCT)	\$0.042	\$11,260,582	\$16,746,183	\$5,485,601	1.49
Lifecycle Revenue Impact (dollars)				\$0.000012177	
Discounted Participant Payback (years)				7.64	

Table 7. Cost-Effectiveness Summary for the Program in 2007 – IRP 65% & 49% LF Decrement – 13% Freeridership

Cost Effectiveness Test	Levelized \$ / kWh	Costs	Benefits	Net Benefits	Benefit / Cost Ratio
Total Resource + Conservation Adder (PTRC)	\$0.032	\$9,995,061	\$22,204,060	\$12,208,998	2.22
Total Resource No Adder (TRC)	\$0.032	\$9,995,061	\$20,185,509	\$10,190,447	2.02
Utility (UCT)	\$0.017	\$5,347,070	\$20,185,509	\$14,838,439	3.78
Ratepayer Impact (RIM)	\$0.07	\$21,835,457	\$20,185,509	-\$1,649,948	0.92
Participant (PCT)	\$0.025	\$7,739,093	\$19,579,488	\$11,840,395	2.53
Lifecycle Revenue Impact (dollars)				\$0.000007297	
Discounted Participant Payback (years)				3.05	

⁶ Two decrements were used in the Cost-Effectiveness analysis, the East Commercial Lighting at 49% was used for commercial projects and the East System at 65% for industrial projects.

Table 8. Cost-Effectiveness Summary for the Program in 2008 – IRP 65% & 49% LF Decrement – 13% Freeridership

Cost Effectiveness Test	Levelized \$ / kWh	Costs	Benefits	Net Benefits	Benefit / Cost Ratio
Total Resource + Conservation Adder (PTRC)	\$0.037	\$15,799,111	\$35,461,745	\$19,662,633	2.24
Total Resource No Adder (TRC)	\$0.037	\$15,799,111	\$32,237,950	\$16,438,838	2.04
Utility (UCT)	\$0.018	\$7,757,650	\$32,237,950	\$24,480,299	4.16
Ratepayer Impact (RIM)	\$0.076	\$32,093,745	\$32,237,950	\$144,205	1.0
Participant (PCT)	\$0.03	\$12,780,662	\$29,075,295	\$16,294,633	2.27
Lifecycle Revenue Impact (dollars)				-\$0.000000587	
Discounted Participant Payback (years)				3.92	

Table 9. Cost-Effectiveness Summary for the Program Across 2005-2008 – IRP 65% & 49% LF Decrement – 13% Freeridership

Cost Effectiveness Test	Levelized \$ / kWh	Costs	Benefits	Net Benefits	Benefit / Cost Ratio
Total Resource + Conservation Adder (PTRC)	\$0.039	\$45,328,767	\$82,097,659	\$36,768,893	1.81
Total Resource No Adder (TRC)	\$0.039	\$45,328,767	\$74,634,236	\$29,305,469	1.65
Utility (UCT)	\$0.018	\$21,232,064	\$74,634,236	\$53,402,172	3.52
Ratepayer Impact (RIM)	\$0.071	\$82,431,713	\$74,634,236	-\$7,797,478	0.91
Participant (PCT)	\$0.031	\$36,245,513	\$73,348,460	\$37,102,947	2.02
Lifecycle Revenue Impact (dollars)				\$0.000034472	

Conclusions

Overall the program is functioning well, savings realization rates are high, and the program is cost-effective. Customers who have completed projects are satisfied with the professionalism of all the staff and consultants they have dealt with. Recommendations below reflect only minor enhancements to make the program even more effective.

Table 10. Overall Experience with the Program

Rating (0 to 10)	Number of Respondents
10	15
9.5	1
9	12
8	4
7	4
5	1

Recommendations

- Most of the participation appears to come through word of mouth, and interaction with Rocky Mountain Power staff or representatives, which is evidenced by the lack of awareness amongst nonparticipants. The company may wish to consider using other means to help expand awareness to customers who don't often interact with consultants or Rocky Mountain Power staff.

2. Introduction

Program Description

The Energy FinAnswer program offers customers an opportunity to increase their operations' electric energy efficiency through evaluation and implementation of Energy Efficiency Measures (EEMs) for existing facilities and new construction. The program is available to commercial new construction and industrial and agricultural projects of any size, as well as commercial retrofit projects larger than 20,000 square feet per electric meter. All customers served under the company's general service commercial, industrial, and irrigation rate schedules in Washington are eligible. The program is implemented by Pacific Power staff utilizing an established network of energy engineering firms.

Customers who elect to participate in the program first receive an Initial Site Visit Report (ISVR), paid for by Rocky Mountain Power, to identify energy savings opportunities and potential costs and incentives. If the project economics are favorable to the customer, Rocky Mountain Power pays for further analysis to quantify energy savings and incentives and provides an Energy Analysis Report (EAR) to the customer for final review before purchase and installation begin. The savings estimates for new construction projects, where energy code applies, uses the state energy code as a baseline. For retrofit projects the baseline can be the existing equipment, common practice or code depending on the nature of the project. The ISVR and EAR are performed by one of several Rocky Mountain Power contracted engineering firms. The firms under contract were all selected after responding to a Rocky Mountain Power request for proposal and are evaluated on their performance annually to assure that their performance meets Rocky Mountain Power's standards. Rocky Mountain Power also uses a peer review process as a quality assurance/quality control method on the work performed in the EARs. Before the EA findings are presented to the customer a second Rocky Mountain Power contracted energy engineering firm reviews the report, the savings, and cost estimates. Quality control review and comments are addressed before the report is delivered.

Customers are then asked to sign an incentive agreement, based on the estimated savings and project costs contained within the EAR, before they proceed with making any equipment purchases. Once the implementation of the EEMs is complete, including any required commissioning and the customer has provided Rocky Mountain Power with all the appropriate documentation, Rocky Mountain Power's energy engineering consultant will perform a post-installation inspection. Based on the results of the inspection, commissioning data, and invoice documentation, the final incentive is calculated and paid to the customer.

To help ensure persistence of electric savings from measures receiving an incentive, Rocky Mountain Power requires that the owner commission certain measures prior to receiving an incentive payment. If the customer chooses not to commission the project, when it's required, they receive only a partial incentive. The company provides measure-specific commissioning procedures in the energy analysis report to facilitate this work. The required commissioning reports contain systematic functional performance testing plans, results, and corrective actions taken (if any) to ensure persistence of energy savings⁷.

⁷ For a process flow diagram of the program please see Appendix E of this report

In 2008, the last year that this evaluation covered, basic program incentives for the program were calculated as the lesser of:

- First-year energy savings (kWh), multiplied by \$0.12/kWh, plus average monthly on-peak kW reduction multiplied by \$50/kW; or
- Fifty-percent of the project costs.

Qualifying measures' pre-incentive simple paybacks had to equal or be greater than one year.

For EEMs retrofitted in existing buildings (elective retrofits), measure cost was the total, installed cost of the measure. For new buildings, the measure cost was the installed cost, minus the cost of code compliance or common-practice installation. For calculating the incentive, lighting measure savings were limited to no more than half of total savings of the project.

Utah FinAnswer Program customers completed 703 EEMs in 273 facilities from 2005–2008. Expected energy savings were largest for industrial facilities.

Table 11. Expected Program Savings by Facility Type

	No. Buildings		Expected Savings	
	Frequency	%	kWh	%
Food Store	15	5%	6,922,398	4.6%
Hospital	2	1%	542,600	0.4%
Industrial	141	52%	101,917,170	67.0%
Irrigation	2	1%	26,538	0.0%
Lodging	7	3%	1,077,300	0.7%
Office	40	15%	15,280,494	10.1%
Other	23	8%	7,329,846	4.8%
Other Health	4	1%	1,263,169	0.8%
Recreation	3	1%	3,902,821	2.6%
Retail	11	4%	1,987,241	1.3%
School	16	6%	8,420,753	5.5%
Service	6	2%	1,641,291	1.1%
Warehouse	3	1%	1,713,313	1.1%
Total	273	100%	152,024,934	100%

Table 12 shows expected savings' distribution by end use. HVAC measures represented the greatest percentage of program savings, at 26.7% of expected savings.

Table 12. Expected Savings by End Use

Measure	Expected Savings	
	KWh	%
Additional Measures	26,950,189	17.7%
Air Compressors	35,003,623	23.0%
Building Shell	652,397	0.4%
Controls	10,356,130	6.8%
HVAC	40,542,202	26.7%
Lighting	13,807,099	9.1%
Motors	13,767,126	9.1%
Refrigeration	10,946,168	7.2%
Total	152,024,934	100.0%

3. Impact Evaluation

Methodology

Cadmus used engineering calculations to verify savings estimates for 46% of the 702 EEMs installed under the program from 2005–2008, representing 60% of expected savings.

Overall, energy analyses evaluation conducted were intended to verify how reasonable the original analyses underlying the utility's savings estimates were. Original savings estimates contained within the EA were based on a thorough review of prior studies and/or site inspections. The Rocky Mountain Power project files were very detailed and thorough, greatly facilitating this evaluation.

The evaluation sought to confirm that the basic assumptions used in the analysis were correct, the analysis method was appropriate, measures had been installed and operated as planned and the customer's facility remained in use. During the review, Cadmus noted projects where changes in operating conditions were identified and provided revised energy and demand savings estimates. The revised analyses contained instances of decreased and increased savings

As described below, several steps were conducted in the energy analysis verification process.

Energy Savings Calculation Method

We applied the basic level of rigor in conducting our analyses as specified in the California Public Utilities Commission's Protocols published in 2006⁸ and IPMVP option A. Analysis of projects began with a complete review of project files, which included one or more reports at various project stages presenting energy savings, costs, and incentive calculations and estimates. Evaluated energy (or demand) savings were calculated by taking evaluated post-consumption less estimated pre-consumption.

Engineering Calculations

Cadmus reviewed the original engineering analysis, and determined whether the site visits or phone calls identified any changes in assumptions used in the original analysis. Cadmus also contacted the utility program/project manager and energy engineer, as needed, to resolve any issues, changes, or discrepancies that might affect estimated energy savings. If necessary, Cadmus adjusted original savings estimates using the same basic methodology, various engineering algorithms were used to estimate savings, based on specific measures.

As variations can occur in calculated savings due to particular engineering methods and assumptions used, the savings calculation methods, for the most part, duplicated the engineering method used when savings were first derived. Observation of operational characteristics became a critical element in estimating actual savings. Cadmus used the observations of key assumptions, validation of engineering methods, and recalculations based on observed differences to provide evaluated savings estimates.

⁸ http://www.calmac.org/events/EvaluatorsProtocols_Final_AdoptedviaRuling_06-19-2006.pdf

Realization Rate Analysis Method

For each EEM in the projects, Cadmus calculated energy and demand savings realization rates as the ratio of evaluated savings to expected savings. The energy realization rate was calculated as a percentage, using evaluated energy savings from the calculation and the utility's expected energy savings. The demand realization rate was calculated similarly.

As discussed, evaluated energy and demand savings from a project reflected any changes observed in the assumptions used in the original analyses. The realization rate accounted for these changes in estimating evaluated savings, but the rate was always calculated relative to the utility's expected savings estimate, without any adjustments.

Evaluation Approach

Step 1: Categorization

Cadmus identified a 90/10 sample selecting the top 25% of energy savers with the remainder of the sample being randomly selected. Cadmus then selected 50% of those projects for site visits including the top 25% of energy savers in the sample. The rest were selected randomly. Remaining projects in the sample were verified through file reviews and phone interviews.. The realization rates for all 703 EEMs outside of the sample frame were extrapolated from the results engineering analysis.

Step 2: Methodology Selection

Cadmus analyzed all projects using engineering calculation methods described above.

Step 3: Site Visits and Data Collection

On-site verification was used to verify equipment installation and operations, obtain data needed to perform calculations, and meet with building maintenance staff. Site visits were completed in May 2010. Site visit information and summaries of the analyses are provided in Appendix G.

Step 4: Analysis

Energy savings were determined for 320 EEMs using engineering calculations incorporating measurements and observations obtained from the site visits, project files and interviews. Remaining project realization rates were determined through extrapolation. To extrapolate the realization rates to the other measures, Cadmus first weighted the evaluated realization rates, by energy savings, for each measure category. The weighted realization rate was then applied to the remaining measures within that category that did not have a realization rate calculated by the Cadmus engineering staff.

Overall, the program achieved a 99% energy savings realization rate, as seen in Table 13, which shows savings by facility type.

Table 13. Evaluated Energy Savings by Facility Type

Facility Type		Count	Expected Savings Estimates (kWh)	Evaluated Savings Estimates (kWh)	Realization Rates
2005	Food Store	1	24,887	25,110	101%
	Industrial	41	27,681,467	28,856,882	104%
	Lodging	2	526,319	537,627	102%
	Office	10	3,024,679	2,944,076	97%
	Other	7	1,102,645	1,076,314	98%
	Other Health	1	112,038	112,723	101%
	Retail	7	663,120	659,461	99%
	School	2	392,610	362,423	92%
	Warehouse	1	143,164	129,680	91%
	Sub Total	72	33,670,929	34,704,296	103%
2006	Food Store	1	359,211	362,436	101%
	Hospital	2	336,000	320,614	95%
	Industrial	45	18,471,479	18,130,670	98%
	Lodging	2	283,812	279,981	99%
	Office	8	1,140,770	1,144,823	100%
	Other	5	2,165,082	1,549,164	72%
	Other Health	1	736,280	606,453	82%
	Recreation	2	1,300,408	1,312,470	101%
	Retail	1	75,904	75,904	100%
	School	8	6,890,887	6,870,255	100%
	Service	2	128,789	125,838	98%
Sub Total	77	31,888,622	30,778,607	97%	
2007	Food Store	4	1,221,064	1,155,081	95%
	Hospital	1	206,600	241,221	117%
	Industrial	42	27,084,531	26,876,018	99%
	Lodging	2	244,222	242,632	99%
	Office	10	5,069,217	4,995,459	99%
	Other	4	1,231,741	1,250,685	102%
	Other Health	1	16,142	13,893	86%
	Recreation	1	1,114,253	1,114,253	100%
	School	4	347,546	457,145	132%
	Warehouse	3	1,143,647	1,203,787	105%
Sub Total	72	37,678,963	37,550,175	100%	
2008	Food Store	9	5,317,236	5,083,487	96%
	Industrial	37	28,679,693	28,720,699	100%
	Irrigation	2	26,538	25,056	94%
	Lodging	1	22,947	22,793	99%
	Office	14	6,045,828	4,714,502	78%
	Other	7	2,830,378	3,022,801	107%
	Other Health	1	398,709	398,709	100%
	Recreation	2	1,488,160	1,496,953	101%
	Retail	3	1,248,217	1,235,651	99%
School	5	789,710	786,480	100%	

Facility Type		Count	Expected Savings Estimates (kWh)	Evaluated Savings Estimates (kWh)	Realization Rates
	Service	4	1,512,502	1,471,880	97%
	Warehouse	1	426,502	426,502	99%
	Sub Total	86	48,786,420	47,402,460	97%
Total All Years		307⁹	152,024,934	150,435,537	99%

Table 14 presents energy savings and realization rates by measure type.

Table 14. Evaluated Energy Savings by Measure Type

	Measure Type	Count	Expected Savings Estimates (kWh)	Evaluated Savings Estimates (kWh)	Realization Rates
2005	Additional Measures	11	5,166,410	5,171,763	100%
	Air Compressors	12	5,519,602	5,589,089	101%
	Building Shell	7	138,133	136,226	99%
	Controls	12	6,082,634	7,331,321	121%
	HVAC	46	8,696,199	8,656,195	100%
	Lighting	16	2,762,794	2,617,695	95%
	Motors	27	2,019,962	1,914,601	95%
	Refrigeration	12	3,285,195	3,287,407	100%
	Sub Total	143	33,670,929	34,704,296	103%
2006	Additional Measures	12	7,837,079	7,863,170	100%
	Air Compressors	26	6,062,381	5,661,099	93%
	Building Shell	15	259,677	259,607	100%
	Controls	7	2,706,259	2,776,312	103%
	HVAC	44	4,969,974	4,765,438	96%
	Lighting	15	2,519,108	2,474,773	98%
	Motors	31	6,307,194	5,746,537	91%
	Refrigeration	12	1,226,950	1,231,669	100%
	Sub Total	162	31,888,622	30,778,607	97%
2007	Additional Measures	14	7,515,069	7,681,898	102%
	Air Compressors	36	14,903,459	14,669,869	98%
	Building Shell	9	88,167	87,806	100%
	Controls	5	870,293	1,016,131	117%
	HVAC	48	9,728,486	9,711,489	100%
	Lighting	17	2,214,837	1,984,389	90%
	Motors	9	490,282	501,631	102%
	Refrigeration	17	1,868,370	1,896,962	102%
	Sub Total	155	37,678,963	37,550,175	100%
2008	Additional Measures	13	6,431,631	6,530,269	102%
	Air Compressors	22	8,518,181	8,427,755	99%

⁹ Some customers participated in multiple years so this count of unique buildings is higher

Measure Type		Count	Expected Savings Estimates (kWh)	Evaluated Savings Estimates (kWh)	Realization Rates
	Building Shell	13	166,420	166,087	100%
	Controls	6	696,944	967,783	139%
	HVAC	78	17,147,543	17,137,430	100%
	Lighting	40	6,310,360	4,709,259	75%
	Motors	27	4,949,688	4,835,481	98%
	Refrigeration	44	4,565,653	4,628,396	101%
	Sub Total	243	48,786,420	47,402,460	97%
Total All Years		703	152,024,934	150,435,537	99%

Table 15 shows demand savings realization rates by measure type.

Table 15. Demand Savings Realization Rates by Measure Type

Measure Type		Count	Expected Savings Estimates (KW)	Evaluated Savings Estimates (KW)	Realization Rates
2005	Additional Measures	11	375	374	100%
	Air Compressors	12	178	179	101%
	Building Shell	7	50	46	92%
	Controls	12	386	542	140%
	HVAC	46	1,675	1,649	98%
	Lighting	16	493	490	99%
	Motors	27	283	277	98%
	Refrigeration	12	174	174	100%
	Sub Total	143	3,614	3,732	103%
2006	Additional Measures	12	818	814	100%
	Air Compressors	26	390	389	100%
	Building Shell	15	81	76	94%
	Controls	7	21	26	124%
	HVAC	44	846	859	101%
	Lighting	15	577	589	102%
	Motors	31	465	479	103%
	Refrigeration	12	177	177	100%
	Sub Total	162	3,375	3,409	101%
2007	Additional Measures	14	822	807	98%
	Air Compressors	36	1,354	1,343	99%
	Building Shell	9	51	47	92%
	Controls	5	160	223	139%
	HVAC	48	1,413	1,419	100%

Measure Type		Count	Expected Savings Estimates (KW)	Evaluated Savings Estimates (KW)	Realization Rates
	Lighting	17	327	320	98%
	Motors	9	27	27	101%
	Refrigeration	17	108	108	100%
	Sub Total	155	4,262	4,294	101%
2008	Additional Measures	13	437	437	100%
	Air Compressors	22	409	407	100%
	Building Shell	13	82	74	90%
	Controls	6	27	38	139%
	HVAC	78	3,014	2,865	95%
	Lighting	40	646	646	100%
	Motors	27	449	450	100%
	Refrigeration	44	321	320	100%
	Sub Total	243	5,385	5,237	97%
Total All Years		703	16,636	16,672	100%

Net-to-Gross

Net savings are the savings “net” of what would have occurred in the absence of the program.¹⁰ Net-to-gross (NTG) consists of freeridership and spillover. For this evaluation, Cadmus only quantified freeridership. Spillover is noted separately in Section 4 but not quantified due to the level of complexity involved in determining the potential savings associated with Spillover for commercial measures.

Freeridership

Freeridership represents the percentage of program participants who would have implemented the program measure or practice in the absence of the program. This was quantified through fielding telephone surveys with program participants who completed projects. While asking participants to self-report for calculating free ridership is a standard approach, it should be noted this methodology has some limitations in that it does not account for longer-term market trends among contractors and supply houses, which typically occur with multiyear programs. For example, a multiyear program may alter lighting design practices of contractors. Consequently, the customer, choosing between various makes and models of a given product, may not be aware available choices were altered by a program. Therefore, while the customer may correctly state a choice was offered between two efficient products, the choices available may have resulted from a program. In this case, while the customer would count as a freerider, had the program not been

¹⁰ Model Energy Efficiency Program Impact Evaluation Guide authored by the EPA as part of the National Action Plan for Energy Efficiency.

running, a less-efficient option may have been available to the customer—an option they may have otherwise chosen.

Accuracy of self-report surveys partly depends on the respondent’s memory of their decisions. For the Energy FinAnswer program, some interviewees were asked to recall actions taken up to several years prior. Participant candor may also be a factor, as respondents may tend to seek a “halo” effect, where the customer indicates they would have made the energy-efficient choice because they perceive it as the response preferred by the interviewer.

In calculating freeridership, Cadmus surveyed 37 program participants. The project numbers were sampled randomly. When a customer was selected they were only asked about the measure with the highest savings in that given project. As a result they were not asked about multiple projects, measures or years.

The surveys resulted in a 13% freeridership score¹¹. Results from the freeridership analysis are presented in Table 16, along with evaluated savings numbers from Table 14 and Table 15. These savings include all measures (not just measures for which respondents were surveyed). The freeridership value was applied across all measures to arrive at net savings.

Table 16. Freeridership Analysis

2008 kWh	Net-to-Gross Ratio (1-Freeridership)	87% (+/- 11.4%) ¹²
	Evaluated Savings	150,435,537
	<i>Net Savings</i>	<i>130,878,917</i>
2008 kW	Net-to-Gross Ratio (1-Freeridership)	87%
	Evaluated Savings	16,672
	<i>Net Savings</i>	<i>14,505</i>

¹¹ For a full description of the scoring matrix refer to Appendix J

¹² Reported at 90% confidence

4. Process Evaluation

Process Evaluation Overview

With customer, implementer, and company perspectives in mind, the evaluation determined which program elements worked well and which could be improved, and, based on these results, developed modifications to refine the program. This evaluation phase relied on interviews with utility and program staff as well as on surveys of program participants who completed projects, nonparticipants, energy engineers, and trade allies. Interview and survey activities also informed evaluation of spillover and freeridership impacts.

In total, 60 interviews and surveys were conducted for the process evaluation, as shown in Table 17.

Table 17. Rocky Mountain Power Process Evaluation Samples

Group	Goal	Achieved
Participants (with completed projects)	70	37
Nonparticipants	25	16
Implementers	2	2
Market Actors	20	5

Process Evaluation

Organizational Data/Firmographics

A total of 37 participants were interviewed for this study.

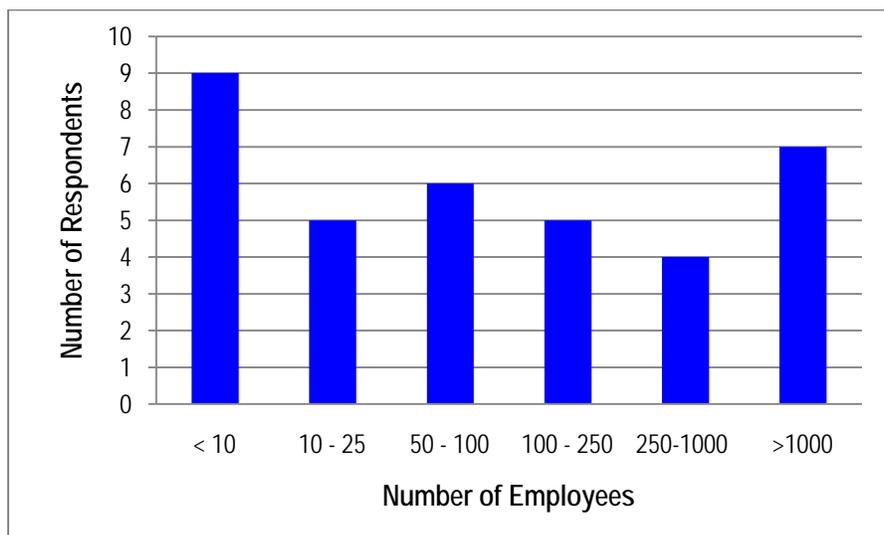
Responding participants were a diverse group. Table 18 shows respondents' primary business activities. The largest numbers of respondents (22%) were in the dairy or agricultural industry, followed by manufacturing (14%).

Table 18. Primary Business Activities of Participants

Primary Business Activities	Number of Respondents
Manufacturing	5
Dairy / Agricultural	8
Food Processing	2
Professional, Scientific, and Technical Services	4
Educational Services	3
Health Care	1
Public Administration	2
Arts, Entertainment, and Recreation	1
Real Estate	4
Other	7
Total	37

Approximately 39% of reporting respondents had less than 25 employees, 19% had over 1,000 employees. Respondents in educational services, health care, manufacturing and professional, scientific, and technical services tended to have a larger number of employees than those in other industries. Figure 1 shows the frequency of respondents with corresponding numbers of employees.

Figure 1. Number of Employees



Approximately 70% of respondents were able to estimate the percentage their electric, gas, and water bills represented of their total annual operating costs. Of the respondents that were able to estimate these percentages, their electric bills represented roughly 22% of total annual operating costs on average.

Nonparticipants

Nonparticipants were selected from a list of Rocky Mountain Power customers who were eligible under the guidelines of the FinAnswer program.

Cadmus was able to interview 16 eligible customers who did not participate in the Utah Energy FinAnswer program from 2005 to 2008. The companies' primary activities are described in Table 19.

Table 19. Business Activities of Nonparticipants

Business Activity	Number of Respondents
Manufacturing	4
Retail	2
Educational Services	1
Arts, Entertainment, and Recreation	1
Real Estate	2
Other	4
No Response	2

Company sizes tended to be small among nonparticipants. Thirteen employed 20 or fewer people; and three employed between 25 and 65.

Five respondents were not able to provide information related to their energy and water bills. Among those providing information, the average electricity bill was 11% of their total annual operating costs.

Implementers

Cadmus interviewed Rocky Mountain Power, the program administrator, and Nexant, the implementer for the FinAnswer Express program. Even though Nexant does not implement the Energy FinAnswer program they were interviewed in an effort to learn more about areas of potential overlap and program mechanics.

Market Actors

Cadmus spoke with five market actors in Utah. They were identified either by their presence in Rocky Mountain Power's program database or by their presence on the lists of contractors maintained by Rocky Mountain Power.

Participation

Nearly 30% of participants learned about the FinAnswer program through marketing or contact with a trade ally. Approximately 46% of respondents were contacted by a Rocky Mountain Power account representative or other staff member. Table 20 indicates how respondents learned about the program. Respondents could indicate multiple methods.

Table 20. How Participants Learned of the Energy FinAnswer Program

Method	Number of Respondents
Contacted by Rocky Mountain Power Representative	17
Marketing by Trade Ally, vendor or contractor	8
Contacted by Trade Ally, vendor or contractor	3
Word of mouth; from another business colleague	2
At a trade show	1
Past program participants	2
Other	4
Don't Know / Refused	3

When asked to list all reasons why they participated in the FinAnswer program, approximately 68% of all respondents participated to save money on their utility bills. Over 43% indicated they participated to receive the program incentive. The third-largest number of respondents (16%) decided to participate in the program to replace old equipment. The responses are shown in Table 21.

Table 21. Reason for Participating in the Program

Reason	Number of Respondents
To save money on bills	25
To obtain a program incentive	16
To replace old equipment	6
To replace broken equipment	2
To acquire the latest technology	4
To reduce maintenance costs	1
To help protect the environment	1
To save energy	5
Part of a broader remodeling or renovation	1
Other	1

Only one of the 16 program nonparticipants had heard of the Energy FinAnswer program; he had been contacted by his Rocky Mountain Power account representative, but had not attempted to participate in the program.

Enrollment

As part of a new strategy implemented concurrently with the evaluation period, account managers were assigned a single project manager to work with their assigned customers' Energy FinAnswer projects. For this program, the energy engineer assigned to a project made an initial site visit and review to obtain additional detail on projects under consideration. During these site visits the energy engineer was tasked with finding energy-saving opportunities eligible through Energy FinAnswer or FinAnswer Express

The initial no-cost site visit and the resulting Initial Site Visit Report (ISVR) was a way to address customers' cost barriers. The energy engineer interviewed felt the no-cost site visit and follow-on consulting services were very influential. Many prospective participants were not familiar with the services or their value, and would be unwilling to pay for consulting services on their own. The initial visit and ISVR also served to determine whether customers were interested in participating and whether they would have sufficient funds to implement their projects.

Eight (22%) of the participants interviewed expressed that aspects of the program caused them some initial concern. Four of these participants were concerned about the timeline of the project or that it would take too long to receive the incentive. Other concerns included the payback for the project, the paperwork involved, the cost of the initial study, the size of the project, and limited resources for completing the project. Six of these respondents stated that the issue causing initial concern was resolved. Two respondents indicated that their concerns over the timing of the project and receiving the incentive were not resolved.

Five of the participants indicated that they experienced some problems, delays, or difficulties during the program's application, review, or approval processes. Two of these respondents indicated that the process took too long. Three respondents did not state what problems were experienced.

Thirteen of the respondents (35%) said they had participated in the Energy FinAnswer program either before 2005 or after 2008. Sixteen respondents (43%) indicated that they had participated

in other energy efficiency programs. When asked who sponsored the other efficiency programs, 6 respondents indicated Rocky Mountain Power, 4 indicated Questar, 1 indicated PacifiCorp, 1 indicated Nexant, and 4 did not know or respond. Four of these respondents indicated that the Energy FinAnswer application process was easier than that of other programs; 9 said the process was harder; and the three did not state how it compared. Four of the respondents indicated that they installed lighting through other programs. Other programs provided boilers, nozzles, and combinations of measures.

Efficiency Measures

Four participants interviewed indicated they did not install items recommended through the program. Measures that were recommended, but not installed, included pumps and motors, VFDs, controls, and exterior lighting. The respondents indicated that a lack of capital or payback was the reason for not installing the measure.

The energy-saving measures installed through the program replaced existing equipment for 70% of respondents, was a new installation for 22%, and was a combination of new and replacement for 8%. When asked about the operating condition of equipment replaced, approximately 14% of the reporting respondents indicated that at least some of it had failed or burned out; 52% responded it was old and had problems, but was still working; 35% said it had no problems.

Most participants rated their satisfaction with the new equipment highly. Approximately 76% of respondents rated their satisfaction at least a 9 on a 10-point scale, while only 5% rated it as less than a 7. The ratings are provided Table 22.

Table 22. Satisfaction with Installed Measures

Rating (0-10)	Number of Respondents
10	13
9.5	2
9	13
8	7
5	1
2	1

Nine nonparticipants said they had installed energy-efficiency measures in the last year. All of these respondents installed high efficiency lighting, and two installed HVAC equipment.

Operational Changes

At the time respondents participated in the program, 70% had an overall plan to increase their operations' energy efficiency. Approximately 30% of respondents indicated they changed the manner in which they operated equipment after installing the new measures. Nearly 82% of these respondents indicated that they used equipment less, either through occupancy sensors, timers, VFDs, or fewer hours of operation. Ten of the respondents (91%) making operational changes did so as part of their overall plan to increase their operations' energy efficiency.

Installation

Only one of the respondents removed or replaced any measures since installation with the program. This respondent replaced a failed air compressor. Of the 60 respondents that replaced existing equipment through the program, 41% had scheduled the equipment for replacement or upgrade before the program. Additionally, 55% of these respondents reported that they had included the project in their most recent capital budgets.

Thirty-five respondents (95%) expected to save money on their electric bills. Nine respondents (24%) did not indicate whether electric savings met their expectations. Of the remaining respondents, 96% felt the savings met their expectations. Thirty-four respondents (50%) reported benefits other than energy savings from the new measures installed. The largest additional benefit reported was better quality equipment, as shown in Table 23.

Table 23. Additional Benefits Associated with Measure

Type of Benefit	Number of Respondents
Better quality equipment	5
Better meets facility needs / improved performance	2
Reduced Maintenance	3
Better work environment / improved health and safety	4
Longer life of equipment	1
Easier to use	1
More reliable	2
Other	6
No benefits	10
Don't Know / Refused	4

When asked to rate their satisfaction with the final cost of the measure on a 10-point scale, over 57% of all respondents rated it as 9 or 10, while 4% rated it as less than 7. Table 24 shows ratings provided by the respondents.

Table 24. Satisfaction with the Final Cost of Measure

Rating (0 to 10)	Number of Respondents
10	10
9.5	1
9	8
8	13
7	2
3	1
Don't Know/ No Response	2

Spillover

Spillover is defined as the amount of additional savings generated by program participants, but not captured by program records. Cadmus used the same participant survey instrument to qualify

spillover, which results when customers purchase energy-efficient measures or adopt energy-efficient practices because of a program, yet choose not to participate in the program or are otherwise unable to participate. The nature of that behavior makes it difficult to actually quantify the savings from each action or measure.

Since participating in the program, 11 respondents (30%) installed other energy-efficiency measures without assistance from a utility or another organization. Respondents installed a variety of high efficiency measures on their own, including chillers, pumps, heat recovery systems, boilers, VFDs, doors, coolers, and lighting. Regarding the program's influence on their decisions to install additional energy-efficiency measures on their own, over 50% gave a rating of 7 or higher on a scale of 0 to 10.

Energy-Efficiency Decision Making

Program participants were asked to rate the importance of energy efficiency to the operations and management of their organization. While 57% of respondents gave a rating of 9 or 10, 3% gave a rating of less than 7. Table 25 shows results for program participants. Almost all respondents mentioned the importance of energy efficiency to cut costs or to be more competitive.

Table 25. Importance of Energy Efficiency to Program Participants

Rating (0 to 10)	Number of Respondents
10	13
9	8
8	14
7	1
6	1

When asked if their business had sufficient in-house technical resources to address management of energy and water costs, 54% of respondents answered "yes", and 46% answered "no".

The ratings that nonparticipants gave to energy efficiency's importance varied, but most felt it was important. Ten respondents gave a rating of at least 8, while only two respondents rated it less than 5. When asked for reasons supporting these higher ratings, respondents overwhelmingly referred to cost savings. Some respondents also mentioned the importance of helping the environment or saving energy. Table 26 shows the results for program nonparticipants.

Table 26. Importance of Energy Efficiency to Program Nonparticipants

Rating (0 to 10)	Number of Respondents
10	3
9	2
8	5
7	1
6	2
5	1
3	1
2	1

When asked if their business had sufficient in-house technical resources to address management of energy and water costs, all but one respondent said “no”.

Interaction with Rocky Mountain or Third-Party Staff

On average, participants worked with 5 people throughout their participation in the Program, including people from Rocky Mountain Power, energy engineering consultants, etc. All respondents described their experiences working with program staff members in positive terms. Many respondents said the experience was “very good” or “excellent”. All market actors said that Rocky Mountain Power was extremely easy to work with and helpful.

Satisfaction

When asked if they would participate in the program again, 36 of the 37 respondents said “yes”. The respondent that said indicated “no” would participate again if the incentive was offered upfront. When asked for suggestions to improve the program, 38% of participants providing an answer other than “don’t know” indicated that they would not change anything at all. Over 26% suggested that the incentive be increased or expanded to include additional measures. Other suggestions included additional outreach and program information, a quicker process, and an easier process. The types of suggestions made by respondents are shown in Table 27.

Table 27. Suggestions to Improve the Program

Rating (0 to 10)	Number of Respondents
Nothing	13
Increase/expand incentive	9
Additional outreach/ information	3
Quicker process	4
Easier process; greater assistance; communication with staff	1
Upfront incentive or financing	1
Other	3
Don't Know/ No response	3

Overall, most respondents were highly satisfied with the program. Approximately 76% of respondents rated their satisfaction with the program at least a 9 and only 3% gave a rating of less than 7.

Table 28 shows the respondents’ ratings.

Table 28. Overall Experience with the Program

Rating (0 to 10)	Number of Respondents
10	15
9.5	1
9	12
8	4
7	4
5	1

Trade allies stated the Energy FinAnswer program, similarly with the FinAnswer Express program, was effective in leading customers to make energy management changes. Trade allies also noted the incentives worked to involve customers. However, they noted the incentives were slightly low—in fact, lower than other utilities they were familiar with—and payback periods for customers were too long.

Key Findings

Among the 37 participants interviewed, satisfaction with program and program staff was high. In addition, most respondents indicated energy efficiency was important to them because of its potential to cut costs: nearly all respondents indicated they participated in the program to save on energy costs. Many participants also reported the program incentive was an important part of their participation. Most participants learned of the program after being contacted by a trade ally or Rocky Mountain Power.

Nonparticipant interviews revealed many customers not participating in the Energy FinAnswer program were unaware of it. Fifteen of 16 nonparticipants interviewed had never heard of the Energy FinAnswer program. The majority of respondents stated energy efficiency was important to them for its cost savings potential.

Recommendations

- Most of the participation appears to come through word of mouth, and interaction with Rocky Mountain Power staff or representatives, which is evidenced by the lack of awareness amongst nonparticipants. The company may wish to consider using other means to help expand awareness to customers who don't often interact with contractors or Rocky Mountain Power staff.

5. Cost-Effectiveness Analysis

To assess cost-effectiveness, evaluators conducted an analysis of program costs and benefits from five perspectives, using Cadmus' DSM Portfolio Pro model. These five perspectives follow methods and guidelines consistent with the California Standard Practice Manual. The perspectives are:

- (1) **PacifiCorp Total Resource Cost Test (PTRC):** This test examined program benefits and costs from Rocky Mountain Power's and Rocky Mountain Power customers' perspectives, combined. On the benefit side, it includes avoided energy costs, capacity costs, and line losses plus a 10% adder to reflect non-quantified benefits. On the cost side, it includes costs incurred by both the utility and participants.
- (2) **Total Resource Cost Test (TRC):** This test examined program benefits and costs from Rocky Mountain Power's and Rocky Mountain Power customers' perspectives, combined. On the benefit side, it included avoided energy costs, capacity costs, and line losses. On the cost side, it included costs incurred by both the utility and participants.
- (3) **Utility Cost Test (UCT):** From Rocky Mountain Power's perspective, benefits were through avoided energy and capacity costs and line losses. Costs included any program administration, implementation or incentive costs associated with funding the program.
- (4) **Ratepayer Impact (RIM):** All ratepayers (participants and nonparticipants) may experience increases in rates to recover lost revenues. This test included all Rocky Mountain Power program costs as well as lost revenues. As benefits, this test included all avoided energy costs, capacity costs, and line losses.
- (5) **Participant Cost Test (PCT):** From this perspective, program benefits included bill reductions. Costs included any customer contribution to the measure cost.

Table 29 summarizes various components of the five tests.

Table 29. Benefits and Costs Included in Various Tests

Test	Benefits	Costs
PTRC	Present Value of Avoided Energy and Capacity Costs with 10% Adder for Non-quantified Benefits	Program Administrative and Marketing Cost + Participant Cost
TRC	Present Value of Avoided Energy and Capacity Costs	Program Administrative and Marketing Cost + Participant Cost
UCT	Present Value of Avoided Energy and Capacity Costs	Program Administrative, Marketing and Incentive Cost
RIM	Present Value of Avoided Energy and Capacity Costs	Program Administrative and Marketing Cost + Present Value of Lost Revenues
PCT	Present Value of Bill Savings	Participant Share of Measure Cost

Table 30 provides selected inputs to the cost analysis. These include the evaluated energy savings for each year (from Table 29 above), discount rate, line loss, and program costs. Other than the energy savings, these values are provided by Rocky Mountain Power. The discount rate is from Rocky Mountain Power's 2008 Integrated Resource Plan. Rocky Mountain Power also provided the values for line loss and the program costs.

Table 30. Selected Cost-Effectiveness Analysis Inputs

Input Description	2005	2006	2007	2008
Net Program Savings (kWh/year)	34,704,296	30,778,607	37,550,175	47,402,460
Discount Rate	7.40%	7.40%	7.40%	7.40%
Line Loss	9.35% Commercial 6.33% Industrial	9.35% Commercial 6.33% Industrial	9.35% Commercial 6.33% Industrial	9.35% Commercial 6.33% Industrial
Commercial Retail Rate	\$0.0592	\$0.0592	\$0.0592	\$0.0592
Industrial Retail Rate	\$0.0403	\$0.0403	\$0.0403	\$0.0403
Net Participant Costs	\$8,734,741	\$11,260,582	\$7,739,093	\$12,780,662
Program Costs				
Program Management Costs	\$850,950	\$293,260	\$87,761	\$118,816
Engineering Costs	\$1,209,369	\$1,467,665	\$1,559,377	\$2,304,089
Incentive Costs	\$3,129,365	\$2,700,139	\$3,091,101	\$4,739,201
Utility Administrative Costs	\$482,087	\$546,587	\$608,831	\$595,547
Total Program Costs	\$5,671,771	\$5,007,650	\$5,347,070	\$7,757,650

Program benefits are comprised of energy savings and their associated avoided costs. The energy savings used in the cost-effectiveness analysis are the evaluated kWh savings from this study. Benefits are accrued over the expected useful life of the installed measure. Measure lives are shown in Table 31.

Table 31. Measure Life Summary¹³

Measure Type	Average Measure Life (years)
2005	13.22
2006	14.17
2007	13.24
2008	14.41
Weighted Average	13.79

Table 32, Table 33, Table 34, and Table 35 present the results of the cost-effectiveness analysis for the Program in 2005, 2006, 2007, and 2008 respectively using a freeridership of 13% as described in Section three of this report. All analyses are based on the two Rocky Mountain Power decrements of the East Commercial Lighting at 49% and the East System at 65%¹⁴.

¹³ Measures lives were calculated based on information from California's DEER database, the New England State Program Working Group report for the ISO Forward Capacity Market, and ACEEE's report on updating Energy Efficiency Standards. The average is achieved by weighting the savings associated with each of the measure types. See Appendix H for a detailed explanation.

¹⁴ IRP decrements are detailed in Appendix G of PacifiCorp's 2008 Integrated Resource Plan Volume II Appendices:
http://www.pacificorp.com/content/dam/pacificorp/doc/Environment/Environmental_Concerns/Integrated_Resource_Planning_6.pdf

Table 32. Cost-Effectiveness Summary for the Program in 2005 – IRP 65% & 49% LF Decrement¹⁵ – 13% Freeridership

Cost Effectiveness Test	Levelized \$ / kWh	Costs	Benefits	Net Benefits	Benefit / Cost Ratio
Total Resource + Conservation Adder (PTRC)	\$0.038	\$11,277,147	\$17,606,688	\$6,329,541	1.56
Total Resource No Adder (TRC)	\$0.038	\$11,277,147	\$16,006,080	\$4,728,933	1.42
Utility (UCT)	\$0.019	\$5,671,771	\$16,006,080	\$10,334,309	2.82
Ratepayer Impact (RIM)	\$0.067	\$19,854,279	\$16,006,080	-\$3,848,199	0.81
Participant (PCT)	\$0.029	\$8,734,741	\$17,311,873	\$8,577,132	1.98
Lifecycle Revenue Impact (dollars)				\$0.000017953	
Discounted Participant Payback (years)				4.64	

Table 33. Cost-Effectiveness Summary for the Program in 2006 – IRP 65% & 49% LF Decrement – 13% Freeridership

Cost Effectiveness Test	Levelized \$ / kWh	Costs	Benefits	Net Benefits	Benefit / Cost Ratio
Total Resource + Conservation Adder (PTRC)	\$0.051	\$13,568,094	\$17,845,758	\$4,277,664	1.31
Total Resource No Adder (TRC)	\$0.051	\$13,568,094	\$16,223,416	\$2,655,322	1.20
Utility (UCT)	\$0.019	\$5,007,650	\$16,223,416	\$11,215,766	3.24
Ratepayer Impact (RIM)	\$0.072	\$19,053,694	\$16,223,416	-\$2,830,279	0.85
Participant (PCT)	\$0.042	\$11,260,582	\$16,746,183	\$5,485,601	1.49
Lifecycle Revenue Impact (dollars)				\$0.000012177	
Discounted Participant Payback (years)				7.64	

Table 34. Cost-Effectiveness Summary for the Program in 2007 – IRP 65% & 49% LF Decrement – 13% Freeridership

Cost Effectiveness Test	Levelized \$ / kWh	Costs	Benefits	Net Benefits	Benefit / Cost Ratio
Total Resource + Conservation Adder (PTRC)	\$0.032	\$9,995,061	\$22,204,060	\$12,208,998	2.22
Total Resource No Adder (TRC)	\$0.032	\$9,995,061	\$20,185,509	\$10,190,447	2.02
Utility (UCT)	\$0.017	\$5,347,070	\$20,185,509	\$14,838,439	3.78
Ratepayer Impact (RIM)	\$0.07	\$21,835,457	\$20,185,509	-\$1,649,948	0.92
Participant (PCT)	\$0.025	\$7,739,093	\$19,579,488	\$11,840,395	2.53
Lifecycle Revenue Impact (dollars)				\$0.000007297	
Discounted Participant Payback (years)				3.05	

¹⁵ Two decrements were used in the Cost-Effectiveness analysis, the East Commercial Lighting at 49% and the East System at 65%

**Table 35. Cost-Effectiveness Summary for the Program in 2008 – IRP 65% & 49% LF
Decrement – 13% Freeridership**

Cost Effectiveness Test	Levelized \$/ kWh	Costs	Benefits	Net Benefits	Benefit / Cost Ratio
Total Resource + Conservation Adder (PTRC)	\$0.037	\$15,799,111	\$35,461,745	\$19,662,633	2.24
Total Resource No Adder (TRC)	\$0.037	\$15,799,111	\$32,237,950	\$16,438,838	2.04
Utility (UCT)	\$0.018	\$7,757,650	\$32,237,950	\$24,480,299	4.16
Ratepayer Impact (RIM)	\$0.076	\$32,093,745	\$32,237,950	\$144,205	1.0
Participant (PCT)	\$0.03	\$12,780,662	\$29,075,295	\$16,294,633	2.27
Lifecycle Revenue Impact (dollars)				-\$0.000000587	
Discounted Participant Payback (years)				3.92	

Appendix A. Participant Survey

PacifiCorp FinAnswer Participant Interview Guide For Completed Projects

Company: _____ Telephone: _____

Name: _____ Cell phone: _____

Title: _____ Fax: _____

City: _____ State: _____ Zip: _____

Interview date: _____ Time: _____

Measure with the greatest savings, and amount of savings (from column U): _____
(Refer to this measure in the 'Installed Efficiency Measures' section.)

Hello, my name is _____ from The Cadmus Group, calling on behalf of:

[UTAH OR IDAHO] Rocky Mountain Power

[WASHINGTON] Pacific Power

[PACIFIC POWER/ROCKY MOUNTAIN POWER] is evaluating its FinAnswer program and would appreciate your input. "It is important for [PACIFIC POWER/ROCKY MOUNTAIN POWER] to include your opinions in this study so they can serve your needs better."

[NOTE: If the customer has received a FinAnswer site visit, state: 'This is a brief follow up to the site visit you recently received.']

[NOTE: If the customer has been selected for a FinAnswer site visit but the visit has not yet happened, state: 'We are conducting this survey to prepare for an upcoming site visit to see your FinAnswer project. We perform site visits to get a better understanding of the energy savings you are actually getting from the program.']

This survey is for research purposes only and this is not a marketing call. Your responses will remain confidential. This survey will take approximately 20 minutes. *As a Thank You for your assistance, at the end of the survey you we would like to offer you a \$50 gift card, which will be mailed to you.* Do you have a moment to answer questions about your experience with the program?

[If a customer asks if this is the Total Quality Service survey, or states that he has recently participated in the Total Quality Service survey, say 'this is a separate survey about your participation and satisfaction with the FinAnswer program.']

[If “No – Not a convenient time,” ask if Respondent would like to 1. Start now and do part of the survey, or 2. Arrange a more convenient time we can call them at home. Emphasize that]

[If customer wants to verify the validity of the survey, tell them that they are welcome to contact Nancy Goddard, PacifiCorp Program Manager, at (503)813-5183.

[IF “NO” – ARRANGE CALLBACK]

-

-

-

- **Confirmation**

1. The [PACIFIC POWER/ROCKY MOUNTAIN POWER] records show that you participated in the FinAnswer program during [Month] of [Year], and installed (a) *[MEASURE(S)]* at *[ADDRESS OF INSTALLATION]*

Is that correct?

1. Yes *[IF YES → GO TO QUESTION 4.]*

2. No, measure is/are incorrect

3. No, date is incorrect *(SKIP TO 3)*

98 DK (TERMINATE)

2. *[IF Q1= NO, MEASURE IS/ARE INCORRECT, ASK]* What measures were installed?
_____ *[RECORD RESPONSE]*

3. *[IF Q1= NO, DATE IS INCORRECT, ASK]* About when were the measures installed?

1. _____MONTH _____YEAR

98. DK *(DO NOT TERMINATE)*

99. REF *(TERMINATE)*

4. Which of the following best describes your company’s primary activities?

1. Manufacturing

2. Retail

3. Dairy / Agricultural

4. Finance and Insurance

5. Food Processing

6. Refrigerated Warehouse
7. Professional, Scientific, and Technical Services
8. Educational Services
9. Health Care
10. Public Administration
11. Arts, Entertainment, and Recreation
12. Accommodation
13. Food Services
14. Real Estate
15. Other [SPECIFY] _____

Participation

5. How did you learn about the Energy FinAnswer Program?
[DO NOT READ RESPONSES; MARK ALL THAT APPLY]
 1. Contacted by my [PACIFIC POWER/ROCKY MOUNTAIN POWER] account representative or other [PACIFIC POWER/ROCKY MOUNTAIN POWER] staff.
 2. Contacted by program representative [IF YES ASK 'Do you remember what company they were from.']
 3. Program sponsored conference or workshop
 4. Program sponsored technology demonstration
 5. Program sponsored integrated audit
 6. Trade Publication
 7. Marketing by Trade Ally, vendor or contractor
 8. Firm approached/contacted by Trade Ally, vendor or contractor
 9. Word of mouth; from another business colleague
 10. Through a trade organization or professional organization/association
 11. Through printed material or outreach materials sent by the Program
 12. At a trade show
 13. Through family, friend, or neighbor
 14. Participation in other [PACIFIC POWER/ROCKY MOUNTAIN POWER] Programs
 15. Past Program participants
 16. Internet research/found Program on the [PACIFIC POWER/ROCKY MOUNTAIN POWER] website
 17. Other [SPECIFY] _____
 98. Don't know
 99. Refused

6. Why did you decide to participate in the Program?

[DO NOT READ RESPONSES; MARK ALL THAT APPLY]

1. To save money on utility bills; save money on electric bills
2. To obtain a program incentive
3. To replace old equipment
4. To replace broken equipment
5. To acquire the latest technology
6. To reduce maintenance costs
7. Because the Program was sponsored by [PACIFIC POWER/ROCKY MOUNTAIN POWER]
8. Previous experience with other [PACIFIC POWER/ROCKY MOUNTAIN POWER] Programs
9. To help protect the environment
10. To save energy
11. Recommended by Program contact
12. Recommended by contractors/trade allies
13. Recommended by another [PACIFIC POWER/ROCKY MOUNTAIN POWER] customer; word of mouth
14. Recommended by family, friend, or neighbor
15. Part of a broader remodeling or renovation
16. Other [SPECIFY] _____
98. Don't know
99. Refused

7. Thinking back to when you were first involved with the Program, were there any aspects of the Program that initially caused you concern?

1. Yes
2. No *[SKIP TO 8]*
98. Don't know *[SKIP TO 8]*
99. Refused *[SKIP TO 8]*

7a. What caused your concern?

_____ *[RECORD RESPONSE]*

7b. Was this issue resolved?

1. Yes *[Ask 7C]*
2. No *[SKIP TO 8]*

98 Don't know [*SKIP TO 8*]

99 Refused [*SKIP TO 8*]

7c. How was it resolved?

_____ [*RECORD RESPONSE*]

Enrollment

8. Did you encounter any problems, delays or difficulties during the application, review or approval processes for the Program?

1. Yes

2. No [*SKIP TO 11*]

98 Don't know [*SKIP TO 11*]

99 Refused [*SKIP TO 11*]

9. [*IF 8 = YES*] What problems, delays or difficulties did you encounter?

[*DO NOT READ RESPONSES; MARK ALL THAT APPLY*]

1. The process took too long

2. Too many delays between steps in the process

3. The process was too complex

4. The applications materials were difficult to understand

5. Lack of coordination and communication among Program staff

6. The Program staff was not responsive; could not get questions answered

7. The Program staff was not knowledgeable

8. The incentives were less than I expected

9. Unable to get information on the status of the application

10. Multiple requests for more information from[PACIFIC POWER/ROCKY MOUNTAIN POWER] throughout the process

11. Disagreement over initial energy savings calculations

12. Disagreement over final energy savings calculations

13. Other [*SPECIFY*] _____

98. Don't know

99. Refused

9a. [*IF 9 = MORE THAN ONE ANSWER*]: What was the **most** difficult issue for you?

_____ [*RECORD RESPONSE*]

10. If you could change anything about the application process, what would you change?

_____ [RECORD RESPONSE]

11. Besides this project did your company participate in the FinAnswer program before 2006 or after 2008?

1. Yes
2. No
- 98 Don't know
- 99 Refused

11a. Have you participated in other energy efficiency programs?

1. Yes
 2. No [skip to 12]
98. Don't know [skip to 12]
99. Refused [skip to 12]

11b. [IF 11a = YES] What other energy efficiency programs have you participated in?

_____ [RECORD RESPONSE]

11c. [IF 11a = YES] Who were the sponsors for these programs?

_____ [RECORD RESPONSE]

11d. [IF 11a = YES] How did this Program's application process compare to your prior experience? Was it easier, harder, or about the same?

1. Easier
2. Harder
3. About the same

11e. [IF 11d = EASIER OR HARDER] Why do you say that?

_____ [RECORD RESPONSE]

Recommended Efficiency Measures

12. Was any equipment, controls or other item recommended through this Program that you did not install?

1. Yes
2. No [IF NO SKIP TO 13]

- 98. Don't know
- 99. Refused

12a. *[IF YES]* What was recommended but not installed?
_____ *[RECORD RESPONSE]*

12b. *[IF YES]* Why did you choose not to install these items?
_____ *[RECORD RESPONSE]*

Installed Efficiency Measures

[REFER TO THE SPREADSHEET FOR "INSTALLED MEASURE." IF MORE THAN ONE MEASURE INSTALLED, PLEASE CHOOSE MEASURE WITH LARGEST SAVINGS]

13. Did the *[INSTALLED MEASURE]* installed through the Program replace existing equipment or was it a totally new installation?
- 1. Replaced existing equipment
 - 2. Totally new *[IF TOTALLY NEW, "PLEASE DESCRIBE" AND, SKIP TO 15]*
 - 98. Don't know
 - 99. Refused
14. What was the operating condition of the equipment that the *[INSTALLED MEASURE]* replaced?
- 1. Old equipment had failed or burned out
 - 2. Old equipment had problems, but still working
 - 3. Old equipment in working condition with no problems
 - 4. Expanding services or production line; wanted efficient equip
 - 5. Other *[SPECIFY]* _____
 - 98. Don't know
 - 99. Refused
15. On a scale of 0 to 10, where 0 is not at all satisfied and 10 is very satisfied, how satisfied would you say you are with the performance of the new *[INSTALLED MEASURE]*?
_____ *[RECORD RESPONSE]*
- 98. Don't know
 - 99. Refused

15a. [If 15 <=5] Why do you say that?

_____ [RECORD RESPONSE]

98. Don't know

99. Refused

Operational Changes

[INTERVIEWER: RESPONDENT WILL RECEIVE ONLY ONE SET OF QUESTIONS REFERRING TO OPERATIONAL CHANGES FOR A SINGLE MEASURE TYPE]

16. At the time that you installed these measures, did you have an overall plan to increase the energy efficiency of your operations?

1. Yes

2. No

98. Don't know

99. Refused

16A. Did you change the manner in which you operated [MEASURE TYPE] after the new [MEASURE TYPE] was installed?

1. Yes

2. No [SKIP TO 18]

98. Don't know

99. Refused

16b. Were these changes part of the overall plan to increase the energy efficiency of your operations?

1. Yes

2. No [SKIP TO 18]

98. Don't know

99. Refused

16c. What did you change?

_____ [RECORD RESPONSE]

17. [ASK IF 16C MENTIONS HOURS OF OPERATION] Did you change the number of operating hours or change the operation schedules since measures were installed?

1. Yes

2. No [SKIP TO 18]

98. Don't know

99. Refused

17a. Please explain what changes were made

_____ [RECORD RESPONSE]

18. Have any [INSTALLED MEASURE] been removed since they were installed with this program?

1. Yes
2. No [SKIP TO 19]
98. Don't know
99. Refused

18a. **What** was removed?

_____ [RECORD RESPONSE]

18b. **Why** was it removed or replaced?

_____ [RECORD RESPONSE]

18c. **About when** was it removed or replaced?

_____ [RECORD RESPONSE]

19. How did **installation** of the [INSTALLED MEASURE] fit with planned replacement and/or maintenance? Was any of this equipment scheduled for replacement/upgrade before the program?

1. Yes [IF YES, PROBE]
2. No [SKIP TO 20]
98. Don't know
99. Refused

19a. Which equipment?

_____ [RECORD RESPONSE]

98. Don't know
99. Refused

20. Was the installation of the [INSTALLED MEASURE] INCLUDED YOUR MOST RECENT CAPITAL BUDGET BEFORE YOU PARTICIPATED IN THE PROGRAM?

1. Yes
2. No
98. Don't know
99. Refused

21. When you installed the new *[INSTALLED MEASURE]*, did you expect savings on:

21a. Electricity?				
21b. Water?				
21c. Natural Gas?				

21d. *[ASK IF 21a = YES]* Do the electric energy savings meet your expectations?

1. Yes *[SKIP TO 22]*
2. No
98. Don't know
99. Refused

21e. *[ASK IF 21a = No]* When do you expect these energy savings?

1. Immediately
2. Within the next 6 Months *[SKIP TO 22]*
3. Within the next year *[SKIP TO 22]*
4. Within the next two years *[SKIP TO 22]*
5. Never
98. Don't know *[SKIP TO 22]*
99. Refused *[SKIP TO 22]*

21f. Why do you not expect savings from the *[INSTALLED MEASURE]* in the future?
 _____ *[SKIP TO 23]*

22. Are there any other benefits that you anticipate?

[PROBE IF NEEDED: HAVE YOU OBSERVED ANY CHANGES IN LEVEL OF PRODUCTION OR SALES? PRODUCT QUALITY?]

_____ *[RECORD RESPONSE]*

23. How satisfied are you with the final cost to you of the *[INSTALLED MEASURE]*? Please use a scale from 0 to 10, with 0 being extremely dissatisfied and 10 being extremely satisfied.

_____ *[RECORD RESPONSE]*

- 98. Don't know
- 99. Refused

23a. *[IF Q23<=5]* Why do you say that?

24. How satisfied are you with the performance of the *[INSTALLED MEASURE]*?
Please use a scale from 0 to 10, with 0 being extremely dissatisfied and 10 being extremely satisfied.

_____ *[RECORD RESPONSE]*

- 98. Don't know
- 99. Refused

24a. *[If 24 <=5]* Why do you say that?

_____ *[RECORD RESPONSE]*

Free Ridership and Market Effects

[NOTE: ONLY ASK FOR SAME MEASURES AS PRIOR QUESTIONS]

25. On a scale from 1 to 10, how important were the following factors in deciding which measures to install:

Factor	Score
A. Information provided by program staff on measure savings	
B. Information on payback for the measure	
C. The project incentive	
D. Familiarity with these measures	
E. Had purchased these measures in the past	

26. Regarding the installation of *[INSTALLED MEASURE/MEASURE(S)]*, would you have installed the *[MEASURE/ MEASURES]* without this program?

1. Yes
2. No *[IF 'NO', ASK Q27, THEN SKIP TO Q30]*
98. Don't know
99. Refused

27. Before the incentive program, had you previously installed the same type of *[MEASURE]* without the program?

3. Yes
4. No
98. Don't know
99. Refused

_____ *[RECORD RESPONSE]*

28. Without the program, would you have installed units to the same level of efficiency?

1. Yes
2. No
98. Don't know
99. Refused

29. Without the program, would you have installed all of the measures or some of the measures?

1. All
2. Some
98. Don't know
99. Refused

29a. *[If 29=Some]* Which measures would you have installed?

_____ *[RECORD RESPONSE]*

30. Without the program, would you have installed these measures...

1. In the same year?
2. In one to two years?
3. In three to five years?
4. More than five years out?
98. Don't know
99. Refused

31. Would you have installed the exact same unit(s) if the amount of the program incentive was less than the current value?
1. Yes
 2. No
 98. Don't know
 99. Refused
32. How much less? Would you say...
1. 25% less
 2. 50% less
 3. 75% less
 98. Don't know
 99. Refused
33. In your opinion was the difference in price between the energy efficient models and the conventional models:
1. Very dramatic
 2. Somewhat dramatic but significant
 3. Not at all different
 98. Don't know
 99. Refused

Energy Efficiency Decision Making

Next, I would like to ask you some questions about the decision making process in regards to energy efficiency purchases and upgrades.

34. Using a 0 to 10 rating scale, where 0 means not at all important and 10 means extremely important, please rate how important energy efficiency is to the operations and management of your company?
1. _____ *[RECORD RESPONSE]*
 98. Don't know
 99. Refused
- 34a. Why do you say that?
35. Do you have sufficient in house technical resources to address the management of energy and water costs?
1. Yes
 2. No

98. Don't know

99. Refused

35b. *[IF35=NO]* For this project, were [PACIFIC POWER/ROCKY MOUNTAIN POWER] or Nexant able to provide you with the needed technical assistance?

_____ *[RECORD RESPONSE]*

Spillover

36. Besides installing the measures through this program, since this project have you made any other energy efficiency improvements or purchases on your own without any assistance from a utility or other organization?

1. Yes

2. No *[SKIP TO 37]*

98. Don't know *[SKIP TO 37]*

99. Refused *[SKIP TO 37]*

36a. What did you purchase or install?

_____ *[RECORD RESPONSE]*

36b. *[IF 36 = YES]* I'm going to read a statement about the equipment that you purchased on your own. On a scale from 0 to 10, with 0 indicating that you strongly disagree, and 10 indicating that you strongly agree, please rate the following statement.

“My experience with the *[Program]* influenced my decision to install other high efficiency equipment on my own.”

_____ *[RECORD RATING]*

98. Don't know

99. Refused

Interaction with [PACIFIC POWER/ROCKY MOUNTAIN POWER] or 3rd Party Staff

We are also interested in learning more about your interactions with the Program staff

37. How many people did you work with throughout your participation in the Program? This would include people from Nexant, [PACIFIC POWER/ROCKY MOUNTAIN POWER], contractors, etc.

_____ Number of people

[SKIP TO 40 IF =0]

38. In what capacity did they work with you?

[PROBE IF NEEDED. WAS IT PROJECT MANAGERS, ACCOUNT REPS, THIRD PARTY STAFF, CONTRACTORS; MULTIPLE RESPONSE]

1. _____ [PACIFIC POWER/ROCKY MOUNTAIN POWER] Account Representatives
2. _____ [PACIFIC POWER/ROCKY MOUNTAIN POWER] Energy Efficiency Project Managers
3. _____ Nexant Energy Efficiency Project Managers
4. _____ Installation Contractors
5. _____ External Consultant
6. _____ Other *[SPECIFY]* _____

[RECORD COMMENTS]

39. Please describe your overall experience working with these people in relation to this project. _____ *[RECORD RESPONSE]*

Satisfaction

40. Would you participate in the Program again?

1. Yes
2. No

40a. *[IF 40 = NO]* Why not?

_____ *[RECORD RESPONSE]*

41. If you could change anything about the Program, what would you change?

_____ *[RECORD RESPONSE]*

98. Don't know

99. Refused

42. Using a scale from 0 to 10, with 0 being extremely dissatisfied and 10 being extremely satisfied, how satisfied are you with your overall experience with the Program?

_____ *[RECORD RESPONSE]*

98. Don't know

99. Refused

42a. *[IF Q42 <=5]* Why do you say that?

Organizational Data/Firmographics

I have a few last questions about your business or organization

43. Approximately, what percent of your total annual operating costs does your electricity bill represent?

_____ *[RECORD RESPONSE]*

98. Don't know

99. Refused

44. Approximately, what percent of your total annual operating costs does your natural gas bill represent?

_____ *[RECORD RESPONSE]*

98. Don't know

99. Refused

45. Approximately, what percent of your total annual operating costs does your water bill represent?

_____ *[RECORD RESPONSE]*

98. Don't know

99. Refused

46. How many people does your firm employ?

_____ *[RECORD RESPONSE]*

98. Don't know

99. Refused

Thank you for your time. Your opinions are very valuable to this research for [PACIFIC POWER/ROCKY MOUNTAIN POWER].

Appendix B. Nonparticipant Survey

FinAnswer Nonparticipant Interview Guide

Company: _____ Telephone: _____
 Name: _____ Cell phone: _____
 Title: _____ Fax: _____
 City: _____ State: _____ Zip: _____
 Interview date: _____ Time: _____

Hello, my name is _____ from _____, calling on behalf of [PACIFIC POWER/ROCKY MOUNTAIN POWER]. We are conducting a study on behalf of [PACIFIC POWER/ROCKY MOUNTAIN POWER] regarding energy efficiency programs. May I speak with *[designated respondent]* or with the person who is responsible for overseeing energy management for your organization?

[IF DIRECTED TO A DIFFERENT RESPONDENT, REPEAT INTRODUCTION]

My questions are for research purposes only. We are interested in your opinions to help improve our programs, and understand how to assist customers in saving money on their utility bills. Your individual answers will be used by [PACIFIC POWER/ROCKY MOUNTAIN POWER] to evaluate energy efficiency programs. *[IF RESPONDENT ASKS HOW LONG, SAY: "APPROXIMATELY 15 MINUTES."]*

[If a customer asks if this is the Total Quality Service survey, or states that he has recently participated in the Total Quality Service survey, say 'this is a separate survey about our energy efficiency programs.']

[If customer wants to verify the validity of the survey, tell them that they are welcome to contact Nancy Goddard, PacifiCorp Program Manager, at (503)813-5183.

Screening:

S2. First, I need to validate my records.

S3. Which electric company provides electric power to your business?

- 1 Pacific Power/Rocky Mountain Power CONTINUE
 2 OTHER..... TERMINATE AND TALLY
 98 DON'T KNOW RETURN TO Q.B AND RESCREEN

Introduction

1. Which of the following best describes your company's primary activities?

1. Manufacturing
2. Retail
3. Dairy / Agricultural
4. Finance and Insurance
5. Food Processing
6. Refrigerated Warehouse
7. Professional, Scientific, and Technical Services
8. Educational Services
9. Health Care
10. Public Administration
11. Arts, Entertainment, and Recreation
12. Accommodation
13. Food Services
14. Real Estate
15. Other [*SPECIFY*] _____

Participation

2. Have you heard of the [PACIFIC POWER/ROCKY MOUNTAIN POWER] FinAnswer Program?

1. Yes [*CONTINUE*]
2. No [*SKIP TO 10*]
98. Don't know
99. Refused

3. How did you learn about the FinAnswer Program?

[DO NOT READ RESPONSES; MARK ALL THAT APPLY]

1. Contacted by my [PACIFIC POWER/ROCKY MOUNTAIN POWER] account representative or other [PACIFIC POWER/ROCKY MOUNTAIN POWER] staff
2. Contacted by program representative [IF YES ASK 'Do you remember what company they were from?']
3. Firm contacted the Program
4. Program sponsored conference or workshop
5. Program sponsored technology demonstration
6. Program sponsored integrated audit
7. Trade Publication
8. Marketing by Trade Ally, vendor or contactor
9. Firm approached/contacted by Trade Ally, vendor or contractor
10. Word of mouth; from another business colleague
11. Through a trade organization or professional organization/association
12. Through printed material or outreach materials sent by the Program
13. At a trade show
14. Through family, friend, or neighbor
15. Participation in other [PACIFIC POWER/ROCKY MOUNTAIN POWER] Programs
16. Past Program participants
17. Internet research/found Program on [PACIFIC POWER/ROCKY MOUNTAIN POWER] website
18. Other *[SPECIFY]* _____
98. Don't know
99. Refused

4. What are the reasons you have not had the opportunity to participate in the Program?

*[DO NOT READ RESPONSES; MARK ALL THAT APPLY]*_____ *[RECORD RESPONSE]*

98. Don't know
99. Refused

5. Regarding the FinAnswer program, have you either begun participation in the program and dropped out, or had a project application rejected?

1. Dropped out
2. Application rejected
3. No *[SKIP TO 10]*
98. Don't know *[SKIP TO 10]*
99. Refused *[SKIP TO 10]*

Program Drop-Outs and Rejected Applications

ASK THIS SECTION ONLY IF RESPONDENT IS: (1) PROGRAM DROP-OUT (2) REJECTED APPLICATION

6. Thinking back to when you were first considered the Program, were there any aspects of the Program that initially caused you concern?

- 1 Yes
- 2 No *[SKIP TO 5D]*
- 98 Don't know *[SKIP TO 5D]*
- 99 Refused *[SKIP TO 5D]*

6a. What caused your concern?

_____ *[RECORD RESPONSE]*

6b. Was this issue resolved?

- 1. Yes
- 2. No *[SKIP TO 5D]*
- 98 Don't know *[SKIP TO 5D]*
- 99 Refused *[SKIP TO 5D]*

6c. How was it resolved?

_____ *[RECORD RESPONSE]*

ASK ONLY IF RESPONDENT IS A PROGRAM DROP-OUT

6d. Why did your business drop out of the Program?

_____ *[RECORD RESPONSE]*

ASK ONLY IF RESPONDENT'S APPLICATION WAS REJECTED

6e. Do you know why your application to participate in the program was denied?

_____ *[RECORD RESPONSE]*

ASK FOR BOTH GROUPS

6f. Was the underlying problem resolved to your satisfaction? If not, why not?

We are also interested in learning more about your interactions and experience with the Program staff.

7. How many people did you work with during your time with the Program? This would include people from Nexant, [PACIFIC POWER/ROCKY MOUNTAIN POWER], contractors, etc.

_____ number of people

8. Who worked with you with you on this project?

[PROBE IF NEEDED. WAS IT PROJECT MANAGERS, ACCOUNT REPS, THIRD PARTY STAFF, CONTRACTORS; MULTIPLE RESPONSE]

7. _____ [PACIFIC POWER/ROCKY MOUNTAIN POWER] Account Representatives
8. _____ [PACIFIC POWER/ROCKY MOUNTAIN POWER] Energy Efficiency Project Managers
9. _____ Another Energy Efficiency Project Manager [IF YES ASK 'Do you remember what company they were from.']
10. _____ Installation Contractors
11. _____ External Consultant
12. _____ Other [*SPECIFY*] _____

[RECORD COMMENTS]

9. If you could change anything about the Program, what would you change?

_____ *[RECORD RESPONSE]*

98. Don't know
99. Refused

10. Did your company participate in the FinAnswer program before 2006? After 2008?

Installed Efficiency Measures

11. In the past year, have you installed any energy efficiency measures in your building(s)?

3. Yes *[CONTINUE]*
4. No *[IF NO, SKIP TO ENERGY EFFICIENCY DECISION MAKING]*
98. Don't know
99. Refused

- 11a. What measures have you installed? *[DO NOT READ. RECORD ALL EQUIPMENT, LIGHTING, CONTROLS, OTHER ITEMS INSTALLED]*

1. Lighting
2. HVAC

3. Controls
4. VFD
5. Compressed Air measures
6. Other [*SPECIFY*] _____
98. Don't know
99. Refused

11b. Did you receive a financial incentive or tax credit for installing this equipment?

1. Yes [Specify the incentive and/ or tax credit amount, and the agency/program offering the incentive/tax credit.]
2. No [*IF NO, SKIP TO ENERGY EFFICIENCY DECISION MAKING*]
98. Don't know
99. Refused

12. Why did you decide to install this equipment?

[DO NOT READ RESPONSES; MARK ALL THAT APPLY]

1. To save money on electric bills
2. To obtain a rebate; Program incentive
3. It was scheduled for replacement/upgrade
4. To replace old equipment
5. To replace broken equipment
6. To acquire the latest technology
7. To reduce maintenance costs
8. Because [*PACIFIC POWER/ROCKY MOUNTAIN POWER*] account manager suggested it
9. Because Nexant engineer suggested it
10. Because we had funds available in this fiscal year
11. Because we lose funds if we don't replace it now.
12. Because the Program was sponsored by [*PACIFIC POWER/ROCKY MOUNTAIN POWER*]
13. Previous experience with other [*PACIFIC POWER/ROCKY MOUNTAIN POWER*] Programs
14. To help protect the environment
15. To save energy
16. Recommended by Program contact
17. Recommended by contractors/trade allies
18. Recommended by another word of mouth
19. Recommended by family, friend, or neighbor
20. Part of a broader remodeling or renovation
21. Other [*SPECIFY*] _____
98. Don't know
99. Refused

12a. Have you taken any other actions to save energy in your buildings?

_____ [RECORD RESPONSE]

13. What actions have you taken?

_____ [RECORD RESPONSE]

98. Don't know

99. Refused

Energy Efficiency Decision Making

Next, I will ask some questions about the decision making process in regards to energy efficiency purchases and upgrades.

14. Using a 0 to 10 rating scale, where 0 means not at all important and 10 means extremely important, please rate how important energy efficiency is to the operations and management of your company?

_____ [RECORD RESPONSE]

98. Don't know

99. Refused

15. Why do you say that?

_____ [RECORD RESPONSE]

16. Do you have sufficient technical resources in house to address the management of energy and water costs?

1. Yes [SKIP NEXT QUESTION]

2. No

98. Don't know

99. Refused

Organizational Data/Firmographics

I have a few last questions about your business or organization

17. Approximately, what percentage of your total annual operating costs is spent in electricity bills?

_____ [RECORD RESPONSE]

98. Don't know

99. Refused

18. Approximately, what percentage of your total annual operating costs is spent in natural gas bills?
_____ [RECORD RESPONSE]
98. Don't know
99. Refused
19. Approximately, what percentage of your total annual operating costs is spent in water bills?
_____ [RECORD RESPONSE]
98. Don't know
99. Refused
20. How many people does your firm employ?
_____ [RECORD RESPONSE]
98. Don't know
99. Refused

Thank you for your time. Your opinions are very valuable to this research for [PACIFIC POWER/ROCKY MOUNTAIN POWER].

Appendix C. Staff Interview Guide

Program Discussion Guide - Energy FinAnswer Program

Name

Title

Company

Program

Date

Program Overview

1. Can you briefly describe how the program operates?
 - a. What is the program theory – how do you expect the programs to change the way that the target market behaves with respect to energy efficiency?
2. How has the program evolved or changed since the last evaluation in 2004?
3. How do you coordinate activities internally? [marketing, service delivery, work with TAs, etc.]
4. Are you providing training to:
 - a. PacifiCorp staff
 - b. Implementers
 - c. Trade allies
 - d. What feedback have you gotten back?
5. What improvements could be made in the administration of the programs?

Application process

6. Could you please describe your understanding of the application process:
 - a. How do the participants enter the program?
 - b. What issues are there?

Eligibility criteria and the verification process

7. Please describe the verification process?
 - a. Participant eligibility
 - b. What if they are not eligible?

Marketing

8. Do you do anything to promote the program? [What marketing and outreach activities have been and are being conducted? What's worked best?]

Savings estimation techniques

9. How are savings estimated for the program as a whole and for individual projects?
10. Are the estimations generally felt to be accurate? Is there a way to improve the manner in which savings are calculated?
11. How are savings verified for the individual projects?
 - a. What materials had to be submitted with the applications [invoices, drawings]?
 - b. Who received the applications and what the steps were for reviewing and approving applications and setting up payments?
 - c. What post-inspections are required?

Participant interaction and satisfaction

12. What aspects of the programs do customers seem to be most interested in or most satisfied with?
 - a. Any concerns? How were they addressed?

Program data collection

13. Who is responsible for collecting and tracking participation data?

- a. How effective and accurate is the data-tracking and data collection system?
 - b. Are data entered and reported in a timely fashion?
 - c. Have there been any difficulties with the data tracking systems?
14. Have the implementers had any problems meeting the tracking and reporting requirements?
15. Would you recommend any changes to the procedures?

Trade Allies – Communication

16. Is PacifiCorp involved in the recruitment or management of Trade Allies, retailers or contractors?
- a. Describe the relationship between these parties
17. How frequently do you contact people, and how is the communication carried out?
18. How often do trade allies contact you?
19. Have you had any particular challenges in working with trade allies?
20. How are their problems and questions dealt with?
21. What kinds of things have been done or are being planned to identify trade allies and get them involved?
22. What has/has not worked well?
23. How would you change or improve communications, either within the program, or with trade allies?

Implementation Barriers

24. Has the level of program participation met your expectations?
- a. Why do you think this has been the case?
25. Have any challenges resulted from perceptions or attitudes about the value of the program among the *target population*? If so, what?

26. How have you dealt with those perceptions and attitudes?

27. How about any challenges resulting from perceptions or attitudes about the value of the programs among the vendors?

a. How have these been dealt with?

Close

28. What would you say are the program's strongest points?

29. What are its weakest points?

30. Other than what we've discussed above, what would you change about the program?

Appendix D. Market Actor Interview Guide

Market Actor Interview Survey Guide – Energy FinAnswer Program

Interviewee information:

Name:

Organization:

Title:

Telephone

Hello, my name is _____ from The Cadmus Group, calling on behalf of:

[Utah or Idaho] Rocky Mountain Power

[Washington] Pacific Power

[Rocky Mountain Power, Pacific Power] is evaluating its FinAnswer program and would appreciate your input. This survey is for research purposes only and this is not a marketing call. Your responses will remain confidential. The questions focus on how the program operated in the 2006-2008 time period. Do you have a moment to answer questions about your experience with the program?

[If “No – Not a convenient time,” ask if Respondent would like to 1. Start now and do part of the survey, or 2. Arrange a more convenient time we can call them at home. Emphasize that]

“It is important for Rocky Mountain Power/Pacific Power to include your opinions in this study so they can serve your needs better.”

[If “No” – Arrange callback]

Program Overview

1. When did you first start providing services for the program?
2. What did you see as the purpose of the program?
3. Who else was involved in carrying out the program? How were they involved? [PROBE on contractors, engineering firms, energy services companies, retailers, and equipment manufacturers.]
4. Have there been changes over time in the services or measures people are interested in? What are the changes?

Program Entry

5. How did a prospective customer find out about the program?
6. Who provided program leads? [DO NOT READ]
 - a. Program staff
 - b. Nexant (program implementer)
 - c. Engineering firms,
 - d. Energy services companies
 - e. Retailers
 - f. Other _____

Participant interaction and satisfaction

7. Did customers express any concerns about the program? How were the concerns addressed?

Pacific Power/Rocky Mountain Power Communication

8. Did your company have any particular challenges in working with Rocky Mountain Power?
9. How were these challenges dealt with?

Implementation Barriers

10. Did any challenges result from perceptions or attitudes about the value of the program among the Pacific Power/Rocky Mountain Power customers? If so, what were they?
11. How did you deal with those perceptions and attitudes?
12. Did anything else make it difficult for you to bring in participants and/or carry out program requirements? If so, what?
13. How have you dealt with those perceptions and attitudes?

Program data collection

14. Please describe the program's data collection and tracking requirements.
 - a. Were there any difficulties meeting those requirements?

15. Would you recommend any changes to the procedures?

Close

16. Other than what we've discussed above, what would you have changed about the program as it operated in 2006 through 2008?

17. What would you change about the program as it is currently operated?

18. Is there anything else you would like to add?

Appendix E. Energy FinAnswer Process Flow Diagram

Provided under separate cover.

Appendix F. Energy FinAnswer Evaluation Plan

Provided under separate cover.

Appendix G. Project Reports

Provided under separate cover.

4889	6984	7066	7228	7249	8005
6163	7019	7070	7229	7263	8028
6163	7020	7136	7238	7292	8091
6259	7049	7144	7265	7304	8211
6376	7058	7147	7322	7340	
6415	7059	7153	7337	7345	
6436	7102	7167	7365	7411	
6519	7117	7186	7387	7434	
6527	4494	7196	7397	7438	
6544	6189	7197	7409	7517	
6577	6352	7198	7414	7525	
6600	6354	7204	7464	7550	
6601	6534	7208	7488	7560	
6615	6535	7208	7507	7606	
6666	6536	7212	7508	7634	
6766	6565	7221	7529	7637	
6768	6641	7269	7559	7651	
6768	6704	7344	7569	7657	
6801	6798	7359	7572	7677	
6808	6869	7367	7581	7710	
6819	6875	7386	7590	7721	
6879	6898	6889	7626	7751	
6882	6910	6919	7674	7805	
6899	6914	6924	7789	7812	
6913	6948	6997	5719	7819	
6920	6949	6998	6467	7820	
6936	6956	7053	6802	7837	
6947	6963	7150	6917	7877	
6951	7011	7155	7145	7881	
6979	7030	7225	7209	7977	

Appendix H. Measure Life Methodology

Measure lifetimes by general measure type were determined for various states and program years (2005-2008) for the following PC programs:

- Energy Finanswer
- Finanswer Express
- Self Direction
- Retrocommissioning

This analysis was performed in an Excel workbook. Comprehensive economic useful life (EUL) information for the various individual measures in the portfolio, including sources, were compiled on a master sheet named “Measure Life.” Some of the sources used were DEER 2008, ACEEE, and the “Measure Life Report” prepared by GDS Associates in 2007. When multiple values for the same measure were available, an average was taken. For example, the measure life of air compressor improvements in the GDS report was 13 and 15 years for retrofit and new construction, respectively. Therefore, the final average measure life used in this analysis was 14 years for air compressor improvements. Where measure names in the data sets or in the sources were open to interpretation, comments were added to clarify to what measure was being referenced.

Project data, such as measure name, type, and savings, were organized as sets on individual worksheets representing each state/program/year combination. Measure type includes the following main categories (shown with their respective sources):

Measure Type	GDS	DEER	ACEEE	Other
Refrigeration	X	X		
Lighting	X	X		
HVAC	X	X	X	Calmac Report 2007
Controls	X	X		
Motors	X	X		
Additional Measures	X		X	
Air Compressors	X			
Building Shell	X	X		
Nonlighting	X	X		
Hot Water	X	X		Energy Star
Traffic Signals	X			

For each data set, the EUL for the applicable measure types was determined by weighting the EULs of component measures by total kWh savings. Using the Idaho Energy Finanswer Express 2008 project data as an example, there are 3 measure types (Lighting, HVAC, and Motors). Lighting measures include Package, Package Trade Ally, and Other. Each of these individual measures has an associated lifetime (14, 14, and 15, respectively). To determine what the overall EUL should be, the total kWh savings for each measure from this data set was used to weight the EULs. This process was repeated for the HVAC and Motor measure types to complete the analysis.

Appendix I. Participant and Nonparticipant Survey Results

Provided under separate cover.

Appendix J. Freeridership Analyses

Freeridership quantifies the percentage of participants who report they would have installed a measure in the absence of the program.

Energy FinAnswer Program

Freeridership survey data was analyzed for the Energy FinAnswer program using a scoring matrix approach. This approach is acknowledged in the National Action Plan for Energy Efficiency: Model Energy Efficiency Program Impact Evaluation Guide⁵ (Guide).

A survey was designed to understand why customers installed a given measure, and the influence the program had over those decisions.

In conducting surveys with the battery of questions, Cadmus randomly selected customers participating in the Energy FinAnswer program. Results of the survey questions were used in a scoring matrix to determine each participant's freeridership score between 0 and 100%.

There are six core questions asked in the survey are written to obtain objective responses and are used in the freeridership scoring matrix:

- Would the participant have installed the measure without the program?
- Had the participant already ordered or installed the measure before learning about the program?
- Would the participant have installed the measure to the same level efficiency without the program incentive?
- Would the participant have installed the same quantity of measures without the program?
- In absence of the program, when would the respondent have installed the measures?
- Was the measure included in included the participant's most recent capital budget?

Cadmus has developed a transparent, straightforward matrix approach to assign a score to all participants based on their responses.

Patterns of responses to these questions are assigned freerider scores, and confidence and precision estimates are calculated based on the distribution of the scores.

The table below shows the scoring matrix that was used for Energy FinAnswer. This matrix is expanded from the general format of the scoring matrix included in the Guide. If a respondent had a non-response, "Don't Know" or "Refused", the respondent was assigned a "Partial" for that given question. This allows for respondents who had a non-response, "Don't Know" or "Refused" answer for a question to be left in the analysis sample.

⁵ http://www.epa.gov/cleanenergy/documents/suca/evaluation_guide.pdf

Would have Installed without Program	Already Ordered or Installed	Same Efficiency	Would have Installed All of the Measures	Planning to Install Soon	Already in Budget	Pattern	Freeridership Score
Yes	Partial	x	x	x	x	YesPartial	100.00%
Yes	Yes	x	x	x	x	YesYes	100.00%
Partial	Yes	x	x	x	x	PartialYes	100.00%
No	x	x	x	x	x	No	0.00%
Partial	No	x	x	x	x	PartialNo	0.00%
Partial	Partial	x	x	x	x	PartialPartial	25.00%
Yes	No	No	x	x	x	YesNoNo	0.00%
Yes	No	Partial	No	No	Yes	YesNoPartialNoNoYes	0.00%
Yes	No	Partial	No	No	Partial	YesNoPartialNoNoPartial	0.00%
Yes	No	Partial	No	No	No	YesNoPartialNoNoNo	0.00%
Yes	No	Partial	No	Partial	Yes	YesNoPartialNoPartialYes	0.00%
Yes	No	Partial	No	Partial	Partial	YesNoPartialNoPartialPartial	0.00%
Yes	No	Partial	No	Partial	No	YesNoPartialNoPartialNo	0.00%
Yes	No	Partial	No	Yes	Yes	YesNoPartialNoYesYes	12.50%
Yes	No	Partial	No	Yes	Partial	YesNoPartialNoYesPartial	0.00%
Yes	No	Partial	No	Yes	No	YesNoPartialNoYesNo	0.00%
Yes	No	Partial	Partial	No	Yes	YesNoPartialPartialNoYes	0.00%
Yes	No	Partial	Partial	No	Partial	YesNoPartialPartialNoPartial	0.00%
Yes	No	Partial	Partial	Partial	No	YesNoPartialPartialNoNo	0.00%
Yes	No	Partial	Partial	Partial	Yes	YesNoPartialPartialPartialYes	0.00%
Yes	No	Partial	Partial	Partial	Partial	YesNoPartialPartialPartialPartial	0.00%
Yes	No	Partial	Partial	Partial	No	YesNoPartialPartialPartialNo	0.00%
Yes	No	Partial	Partial	Yes	Yes	YesNoPartialPartialYesYes	12.50%
Yes	No	Partial	Partial	Yes	Partial	YesNoPartialPartialYesPartial	0.00%
Yes	No	Partial	Partial	Yes	No	YesNoPartialPartialYesNo	0.00%
Yes	No	Partial	Yes	No	Yes	YesNoPartialYesNoYes	0.00%
Yes	No	Partial	Yes	No	Partial	YesNoPartialYesNoPartial	0.00%
Yes	No	Partial	Yes	No	No	YesNoPartialYesNoNo	0.00%
Yes	No	Partial	Yes	Partial	Yes	YesNoPartialYesPartialYes	12.50%
Yes	No	Partial	Yes	Partial	Partial	YesNoPartialYesPartialPartial	0.00%
Yes	No	Partial	Yes	Partial	No	YesNoPartialYesPartialNo	0.00%
Yes	No	Partial	Yes	Yes	Yes	YesNoPartialYesYesYes	25.00%
Yes	No	Partial	Yes	Yes	Partial	YesNoPartialYesYesPartial	12.50%
Yes	No	Partial	Yes	Yes	No	YesNoPartialYesYesNo	0.00%
Yes	No	Yes	No	No	Yes	YesNoYesNoNoYes	0.00%
Yes	No	Yes	No	No	Partial	YesNoYesNoNoPartial	0.00%
Yes	No	Yes	No	No	No	YesNoYesNoNoNo	0.00%
Yes	No	Yes	No	Partial	Yes	YesNoYesNoPartialYes	0.00%
Yes	No	Yes	No	Partial	Partial	YesNoYesNoPartialPartial	0.00%
Yes	No	Yes	No	Partial	No	YesNoYesNoPartialNo	0.00%
Yes	No	Yes	No	Yes	Yes	YesNoYesNoYesYes	0.00%
Yes	No	Yes	No	Yes	Partial	YesNoYesNoYesPartial	0.00%
Yes	No	Yes	No	Yes	No	YesNoYesNoYesNo	0.00%
Yes	No	Yes	Partial	No	Yes	YesNoYesPartialNoYes	0.00%
Yes	No	Yes	Partial	No	Partial	YesNoYesPartialNoPartial	0.00%
Yes	No	Yes	Partial	No	No	YesNoYesPartialNoNo	0.00%
Yes	No	Yes	Partial	Partial	Yes	YesNoYesPartialPartialYes	12.50%
Yes	No	Yes	Partial	Partial	Partial	YesNoYesPartialPartialPartial	0.00%
Yes	No	Yes	Partial	Partial	No	YesNoYesPartialPartialNo	0.00%
Yes	No	Yes	Partial	Yes	Yes	YesNoYesPartialYesYes	25.00%
Yes	No	Yes	Partial	Yes	Partial	YesNoYesPartialYesPartial	12.50%
Yes	No	Yes	Partial	Yes	No	YesNoYesPartialYesNo	0.00%
Yes	No	Yes	Yes	No	Yes	YesNoYesYesNoYes	0.00%
Yes	No	Yes	Yes	No	Partial	YesNoYesYesNoPartial	0.00%
Yes	No	Yes	Yes	No	No	YesNoYesYesNoNo	0.00%
Yes	No	Yes	Yes	Partial	Yes	YesNoYesYesPartialYes	25.00%
Yes	No	Yes	Yes	Partial	Partial	YesNoYesYesPartialPartial	12.50%
Yes	No	Yes	Yes	Partial	No	YesNoYesYesPartialNo	0.00%
Yes	No	Yes	Yes	Yes	Yes	YesNoYesYesYesYes	50.00%
Yes	No	Yes	Yes	Yes	Partial	YesNoYesYesYesPartial	25.00%
Yes	No	Yes	Yes	Yes	No	YesNoYesYesYesNo	12.50%

The Freeridership Designation

If customers both did not know about the measure before hearing about the program and had no plans to install the measure, they are not freeriders. Likewise, if they knew about the program, but had no plans to install the measure, they are not freeriders. Customers who indicated they would have installed the measure without the program or had already installed the measure when they learned of the program are 100-percent freeriders.

Customers can also be partial freeriders. Partial scores are assigned to customers that indicated a likelihood that they would have installed the measure without the program, but that the program had some influence over the timing of their decision, the level of efficiency they would have chosen or the number of measures they would have chosen.

The Energy *Fin*Answer® Process

Consultant Deliverable

Project Manager (PM) Activities

Preliminary Project Development

Customer signs
Letter of Intent

Scoping Project
Development Mtg.

Initial Visit
Report/Scoping Report

Energy Analysis (EA)
Proposal

PacifiCorp Approval
Task Order for EA

- Coordinate customer contact with account manager
- Provide collateral
- Ask project screening questions
- Determine general scope of project
- Assign scoping to consultant
- If >16 hrs for scoping, get estimate from consultant, obtain internal approval and send Task Order Agreement (TOA)

Initial visit/scoping report
(e-mail to PM)

- Obtain customer feedback on report
- Finish screening questions
- Based on PM assessment of customer intent to implement, request EA proposal

EA Proposal
(can be attached to end of
initial visit)
e-mail to PM

- Review EA Proposal with Customer
- Based on PM assessment of customer intent to implement request internal approval of EA Proposal

Engineering Phase

Perform Energy Analysis (EA)

Quality Control (QC)
Review of EA

Finalize EA

Present EA and
Proposed incentive

Draft EA report
including commissioning
(email to PM and QC)

QC letter
(email to PM and EA consultant)

**QC response letter,
Final EA Report**
(email to PM and QC)

Present EA in person
or via phone
(as requested by PM)

Review and provide comments

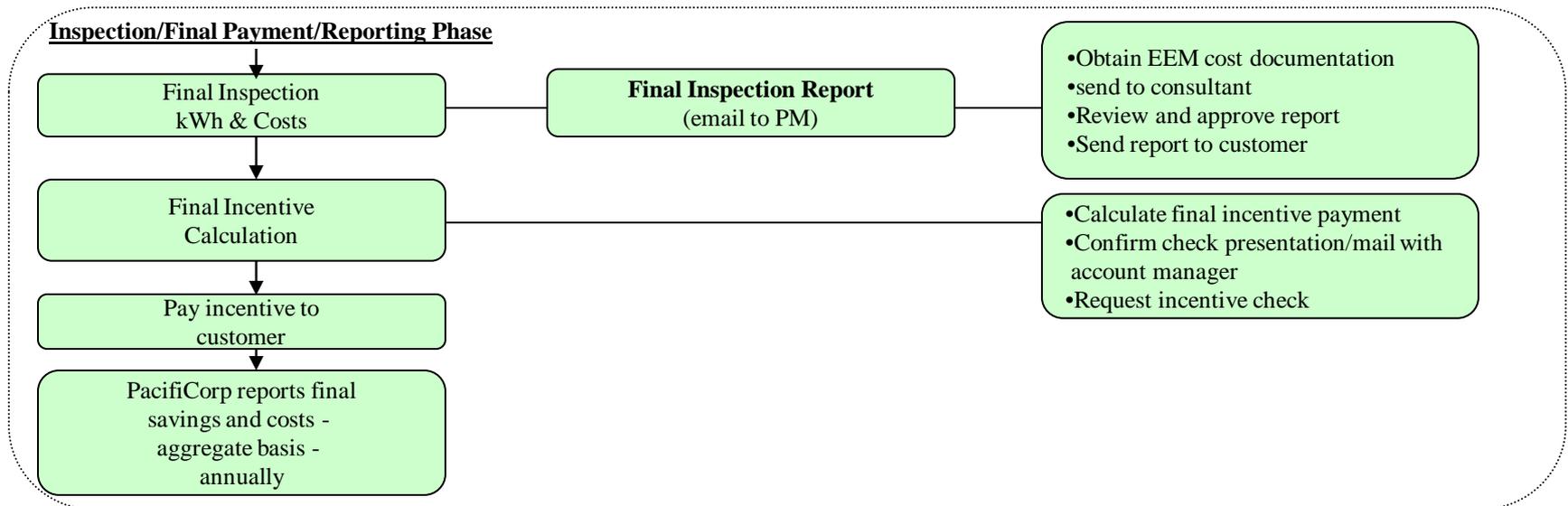
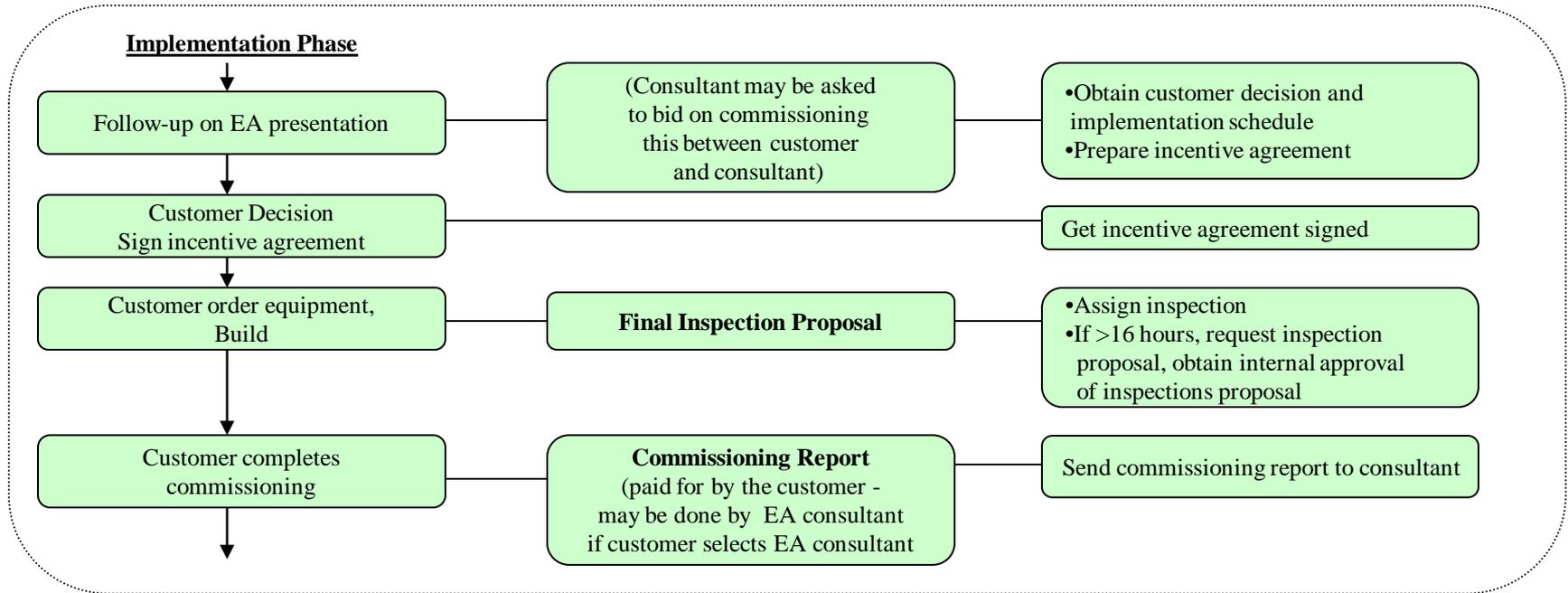
Review and provide comments

- Review report
- Prepare incentive offer
- Discuss report distribution with account manager
- Distribute report to customer

Arrange for report presentation

Consultant Deliverable

Project Manager (PM) Activities



Energy FinAnswer

This program offers incentives for more complex measures, including industrial process improvements and new building construction. Any cost-effective measure that improves a customer's electric energy efficiency may be considered for an incentive. Incentive levels are project-specific and based on prescribed calculations.

Work Plan and Approach

Task 1: Project Initiation Meeting

Within two weeks of the contract award, the Cadmus team will meet with the PacifiCorp project managers and the project review team. At least three days before the meeting, Cadmus will submit a draft agenda to the project managers for review, including a list of key personnel from the evaluation team who will attend. Also before the meeting, we will request PacifiCorp to provide information and materials describing the Program.

- Obtain feedback and clarification regarding our understanding of the Program design and theory to be sure we fully understand PacifiCorp's goals and objectives
- Refine the research objectives
- Discuss evaluation design and methods, including:
 - Review of our detailed work plan
 - Logistics of data-collection activities
 - Schedule
- Discuss data requirements, including:
 - All relevant filings
 - Program marketing plan and materials
 - Program surveys
 - Participant databases

Task 2: Final Evaluation Work Plan

Cadmus will use the information from the initiation meeting to prepare a final work plan for the evaluation including the process evaluation, if PacifiCorp elects the optional task. The work plan will identify how the Programs will be evaluated on a state-by-state basis. The approaches for determining both gross and net savings will be presented in detail and the final program theory will be presented.

Cadmus believes that it is essential to maintain close communications with PacifiCorp Program staff during the evaluation. Consequently, the work plan will spell out a process of regular and as-needed communications to ensure the timely acquisition of necessary Program data and information, feedback of interim findings, and resolution of any problems that are encountered.

The final evaluation plan will include:

- A list of all questions to be answered

- Complete list of evaluation tasks
- Baseline discussion
- Detailed data-collection plan and schedule
- Mapping of evaluation questions to data-collection activity and method

The final evaluation plan will be delivered within one week of the project initiation meeting.

Task 3: Determine Gross Savings

As noted earlier, this is the core task for this evaluation. The key activities required by this task are:

- Development of a sampling plan
- Selection of appropriate data collection approaches for sampled projects
- Selection of appropriate analysis approaches for sampled projects
- Data collection
- Data analysis
- Extrapolation of results to sites not included in sample

Documentation Review

Cadmus will begin by reviewing documentation and other program materials relevant to the evaluation effort. We will give particular attention to the calculation procedures and documentation for savings estimates.

On-Site Verification

We will use on-site visits to verify measures installation, collect primary data to calculate savings impacts, and interview the facility contact person. We will stratify the number of site visits conducted in proportion to the number of rebates received for the major program components (such as lighting, motors, variable frequency drives, and compressed air systems).

Standard Engineering Calculations

We will perform standardized engineering calculations for customers whose sites we visit. Savings calculations will be determined from year-round operating parameters (such as building schedule, construction and occupancy). In addition, eQUEST will be used to model energy usage for new construction and where enough data are available to enable successful modeling.

Sampling

Cadmus will meter a sample of sites to verify building conditions, hours of operation and other relevant information. Data collected will be compared to *ex ante* energy saving estimates. We will coordinate with the Company and program implementer to conduct metering at a portion of the sites.

Interviews

We will conduct interviews with nonparticipants and market actors to assess standard practices for each technology rebated through the program. Standard practices may be quite similar to that prescribed through the program. Since energy use can be impacted by technology issues (such as

improper installation or sizing), data will also be collected to assess standard practices in these areas. These data will be used to adjust gross energy savings estimates.

Secondary Research

Through secondary research, we will examine results from comparable programs implemented at other utilities. Often, we can leverage current findings in programs related to the ones commonly employed in a commercial custom-rebate program. These data will be summarized and shared with PacifiCorp and program implementer as they become available and are relevant to the work being conducted.

Sampling Plan

In an evaluation like this, selecting a statistically valid sample is critical and requires a complex tradeoff between cost and accuracy. We have done a preliminary analysis of the Program data provided by PacifiCorp and developed an initial approach that balances these criteria; the final sampling plan will be developed in the first phase of the project and we will ensure that the statistical concepts and the underlying sampling procedures are clearly laid out and explained. The main driver in the sampling approach is how homogenous the population or subpopulations are (e.g., offices with lighting retrofits). We have used the current Program data and our experience from past evaluations of PacifiCorp's C&I programs to develop our proposed approach.

We will take the steps described below to develop the sampling plan:

1. **Select Desired Precision and Confidence Levels.** The width of the interval that brackets the true value of the parameter of interest indicates the level of precision. The confidence level is the probability that this interval will include the true value of the parameter. For example, at the end of conducting the site visits, we may conclude that we are 90-percent confident that 82.5 percent of measures are still in place, with the true value expected to be between 80 percent and 85 percent. This is 90 percent confidence and ± 3 percent precision (2.5 percent divided by the mid point value, 82.5 percent). The conventional recommendation for impact evaluation protocols is 90/10 (confidence-level percent /precision). This was originally adopted as the PURPA requirement for load research samples and has since become the norm.
2. **Decide on Level of Disaggregation.** Once the confidence and precision levels are determined, the next question to be resolved is to what level they should be applied (for the program overall, group of buildings, specific buildings, etc.). We have chosen to disaggregate and to set the 90/10-confidence/precision levels at the measure by building type level. This will guarantee that 90/10 levels (at minimum) are achieved for the Program overall as well as at the state level.
3. **Determine Sample Sizes.** Based on the information above and results from prior PacifiCorp C&I program evaluations (to provide an estimate of mean values and standard deviations used to calculate the coefficient of variation, or CV), we determined the preliminary sample size for each program year by state. We have used a CV value of 0.4 based on prior evaluations; the actual sample design will be based on CVs calculated for each subpopulation.

4. ***Adjust Sample Sizes for Finite Populations.*** Due to the small size of some building type/end-use groups, it is possible to apply a finite population correction to reduce the sample size of these subpopulations and still meet the 90/10 requirement. We applied the correction where possible to adjust the required sample size.
5. ***Adjust Sample Sizes Using Previous Evaluation Results.*** We believe it is desirable and cost-effective in this study to leverage the data from prior PacifiCorp C&I program evaluations to minimize the number of new sites required in our samples for this evaluation. Consequently, we will review the historical PacifiCorp C&I program evaluations, identified building type/end-use combinations for which verified savings were determined, and subtract the number of these projects from the quantity required to meet the 90/10 statistical test.
6. ***Assign Verification Method to Sampled Sites.*** For our proposed sampling plan, within each stratum of building type/end-use, we will divide the needed samples into those where the data would be obtained with site visits and those requiring project file/telephone verification. To include the sites with the largest contribution and the most variability of impacts in our proposed sample, projects with large savings or complex measures and applications will be assigned site visits to estimate savings on an individual basis. The remainder of the sites in our samples will consist of projects that appear to be of intermediate complexity and/or impacts. They will be sampled and verified through a review of the project files and telephone calls to the customer and project engineers, as needed. The final sample selections and allocations will be made at the beginning of the study.

Data Collection

Data collection will begin with a thorough review of PacifiCorp's electronic tracking database. We will then copy all relevant hard-copy project information. Cadmus will coordinate collection of this information with Program staff; our familiarity with both the electronic and hard-copy information will minimize the assistance required from PacifiCorp staff.

Our data collection will be tiered based on the characteristics of the study samples. Prior to any primary data collection, we will provide PacifiCorp with a list of all samples and our selected data collection approaches by project. This will permit PacifiCorp Program staff and account managers an opportunity to inform customers about our research plans and timeline as preferred.

For the site-visit verification projects, we have developed on-site data collection protocols that will identify the systems to be examined, parameters to be determined, readings to take, and measurements required (where appropriate). We will contact the appropriate customer representative (and potentially the project implementer) to schedule the site visit. The visit will be scheduled at a convenient time for the customer and coordinated with other site visits to minimize travel costs. During the site visits we will:

- Collect and document all necessary equipment and measure information
- Verify measure installation and operation
- Identify and record any equipment or performance changes from the project documentation
- Document operating schedules and settings
- Determine basic customer information about the effects of the Program and what the customer would have done in the absence of the Program

For the project file/phone verification projects, we have developed an introduction script that will be used to set up the phone call. Each call will be tailored to the measures installed based on the information within the project files. Customers will be asked to provide the same types of information collected for the site-visit projects. As necessary, we also will contact the project implementer to fill any gaps in the information provided by the customer.

Although it is not possible to know for sure at this point which, if any, projects should be verified using direct metering, we have identified the characteristics of projects that may be candidates for direct metering in addition to measure verification. Direct metering may be warranted when complex systems are installed (especially upgrades that O&M staff may be unfamiliar with); the potential for customer changes is high; notable changes have occurred since PacifiCorp conducted its review or commissioning; or new operating conditions have been implemented such as a new schedule. Metering is important for determining the start/stop times of equipment, whether end-uses are using more or less energy than anticipated, the extent of cycling, etc.

The decision on the extent of metering to conduct will take into account tradeoffs between resources required and data quality. Based on our past experience evaluating PacifiCorp's C&I programs, we believe sufficiently accurate information can be collected for most projects without metering. Our proposed approach, however, allows for the possibility of selectively targeted metering.

Finally, in addition to the direct verification data collection described above, we will obtain billing data from PacifiCorp for all projects for two years before and all months since the project was implemented. Cadmus is thoroughly familiar with PacifiCorp's customer billing database and has requested and analyzed these data in the past. These data will be used, as needed, in the energy savings analyses.

Data Analysis

As with data collection, different data analysis approaches will be selected for different projects depending on their characteristics. In general, different methodologies will be used for the commercial and industrial projects to analyze energy consumption and estimate savings. One overall objective of our strategy for conducting the analyses is to maintain a fundamental consistency with prior approaches, without unnecessarily limiting analytic flexibility. This will ensure that the most appropriate analysis techniques are applied, while leveraging of past evaluations and consistency with them are maximized. Our proposed approaches are discussed below.

Overview

The objective of the energy and demand analysis is to estimate the evaluated savings and compare them to the expected savings to develop realization rates. We intend to analyze projects at the building and measure level. These results will provide realization rates at this level that can be used in extrapolations to projects that are not verified and analyzed directly. Verified savings for each building/end-use type will be used to extrapolate to the same combination in participant sites not directly verified. This approach has worked successfully and produced accurate and credible results for prior PacifiCorp C&I program evaluations.

We propose to apply five basic analysis approaches:

- Building simulation modeling
- Engineering calculations

- Billing data analysis
- Extrapolation of realization rates from projects that were evaluated through one of the other methods
- Deemed savings

Selection of the most appropriate methodology will be done on a case-by-case basis depending on criteria including these:

- Type of building
- Vintage of the building (that is, new or existing)
- Magnitude of expected energy savings
- Types of measures installed
- Type of analysis conducted to estimate expected savings and availability of information from the analysis

We propose to categorize projects into one of three groups depending on their characteristics. Category 1 will include less complex projects (often lighting only) with small or medium energy savings, and medium complexity projects with small energy savings. Category 3 projects are the more complex ones with sizable estimated energy savings. Category 2 projects are those that fall between. We make no distinction in the categorization process between projects at industrial and commercial sites; however, in general projects at industrial sites are likely to be more complex and fall into Category 3.

Energy Savings Calculation Methods

We will select an energy and demand analysis technique for each project from the five listed earlier. The five basic analytic techniques are described briefly below.

Simulation Modeling

We propose to use eQUEST to conduct the building simulation analyses.¹ eQUEST requires the user to first define a base case of energy use describing the existing building, in the case of retrofit projects, systems, and operations that can then be compared to the facility with the energy-efficiency measures (EEMs) installed. In the case of new buildings, the initial process is reversed. To create a base case, the following must be defined: size and structural makeup of the building; all HVAC equipment specifications; lighting and energy use; occupancy; and schedules. These data will be obtained from the project files, site visits, or interviews with the customer or energy analyst who conducted the original analysis. The base case analysis will be calibrated to annual energy use with pre-implementation billing records for retrofit buildings or post-construction billing data for new buildings. After the model is calibrated, an installed EEM will be added to the model for retrofit projects or subtracted from the model in the case of new buildings; the change in energy use and demand will provide the estimate of the evaluated energy savings. Our analysis will take into account the changes observed through our verification data collection process. We anticipate that it will be possible to use prototypical building descriptions for many of the buildings analyzed. Using

¹ eQUEST is publicly available software to simulate building hourly energy consumption. eQUEST uses the widely reviewed and validated DOE-2 simulation “engine” to perform the energy analysis. eQUEST extends and expands DOE-2’s capabilities by including interactive operation, dynamic/intelligent defaults, and methodological improvements.

prototypes will simplify the analysis process while maintaining acceptable accuracy in the results. eQUEST provides the flexibility to build upon prototypes using its default building characteristics.

Engineering Calculations

We plan to use engineering calculations to verify energy savings in two general situations. In projects where an implemented EEM affects a specific facility system, such as cold storage refrigeration, the original energy savings estimates are likely to be based on engineering modeling of the system alone. In these cases, we will review the original engineering analysis and determine whether our verification procedure identified any changes in the assumptions used in the original analysis. We also will contact the project manager and energy engineer, as needed, to resolve any issues, changes, or discrepancies that might affect the estimated energy savings. If necessary, we will adjust the original savings estimates using the same basic methodology or work with the energy engineer who originally analyzed the project to revise the estimates.

In the second type of situation, we propose to apply engineering calculations to selected projects to confirm that the original analysis was appropriate and produced reasonable savings estimates. We plan to do this in cases where the original analysis was very complex and would require extensive data collection for modeling purposes (e.g., where the original facility had been modeled using a complex building simulation based on complete building characteristics data). In these cases, we will apply simplified engineering calculation methods to ensure that the estimates from the more complex analysis conducted initially were reasonable. In other cases, such as lighting retrofits, the calculations will involve simplified approaches based on verified operating hours and end-use power consumption.

We anticipate using a range of engineering algorithms to estimate savings based on the specific measures implemented. In general, we expect our selected engineering calculation methods to duplicate the method used when the savings were first derived to minimize differences due to methodology.

Billing Data Calculations

We anticipate that billing data analysis will be used in a hybrid approach in conjunction with the building simulation modeling for model calibration, as described above. Billing data analysis is likely to be used as the primary analysis method for selected complex projects for which simulation modeling would require extensive primary data collection and an intensive modeling effort. For billing data analysis to be applied effectively, the expected energy savings will have to be relatively large so that changes in energy consumption will be estimated accurately by this approach.

Extrapolation

For relatively small and simple projects, we propose to use building type/measure realization rates to estimate energy and demand savings. This approach will fully leverage the results from past PacifiCorp C&I program evaluations and realization rates will be updated to incorporate the results of the 2005-08 projects analyzed using one of the other methods described above.

Deemed Savings

Savings for certain measures such as vending machine controls and LED traffic lights will be calculated based on the number of units installed. Savings per unit will be deemed based on prior studies and will incorporate any necessary adjustments to take into account information from any studies conducted since the last evaluation of this Program.

HVAC Interactions

Projects that improve lighting energy efficiency can affect heating and cooling loads. Specifically, more efficient lighting can reduce cooling loads on the HVAC system, but increase heating loads since the heating system has to compensate for the reduced heating provided by the lighting. A thorough literature review was conducted for the last evaluation of this Program and a methodology was developed to estimate HVAC interactions attributable to lighting efficiency improvements. We propose to apply the same methodology as part of this analysis. In the cases where we elect to use building simulation model or billing data analysis, the methodology will implicitly incorporate these interactions; in these cases, we plan to back-calculate the contribution of HVAC interactions based on the approach used in the most recent analysis for PacifiCorp.

Task 3.5: (Optional) Conduct Process Evaluation

Process Evaluation Objectives

Process evaluations focus on program implementation issues including administration, program-delivery mechanisms, on-going activities, and perceptions and responses of participants and nonparticipants.

The objectives of this evaluation will be to answer the following questions:

- How did participants become aware of the Programs?
- How aware were nonparticipants and how knowledgeable were they about the Programs?
- How did participants choose which Program(s) to participate in?
- Why did nonparticipants elect to not participate? What would have increased their likelihood of participating?
- How effective were PacifiCorp's materials and activities to inform and educate customers about the Programs?
- How efficient, simple, and understandable were all stages of the participation process?
- How efficient and effective were the utility's internal administration and implementation processes?
- What role did vendors play in the Programs?
- How effective were the Programs at minimizing the barriers to increasing energy-efficiency?
- How satisfied were all parties with the way the Programs worked?
- How could the Programs be improved to increase participation, efficiency, and effectiveness?
- What the participant would have done in the absence of the Program?
- What other actions did participants and nonparticipants take as a result of the Program?

Approach Overview

The process evaluation will be conducted through two major types of activities. The first is a review of key Program materials and other studies. The Program materials reviewed will include PacifiCorp's Program description documents; internal processing, tracking, and approval systems; application forms; and any outreach materials used to inform potential participants or vendors about

the Programs. We also will review prior studies of similar programs to gain insights into how these programs were implemented and promoted and to characterize the needs of C&I customers, their interest in energy-efficiency, and their decision-making processes.

The second major activity will be a series of interviews with key market actors. These will be in-depth interviews conducted by Cadmus staff and they will address the core questions listed earlier that define the process evaluation's objectives. The following table shows the number of interviews planned with different groups of actors.

Documentation Review

We will work with PacifiCorp's staff to identify and collect C&I Program description documents, internal tracking and approval reports, application forms, databases, and any outreach materials used to inform potential participants or vendors about the Programs. The materials will include any that are specific to individual jurisdictions and different customer types or audiences.

We will review the documents and provide an objective assessment of each, taking into account the following characteristics:

- Clarity: Are the documents and materials clear and unambiguous? Is the language appropriate for the audience?
- Format: Are the format and layout suitable for the purpose? Are accompanying graphical materials effective? Are additional graphical materials desirable?
- Usefulness: Do the materials provide all information needed? Do they indicate what steps should be taken next?

We also will obtain previous studies of similar programs directed at C&I customers. Our review will provide a market characterization and assist in the design of interviews of nonparticipants. This review will address these topics:

- What opportunities exist for energy-efficiency upgrades among various C&I customers based on customer type and size
- What factors encourage such customers to make efficiency upgrades
- What barriers limit efficiency upgrades by these customers
- How decisions are made about efficiency upgrades
- What types of programs have been successful with C&I customers
- What types of promotional efforts are most successful with different customers in this group

Survey Instruments

Cadmus will prepare draft instruments for conducting telephone interviews with key market actors. Separate instruments will be drafted for interviews with Program participants, nonparticipants, state agency staff and regulators, trade allies (vendors and service providers), and PacifiCorp staff. Information from Task 2 will be used to help design questions related to Program materials and documents and drawing upon findings from prior studies of programs directed at similar customers.

The draft interview instruments will be provided to PacifiCorp for review. Based on PacifiCorp's comments, we will revise and finalize the instruments.

Participant Interviews

The Program participant instrument will include questions addressing the following issues:

- How participants become aware of the Programs
- Where they got their information about the Programs
- The role of vendors
- How they chose which Program(s) to participate in and how the participation decision was made
- How effective PacifiCorp's outreach efforts and materials were
- How easy it was to participate in the Programs
- Whether the incentive levels and types were appropriate
- Whether the energy savings assessment process was adequate
- How satisfied participants were with Program implementation and outcomes
- What energy-efficiency improvements participants would have made if they had not participated in the Programs
- Whether the Programs led participants to make energy-efficiency improvements outside of the Programs or will in the future
- Recommendations for improving the Programs
- What the participant would have done in the absence of the Program?
- What other actions did participants and nonparticipants take as a result of the Program?

Nonparticipant Interviews

The instrument for interviewing nonparticipants will include questions addressing the following:

- Whether they were aware of the Programs and, if they were aware, their level of knowledge of each Program
- Why they chose to not participate
- How decisions are made about energy-efficiency investments and Program participation
- What would have increased their likelihood of participating
- Whether the incentive levels and types were appropriate

- What energy-efficiency improvements nonparticipants made without participating in the Programs and how much influence the Programs had on these decisions
- Recommendations for improving the Programs

Agency Staff and Regulator Interviews

The interview instrument for state agency staff and regulators will address the following:

- Awareness of and knowledge about each of the Programs
- How effective PacifiCorp's materials and activities were to inform and educate various audiences about the Programs
- What role vendors played in the Programs
- How effective and efficient the Programs were
- How satisfied various parties were with the way the Programs worked
- Whether the Programs met their expectations regarding integrated resource planning goals or other state mandates

Trade Ally Interviews

Interviews with trade allies will focus on these topics:

- How they became aware of the Programs and their level of knowledge of each Program
- How aware potentially participating customers were about the Programs
- What role they played in promoting the Programs and working with utility customers to participate
- What customers liked and disliked about the Programs
- How effective PacifiCorp's outreach materials and activities were and how well they addressed customers' concerns
- How efficient, simple, and understandable the participation process was
- How effective the Programs were at minimizing the barriers to increasing energy-efficiency
- What energy-efficiency improvements their customers were typically making outside of the Programs
- How much influence the Programs had on energy-efficiency improvements made receiving Program incentives
- How satisfied trade allies were with the way the Programs worked and what improvements they would recommend

PacifiCorp Staff Interviews

Interviews with PacifiCorp's staff and customer representatives will document the administration and implementation of the Programs and obtain the utility staff's perspectives on the effectiveness of the Programs. Questions that will be addressed include the following:

- What objectives PacifiCorp set for each Program

- How effective PacifiCorp's Program promotion and outreach materials and activities were
 - How participants applied for each Program
 - At what point in the projects participants could apply for the Programs
- What materials had to be submitted with the applications (e.g., invoices, drawings)
- Who received the applications and what the steps were for reviewing and approving applications and setting up payments
 - What post-inspections were required
- How the need for commissioning was determined, who did it, how results were reported to PacifiCorp, and what was done if performance was not satisfactory
- What electronic tracking databases were used, what they contained, how data were entered, and who was responsible for the databases
- What quality assurance was done on PacifiCorp's tracking information
- How incentives were paid out for different Programs and how they were documented and tracked
- How efficient, simple, and understandable all stages of the participation process were
- How efficient and effective the utility's internal administration and implementation processes were
- What role vendors played in the Programs
- How effective the Programs were at minimizing the barriers to increasing energy-efficiency
- How satisfied the parties were with the way the Programs worked
- How the Programs have evolved over the years and changes that have been made since 2002
- What recommendations these parties have for improving the Programs

Conduct Interviews

Cadmus project staff will conduct telephone interviews with representatives of the various interest group categories listed earlier.

We will interview 70 Program participants in Utah, 50 in Washington, and all 5 in Idaho. They will be selected from the participating customers included in the impact evaluation and will represent the range of projects. We plan to select one-third from the projects for which site visits are conducted in the impact evaluation and two-thirds from the projects for which file review or telephone verifications are conducted.

Nonparticipant interviewees will be chosen in consultation with PacifiCorp. We will meet with PacifiCorp staff to select interviewees who would provide information on the issues of most interest to PacifiCorp. For example, PacifiCorp might want to

- Examine why certain types of customers have been reluctant to participate in the Programs and what types of outreach would be most effective to recruit them
- Determine why customers in different size ranges (in terms of electricity consumption) have been underrepresented in the Programs

- Determine how energy-efficiency investment decisions are made within certain customer categories and how the Programs could be modified to increase participation in selected categories.

We will work with PacifiCorp's customer database to select a sample of nonparticipants who will provide the information needed to respond to the utility's primary interests. We plan to interview an equal number of nonparticipants as participants split between commercial and industrial customers to meet PacifiCorp's needs.

Two representatives will be identified to interview from each state for a total of *6 state energy agency or utility regulatory body staff or decision makers*. Interviewees who are knowledgeable about the PacifiCorp Programs or similar programs will be selected for the interviews. Some will be agency staff and others may be commissioners or other decision makers.

We will use information on projects conducted under PacifiCorp's Programs to identify trade allies who have worked with participating customers. In the states where customers have participated, we will interview knowledgeable personnel at several firms. In total, we will interview staff at *25 trade allies* distributed across the three states.

Finally, we will interview *2 PacifiCorp staff members and 2 implementer staff* who are knowledgeable about the Programs. The interviews will be split between Program implementation staff and customer representatives who service customers that would be eligible to participate in the Programs.

Task 4: Calculate Net Program Savings

Task 3 will provide estimates of gross energy and demand savings. Gross savings do not account for underlying efficiency changes that would occur in the absence of Program participation. To properly attribute savings to the Program, it is necessary to net out savings that would have occurred if these customers had not participated in the Program; the result would be an estimate of net Program savings.

There are two general approaches for developing estimates of net savings. One relies on detailed analyses of changes in energy consumption of both participants and nonparticipants. The other draws upon survey data elicited from participants and, sometimes, nonparticipants that provide an estimate of what efficiency improvements would have been made without Program participation.

Both of these approaches would require a substantial research effort beyond that described in Task 3. However, we believe that is important to develop an accurate estimate of the net-to-gross ratio (NTG) that can be used to estimate net savings from the estimates produced by Task 3. A major component of the process evaluation we propose for Task 3.5 would be the development of an estimate of the NTG through survey data. If PacifiCorp elects to not conduct the process evaluation, we propose to conduct a survey of the same number of customers, but more limited in scope to NTG questions.

Once estimates of the NTG ratio are developed, we will apply them to our gross savings estimates to derive net savings estimates by state and by Program.

Task 5: Provide Net Program Savings to selected sub-contractor

As requested in the RFP, Cadmus will provide the calculated net program savings to PacifiCorp's subcontractor selected to provide cost-effectiveness analysis. The net savings will be provided by state and Program and, if possible, by project and measure. We will work with the subcontractor to address any questions and to incorporate the cost-effectiveness analysis into the draft and final report.

Task 6: Provide Project Management and Progress Reporting

Project management and progress reporting will be provided as outlined in the RFP. At minimum, bi-weekly conference calls will be scheduled to formally discuss the project status. We anticipate more frequent communication during the data gathering portion of the project during which we will be working with PacifiCorp staff to gather project information and to schedule site visits. We believe it is important that PacifiCorp customer field representative be informed prior to our contact with the customer. The field representative may prefer to act as the point of contact and assist in scheduling our site visits or phone contact.

Monthly status reports will be included with each invoice that detail:

- A summary of the bi-weekly conference calls
- A summary of accomplishments to date and for the prior month
- Current activities
- A copy of the master spreadsheet with most recently updated realization rates
- Variances in schedule or budget and any other issues or concerns.

Our team is very open to course changes throughout the evaluation. We will report preliminary findings to the Company as data are collected. If in the process, our team along with Company staff decide that changes in the data collection methods, instruments, sampling design and planned data analysis is needed, we will gladly revise our evaluation plan. We never approach evaluation with a plan set in stone, we deeply believe that evaluations need to evolve and allow for course changes for accomplishment of optimal results.

Task 7: Present the Draft Evaluation Report and Collect Comments

We will prepare one report for each state for each program. Reports will be submitted to PacifiCorp in draft form, and all comments and issues will be addressed before submission of a final report. In addition we will prepare presentations of key findings and make presentations to the state DSM advisory groups and regulatory commission staff as directed by the Company. Cadmus has presented evaluation findings before the Washington DSM advisory group and the Utah DSM advisory group on numerous occasions in the past and is very familiar with both the process and the participants. Information requests from the advisory groups or commission staffs will be responded to as needed.

The reports will include the following:

- Executive summary
- Introduction with a program description

- Impact evaluation assumptions, methodology, and results for commercial and industrial facilities
- Process evaluation assumptions, methodology, and results (if optional process evaluation is selected)
- Gross and net program savings
- Conclusions and recommendations
- Appendices with supplementary materials

Task 8: Finalize C&I Program Evaluation

Cadmus will incorporate comments received from the Company and from the Utah DSM advisory group into the final report, as appropriate. The report will be produced, bound and provided to the Company.