Final Evaluation Report for California's Energy FinAnswer Program (PY 2009-2011)

Prepared for:
Pacific Power

Prepared by:

NAVIGANT In partnership with EMI

Navigant Consulting, Inc.
1375 Walnut Street
Suite 200
Boulder, CO 80302
303.728.2500
www.navigant.com

Energy Market Innovations, Inc.
83 Columbia St
Suite 400
Seattle, WA 98104
206-621-1160
www.emiconsulting.com

February 15, 2013

NAVIGANT

Table of Contents

1. Executive Summary

This report provides findings and recommendations from the Impact and Process Evaluation of California's Energy FinAnswer program for program year 2009 through 2011. These results serve to inform improvements anticipated for future program cycles while also satisfying the California Public Utilities Commission's (the "Commission") filing requirements.

1.1 Program Background

The Energy FinAnswer program offers custom incentives and engineering services to commercial and industrial customers in California for implementation of Energy Efficiency Measures (EEMs).[1] The EEMs can include equipment installed as upgrades (i.e., retrofits) to existing equipment and equipment installed as part of new construction projects. Pacific Power project managers and an established network of energy engineering firms implement the Energy FinAnswer program under contract with Pacific Power. The program offering includes:

- A vendor-neutral, investment-grade energy analysis to identify energy efficiency opportunities
- Financial incentives equal to $0.12 per kWh annual energy savings plus $50 per kW average monthly demand savings (up to 50 percent of project costs)
- Design assistance, design team incentives, and a sliding scale incentive formula based on the percentage by which a project exceeds the energy code

Further detail on the Energy FinAnswer program can be found in section 2.2 of this report.

1.2 Evaluation Objectives

This evaluation addressed the following objectives:

- To verify the annual and combined 2009 through 2011 gross and net energy and demand impacts of Pacific Power's Energy FinAnswer program;[2]
- To review the effectiveness of program operations, highlighting achievements and identifying opportunities for process improvement;
- To characterize participant and near-participant motivations;
- To perform cost effectiveness calculations on evaluated results for each year evaluated, in total, and providing feedback on input assumptions; and
- To highlight Pacific Power's regulatory reporting compliance efforts while ensuring accuracy.

1.3 Impact Evaluation

The Impact Evaluation of Pacific Power's Energy FinAnswer Program quantified energy and demand impacts for incented technologies, including:

- Quantifying the impacts of all measures and activities on annual gross energy consumption while accounting for any interactions among technologies.
- Establishing post-implementation performance profiles for installed measures and activities.

[1] Irrigated agriculture projects are considered industrial facilities within the Energy FinAnswer Tariff A-125.
[2] The evaluation team planned for 90/10 by program and state; the final confidence/precision for California's Energy FinAnswer is 90/1.7. Industry standard is a minimum of 80/20

» Explaining discrepancies between the results of this study and the reported savings estimates.

Evaluation metrics and parameters reported through this effort include:

» Gross and Net *evaluated* program energy and demand savings estimates and realization rates for incented projects.

» Energy usage profiles for commercial and industrial (C&I) technologies metered through on-site Measurement & Verification (M&V) activities.

1.3.1 Key Impact Evaluation Findings

A combination of in-depth project file reviews, interviews with facility staff, and on-site M&V activities involving spot measurements and end-use metering of incented equipment informed the evaluated savings estimates for each project sampled during the evaluation. Of the seven projects that participated during the 2009-2011 program years, four projects (representing 99 percent of claimed savings) were included in on-site verification activities.

The 2009-2011 gross program demand savings realization rate was 112 percent and the gross program energy savings realization rate was 102 percent. Table 1 provides the *program-level* reported and evaluated kW and kWh realization rates:

Table 1: Program-Level Gross Realization Rates for California Energy FinAnswer

Program Year	Program Reported kW	Gross Program Evaluated kW	Gross Program kW Realization Rate	Program Reported kWh	Gross Program Evaluated kWh	Gross Program kWh Realization Rate
2009	13.0	13.2	*102%*	63,643.0	62,657	*98%*
2010	3.0	4.5	*150%*	7,088.0	11,000	*155%*
2011	194.0	217.1	*112%*	2,852,039.0	2,910,407	*102%*
All	210.0	234.9	*112%*	2,922,770	2,984,064	*102%*

Overall, the evaluation team found the reported savings methodologies for custom measures incented through the Energy FinAnswer program to be consistent with industry standards. The reported findings were adjusted based on end-use metering findings to obtain the realization rates.
Measure specific findings include:

One project site evaluated comprised over 99 percent of program savings. The project included two measures: a boiler controls upgrade and a lighting retrofit. Savings from the boiler retrofit were realized through installing a variable frequency drive (VFD) on the induced draft (ID) fan, cooling tower fans, and water pumps. Lighting savings were primarily due to more efficient fixtures including motion sensors.

The evaluation of the Energy FinAnswer program addressed the 2009-2011 program years. ***The potential for recall bias among program participants may be exacerbated*** by both the time that passed since they participated and the presence of multiple decision makers, only a few of which could be interviewed.

The Evaluation Team calculated an average Net-to-Gross Ratio (NTGR) of 0.99 for the Energy FinAnswer program across the evaluated period, for program years 2009-2011. The methodology used in this calculation is provided in detail in Section 3.1.5, Net kWh and kW Savings. This value is consistent with studies completed by the Evaluation Team for similar C&I programs offered in New

York, Wisconsin, Vermont, and California where self-reported free-ridership and spillover estimates yielded Net-to-Gross ratios between 0.67 and 1.23.

1.3.2 Cost Effectiveness

The evaluation team also calibrated and updated the cost-effectiveness models based on the Impact Evaluation results. As Table 5 indicates, the programs were cost-effective by the Total Resource Cost (TRC) test over the course of the 2009 through 2011 evaluated program years with a combined TRC of 4.86. Detailed cost effectiveness tables for each program year and combined 2009 through 2011 are provided below in Table 2 through Table 5. Cost effectiveness results are also provided from the E3 Model for TRC, UTC, and RIM tests and is not applicable to PTRC and PCT tests.[3]

Table 2: 2009 Evaluated Benefit Cost Ratios

Benefit/Cost Test Performed	Evaluated Gross Savings	Evaluated Net Savings	PacifiCorp Evaluated Costs	PacifiCorp Evaluated Benefits	PacifiCorp Model B/C Ratio	E3 Model B/C Ratio
Total Resource Cost Test (PTRC)	62,657	62,156	$103,002	$70,642	0.69	N/A
Total Resource Cost Test (TRC)	62,657	62,156	$103,002	$64,220	0.62	0.59
Utility Cost Test (UCT)	62,657	62,156	$60,602	$64,220	1.06	1.00
Rate Impact Test (RIM)	62,657	62,156	$127,737	$64,220	0.50	0.46
Participant Cost Test (PCT)	62,657	62,156	$51,115	$75,983	1.49	N/A

Table 3: 2010 Evaluated Benefit Cost Ratios

Benefit/Cost Test Performed	Evaluated Gross Savings	Evaluated Net Savings	PacifiCorp Evaluated Costs	PacifiCorp Evaluated Benefits	PacifiCorp Model B/C Ratio	E3 Model B/C Ratio
Total Resource Cost Test (PTRC)	11,000	10,912	$53,517	$13,018	0.24	N/A
Total Resource Cost Test (TRC)	11,000	10,912	$53,517	$11,834	0.22	0.21
Utility Cost Test (UCT)	11,000	10,912	$45,994	$11,834	0.26	0.24
Rate Impact Test (RIM)	11,000	10,912	$58,027	$11,834	0.20	0.18
Participant Cost Test (PCT)	11,000	10,912	$8,587	$13,126	1.53	N/A

Table 4: 2011 Evaluated Benefit Cost Ratios

Benefit/Cost Test Performed	Evaluated Gross Savings	Evaluated Net Savings	PacifiCorp Evaluated Costs	PacifiCorp Evaluated Benefits	PacifiCorp Model B/C Ratio	E3 Model B/C Ratio
Total Resource Cost Test (PTRC)	2,910,407	2,887,123	$426,589	$2,988,238	7.00	N/A
Total Resource Cost Test (TRC)	2,910,407	2,887,123	$426,589	$2,716,580	6.37	7.27
Utility Cost Test (UCT)	2,910,407	2,887,123	$197,407	$2,716,580	13.76	15.80
Rate Impact Test (RIM)	2,910,407	2,887,123	$3,742,226	$2,716,580	0.73	0.95
Participant Cost Test (PCT)	2,910,407	2,887,123	$347,211	$3,688,657	10.62	N/A

[3] Navigant utilized an energy efficiency calculator, E3 Calculator developed by Energy+Environmental Economics (E3) as a comparison for the benefit/cost test results performed using Pacific Power's custom approach. The E3 Calculator is used by all California investor-owned utilities to compute the cost-effectiveness of energy efficiency programs. Pacific Power originally used the version *Pacific Gas and Electric (PG&E_10-12 4g5)* for program design, consequently Navigant felt this version was appropriate for an accurate comparison.

Table 5: Combined 2009 through 2011 Evaluated Benefit Cost Ratios

Benefit/Cost Test Performed	Evaluated Gross Savings	Evaluated Net Savings	PacifiCorp Evaluated Costs	PacifiCorp Evaluated Benefits	PacifiCorp Model B/C Ratio	E3 Model B/C Ratio
Total Resource Cost Test (PTRC)	2,984,064	2,960,191	$583,108	$3,071,897	5.27	N/A
Total Resource Cost Test (TRC)	2,984,064	2,960,191	$583,108	$2,792,634	4.79	5.42
Utility Cost Test (UCT)	2,984,064	2,960,191	$304,002	$2,792,634	9.19	10.42
Rate Impact Test (RIM)	2,984,064	2,960,191	$3,927,990	$2,792,634	0.71	0.91
Participant Cost Test (PCT)	2,984,064	2,960,191	$406,913	$3,777,766	9.28	N/A

1.4 Process Evaluation

The Process Evaluation characterized the Energy FinAnswer program from the perspective of program staff, participants, near participants, and energy engineers in order to identify both existing strengths and areas for refinement that may better serve the California C&I market in future years. It also included consideration of the perspective of non-participants to identify the level of program awareness and the barriers to actions to improve electric efficiency.

Between May and August 2012, the evaluation team surveyed or interviewed 33 customers: five participants, five near participants, and 23 non-participants.[4] The evaluation team also conducted in-depth telephone interviews with five energy engineers – active engineers who conduct analyses as part of the program. These surveys and interviews provided data that were combined with information from program administrative staff interviews to create a comprehensive view of the Energy FinAnswer program from 2009 to 2011.

1.4.1 Overall Process Evaluation Findings

The program is based on sound theory and design. The Energy FinAnswer program in California seeks to improve energy efficiency at commercial and industrial sites. The basic program theory is that providing technical assistance will help overcome information gaps for customers and providing an incentive will help the customers overcome cost barriers. The design is indicated in the program logic model in the program overview. The program concept and design are based on sound theory and practice in line with best practices for non-residential large comprehensive incentive program design.[5] The program includes a network of qualified engineers, inspections (site visits) before and after installation, and commissioning of mechanical equipment.

The program exceeded savings goals in 2011. The program reported energy savings of 2,852,039 kWh in 2011, greatly exceeding the energy savings goal of 7,088 kWh. No explicit energy savings, demand savings, or participation goals were outlined for the Energy FinAnswer program for 2009 or 2010.

Some communication challenges and delays were identified; more information is needed. Program staff at Pacific Power indicated that they had the resources and capacity to implement the program as planned, and program participants did not identify communication delays that would indicate resource or capacity constraints for the program. However, both near participants and energy engineers noted that there were some communication challenges and delays. Since the findings across data sources conflict, it is not clear if resource and capacity constraints are hindering the program process.

[4] Near participants are those customers who began working with the program but did not complete their projects as planned during the program years under study; these projects are identified as either cancelled or on hold. Non-participants are industrial customers that did not work with any program during the program years under study.
[5] Quantum Consulting. 2004. National Energy Efficiency Best Practices Study Vol. NR-5 Non-Residential Large Comprehensive Incentive Best Practices Report. Submitted to California Best Practices Project Advisory Committee.

The program is working as intended for participants. Both participants and energy engineers describe the program as operating as would be expected from the logic model. Also, two near participants did not move forward with projects after the energy analysis because the savings based on their project scope were not large enough to qualify for the program; *this indicates that the energy analysis and PM review are working to focus efforts towards projects with savings*. Customers who do begin working with the program mostly find out about it directly from Pacific Power, as is expected from the program logic model. Participants are influenced by Pacific Power incentives, saving energy, and saving money on energy bills.

Participants are mostly satisfied, keeping their equipment in operation, and achieving expected energy savings. When asked to rate their overall satisfaction with the program, three respondents were "very satisfied," one was "neither satisfied nor dissatisfied," and one was "somewhat dissatisfied." The two respondents who were less than somewhat satisfied with the program indicated the limited incentive was the main reason for their rating. These five respondents installed seven measures, and they indicated satisfaction with six of the seven installed measures; one heat pump installed through the program was not performing well. Five out of seven measures were meeting energy savings expectations and also providing other non-energy benefits. Non-energy benefits included improved lighting quality, more reliable equipment, and better control.

The program has low free-ridership but no attributable spillover. Most measures installed are at least partially influenced by the program. Participants indicated that just one of seven measures would have been installed at the same time without the program . There is no indication at this time of spillover from the Energy FinAnswer program from participants or participating energy engineers.

Customers identify high upfront costs and lack of access to capital as barriers to further action to reduce energy consumption and demand. More telling is the portion of respondents who stated that there were no further actions that their firm could take to improve efficiency: 40 percent of participants, 40 percent of near participants, and 65 percent of industrial class non-participants. These responses indicated that one barrier might be that the intended target population truly does not have additional energy efficiency actions or is not aware of possible additional actions. Given that they believe there are no other opportunities, it may be a challenge to gain their attention and educate them otherwise.

1.5 Program Evaluation Recommendations

Based on the findings from this evaluation, the evaluation team has identified the following recommendations to enhance the delivery efficiency and effectiveness of the Energy FinAnswer Program in future program cycles:

Recommendation 1: Include email in the marketing strategy. Non-participants indicated that their preferred methods of learning about programs and opportunities from Pacific Power were email and phone. The program already sends mailings in the form of newsletters and bill inserts. Extending the campaign to customer email would provide an additional avenue to generate program participation leads. This may also be the most cost-effective method of directly reaching out to the rural California territory. Use of email in this manner should result in higher participation rates at lower cost.

Recommendation 2:. Do follow-up reviews with program participants. This would provide Pacific Power a channel for further program communication, and help to mitigate other program-related issues. Within a year of measure installation and receipt of program rebates, Pacific Power should follow up to discuss satisfaction with the program/technology installed and to update customers on program and technology changes. Pacific Power should send short follow up emails to customers to touch base on their satisfaction with the program and recommend new ways to participate in the program. These actions could also help to mitigate issues regarding updated addresses, equipment mismatches, and lack of program awareness.

Recommendation 3: Include energy and demand savings calculations in a spreadsheet format. By providing this information in one consolidated location, future evaluation efforts will be more efficient and reduce the potential for comparing verified savings to incorrect or outdated project assumptions.

- Although each project properly documented the reported energy and demand savings estimates, the absence of savings calculations (particularly for demand savings) reduces the transparency of reported savings, along with the efficiency of evaluation efforts. Providing both the input assumptions and savings calculation methodologies will ensure the comparability and accuracy of reported and evaluated savings and will reduce associated evaluation costs.
- Include the clearly identified final Energy Savings table in project files for the evaluation. The data should include both baseline and current energy and demand usage as well as savings estimates. Utilizing consistent formats based on the FINAL numbers is important for all follow up activities, and will provide decision makers the key information needed to quickly assess the situation and take appropriate action relative to the inspections conducted. It is noted that the key elements are included in the documentation for each project, but it is often difficult to identify the final set of parameters used because the project files capture multiple changes/revisions to the application process.

2. Introduction

2.1 Objectives of the Evaluation

The Impact and Process Evaluation of California's Energy FinAnswer Program addressed the following objectives in support of Pacific Power's accelerated targets for energy efficiency achievements in California:

- Verified the annual and combined 2009 through 2011 gross and net energy and demand impacts of Pacific Power's Energy FinAnswerProgram;[6]
- Reviewed the effectiveness of program operations, highlighting achievements and identifying opportunities for process improvement;
- Characterized participant and near-participant[7] motivations;
- Performed cost effectiveness calculations on evaluated results by program for each year evaluated and in total, and providing feedback on input assumptions; and
- Highlighted Pacific Power's regulatory reporting compliance efforts while ensuring accuracy.

The following report provides context on evaluation findings while soliciting feedback from Pacific Power staff.

2.2 Program Description

The Energy FinAnswer program is intended to maximize the efficient use of electricity for new and existing loads in Commercial and Industrial Facilities by promoting the installation of Energy Efficiency Measures (EEMs). In 2011, the program had an energy savings goal of 7,088 kWh; there were no program savings goals in 2009 or 2010.

The Energy FinAnswer program offers custom incentives and engineering services to commercial and industrial customers in California on general service schedules A-25, A-32, A-33, A-36, AT-47, AT-48, LS-53, LS-58, OL-42, and PA-20 for implementation of Energy Efficiency Measures .[8] The EEMs can include equipment installed as upgrades (i.e., retrofits) to existing equipment and equipment installed as part of new construction projects. Commercial retrofit projects must cover a minimum size of 20,000 square feet per electric meter to be eligible. Commercial new construction and all industrial projects are eligible regardless of facility size. Pacific Power project managers and an established network of energy engineering firms implement the Energy FinAnswer program under contract with Pacific Power. The program offering includes:

- A vendor-neutral, investment-grade energy analysis to identify energy efficiency opportunities;

[6] For each program, statistically significant impacts of 90/10 confidence/precision will developed for the combined 2009 – 2011 program years and categories.

[7] Participants are those customers who completed a project with a Pacific Power's Energy FinAnswer program in 2009, 2010, or 2011. Near participants are those who began a project with a Pacific Power's Energy FinAnswer program in 2009, 2010, or 2011, but did not complete their projects , and non-participants did not begin a project or complete a project with a Pacific Power's Energy FinAnswer program in 2009, 2010, or 2011.

[8] Irrigated agriculture projects are considered industrial facilities within the Energy FinAnswer Tariff A-125.

» Financial incentives equal to $0.12 per kWh annual energy savings plus $50 per kW average monthly demand savings (up to 50 percent of project costs); and

» Design assistance, design team incentives, and a sliding scale incentive formula based on the percentage that a project exceeds the energy code.

Incentives offered through this program are subject to a cap that prevents the incentive from reducing the payback period for a project below one year. Lighting energy savings projects per Energy FinAnswer project are capped because lighting-only projects are handled through the FinAnswer Express program. The FinAnswer Express program is a prescriptive incentive program offered by Pacific Power to all non-residential customers. The Energy FinAnswer program includes a commissioning requirement and post-installation verification to document the energy savings and measure costs for installed measures. For comprehensive new construction and major renovation projects where the whole building exceeds energy code by at least 10 percent, Energy FinAnswer includes design assistance, design team incentives, and a sliding scale incentive formula based on the percentage that a project exceeds the energy code.

The incentive structure for both the design assistance and the energy analysis is defined in the Tariff Schedule A-125. Detail on the program activities and desired outcomes is provided in the discussion of the program logic model in Table 6.

Table 6: Incentive Structure for Energy FinAnswer[a]

Program Track	Design Assistance	Energy Analysis	Energy Analysis	Energy Analysis
Project Scope	Whole building	System/EEM	System/EEM	System/EEM
Type	New Construction/ Major Renovation	New Construction/ Major Renovation	New Construction/ Major Renovation	Retrofit
Energy Code Applies	Yes	Yes	No	No
Incentive	Varies based on savings relative to Code	$0.12/kWh Annual kWh Savings + $50/KW Average Monthly KW Savings		
Percent of Project Cost Cap	None	50%	50%	50%
Minimum Simple Payback Period	None	1 year (if the incentive brings the simple payback below one year, the incentive is reduced so the simple payback equals one year)		
Energy Savings Threshold	Must exceed code by 10% - whole building electric basis	Qualifying equipment must exceed code	None	None
Lighting Energy Savings Limit	75%	50%	50%	50%
Design Team Incentives	Honorarium and Incentive	Honorarium	Not Applicable	Not Applicable

(a) This table is modified slightly from the incentive table in Pacific Power Tariff A-125

2.3 *Program Changes from 2009 to 2011*

No changes to the program were filed from 2009 to 2011.

2.4 *Program Participation*

From 2009 to 2011, there were seven Energy FinAnswer projects completed in California: three projects in 2009, one project in 2010, and three projects in 2011. Through 2011, the program had claimed 2,922,770 kWh in energy savings; Table 7 summarizes the projects present in the program by measure type.

Table 7: California Energy FinAnswer Project Details 2009 through 2011

Measure	Number of Measures	Reported kWh Savings	Percent Savings
Lighting	1	1457747	50%
Controls	1	1388347	48%
Motors	3	34271	1%
HVAC	2	24055	1%
Pump	2	18350	1%
Total	9*	2,922,770	100%

*Two projects included multiple measures resulting in nine total measures across seven projects.

2.5 *Program Theory and Logic Model*

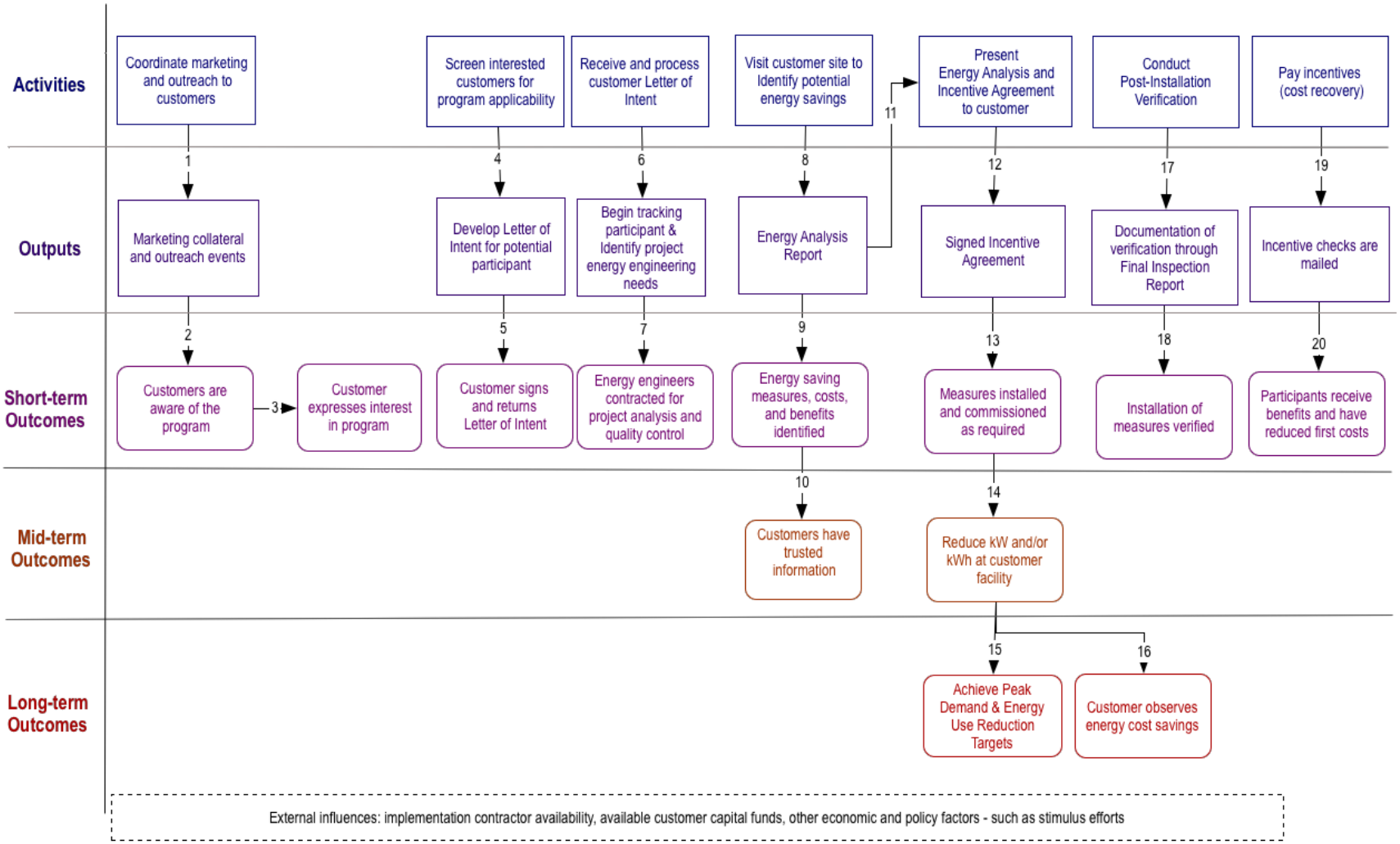
Program logic models depict the primary program activities, the outputs that are expected to result from each activity, and the expected short, mid and long-term outcomes of those activities. Program *activities* depict the primary actions that are required to implement the program. This includes marketing, participant recruitment, training, etc. The *outputs* depict the tangible "product" resulting from each primary activity. For example, marketing materials, training documents, and databases of recruited participants can all be outputs of primary program activities. Outputs are typically identified as "things" that can be tracked and tallied. *Outcomes* represent the intended results of successful deployment of the identified activities.

Developing a logic model that clearly provides the theory of action and change is an important step in evaluation, allowing the evaluator and program actors to see inside the program 'black box.'[9] Program logic models provide a framework for an evaluation because they highlight key linkages between program activities and expected outcomes. The process and impact evaluations focused on these linkages, particularly those on the critical path to achieving savings goals. The evaluation identified which linkages in the program logic model are working properly and which linkage(s) may be weak or broken. Thus, if the program falls short of achieving its intended short, mid, or long-term outcome(s), the source of the shortfall can be pinpointed and remedied. Logic Models are often developed as a visual tool to document the program theory. The creation of such a model serves to develop a common understanding of program activities and intended outcomes among program staff, Pacific Power, and the evaluator. With this foundation, the evaluation team can then make informed choices related to the prioritization and focus of evaluation resources.

The underlying theory for the Energy FinAnswer Program is articulated in the Logic Model provided in Figure 1. The evaluation team created the logic model based on a review of program documentation and discussions with program management staff.

[9] Funnell, Sue and Patricia Rogers. 2011. Purposeful Program Theory: Effective Use of Theories of Change and Logic Models. John Wiley & Sons.

Figure 1. Energy FinAnswer Program Logic Model (2011)



The Energy FinAnswer program is designed to overcome two commercial and industrial customer barriers to implementing energy efficiency projects: lack of trusted information and high upfront capital costs. The program's primary intervention for overcoming these barriers is through the provision of technical assistance and incentives. Incentives improve customer economics while technical assistance helps to quantify opportunities in advance of customer investment. Linkages within the program logic are described here with numbers related to those shown in the logic model figure.

1. Pacific Power coordinates marketing efforts and outreach through account managers. By design, individual programs are not marketed to customers. Instead, Pacific Power markets the portfolio of energy efficiency programs.
2. Customers become aware of the program through marketing and account managers.
3. Customers either directly submit Letters of Intent or express interest through the Pacific Power efficiency program's phone number, online inquiry form, email to the energy expert, or their customer or community manager. The majority of participants are expected to express interest in energy efficiency or demand reduction projects without being familiar with the Energy FinAnswer program by name.
4. Pacific Power Project Manager (PM) screens interested customers to identify projects that are candidates for Energy FinAnswer and ensure program eligibility criteria are met.
5. PM drafts Letter of Intent and provides it to the customer along with program information.
6. The customer submits signed Letter of Intent (LOI) to begin the program process. Pacific Power receives and reviews applications. PM coordinates customer contacts with account manager, asks project screening questions, and determines the general scope of the project.
7. Pacific Power PM selects an appropriate energy engineer from a list of pre-qualified engineering firms that support Pacific Power. The PM contracts with the energy engineer to scope and analyze the project potential.
8. The energy engineer visits the customer's facility and identifies savings opportunities. The engineer develops an Energy Analysis Report (EAR) that includes EEMs that could improve efficiency as well as potential costs, savings, and any commissioning necessary to ensure proper EEM operation and savings.[10] In many cases, the energy engineer visits the customer's facility and submits an initial scoping report, called an Initial Site Visit Report (ISVR) or Preliminary Energy Analysis Report (PEAR), to the PM before conducting a detailed energy analysis. PM discusses scoping with customer, conducts further screening, and decides to move forward with energy analysis. Small or well-defined projects may go forward with a PEAR to avoid unnecessary analysis expense; the PM will make the determination to go ahead based on project timeline and size.
9. As a quality control measure, Pacific Power requires that EARs be peer-reviewed by a second energy engineering consultant before the report is delivered to the customer. The EAR and peer review ensure that appropriate EEMs, along with costs and savings, are identified.
10. The customer can rely on this information to make decisions, reducing information barriers. Throughout the customer's participation, Pacific Power provides technical support, as needed, to ensure that implementation meets the intent and requirements of the program.

[10] For some Energy FinAnswer projects, Pacific Power requires the customer to commission certain measures. The EAR provides details regarding these requirements on a measure-specific basis. If the customer chooses not to commission the project, when it is required, their incentive will be based on kWh savings and allowed project costs that are reduced by 20 percent. Commissioning reports are submitted to Pacific Power along with invoices and other documentation before the incentive is awarded to the customer.

11. The EAR and Incentive Agreement, highlighting incentives and stipulations for recommended measures, are presented to the customer.
12. An agreement is reached between Pacific Power and the customer on which measures to implement, and the customer signs the Incentive Agreement for agreed-upon measures. Before purchasing or installing equipment, the customer is required to sign an incentive agreement with Pacific Power based on the EAR estimates.
13. EEMs are implemented either by the customer or their contractor. Commissioning is completed for those EEMs for which commissioning was prescribed in the EAR. The customer notifies Pacific Power of project completion and the status of any expected commissioning.
14. EEMs reduce energy consumption (and, in some cases, demand) at the facility.
15. Reduced energy consumption contributes to meeting annual program targets.
16. Customers experience reduced energy costs.
17. An energy engineer verifies proper installation of measures, reviews commissioning report (if any) and obtains invoicing information.
18. A Final Inspection Report is submitted to Pacific Power. The Final Inspection Report documents verification of energy savings; verification ensures that expected savings occur.
19. Pacific Power processes incentives after final incentive calculation.
20. Incentives are mailed to the customer. Incentives reduce customer costs for the project.

As part of the program evaluation, the evaluation team assesses program outcomes and compares these actual outcomes with the outcomes expected in the logic model. In order to make this comparison, indicators for each expected outcome as well as sources of indicator data are identified. In some cases, these indicators are directly observable from program tracking data or other archives; in other cases, indicators can be assessed through data collection and analysis of survey or interview responses.

Table 8 identifies both key indicators and data sources for each of the Energy FinAnswer program outcomes (short, medium, and long-term) shown in the logic model, above.

Table 8: Indicators and Data Sources for Program Outcomes

Outcome	Indicator	Data Source
Short-term Outcomes		
Customers are aware of the program	Non-participant awareness	Customer surveys
Customer expresses interest in the program	Program attracts interested participants; participation	Customer surveys; program tracking data; non-participant data
Customer signs and returns LOI	LOI in project file	Program-tracking data
Energy engineers selected for project analysis and quality control	RFP; contracts; engineers identified in program tracking data	Program tracking data; energy engineer interviews
Energy saving measures, costs, and benefits identified	Energy analysis report includes measures, costs and benefits	Customer surveys; energy engineer interviews
Measures installed and commissioned as required	Commissioning report in project file; final inspection report; invoices	Customer surveys; energy engineer interviews
Installation of measures verified	Verification in project file	Energy engineer interviews
Customers receive benefits and have reduced first costs	Customers receive benefits	Cost-recovery in program tracking data; Customer surveys
Mid-term Outcomes		
Customers have trusted information	Customers find technical assistance valuable	Customer surveys
Reduce kW and/or kWh at customer facility	Customers realize expected savings	Customer surveys
Long-term Outcomes		
Achieve peak demand and energy use reduction targets	Pacific Power meets targets	Program goals; program tracking data
Customers observe energy cost savings	Customers realize expected savings	Customer surveys

3. Evaluation Methodology

The following subsections provide a detailed description of the evaluation methodologies used in the Impact Evaluation of California's Energy FinAnswer Program.

3.1 Impact Evaluation Methodology

This section summarizes the Impact Evaluation methods used to develop project- and program-level realization rates for the Energy FinAnswer Program. Findings provide Pacific Power staff with the feedback they need to increase program efficacy and to advance the research and policy objectives of California's Public Service Commission by providing an independent quantitative review of program achievements.

Overall, the impact evaluation of California's Energy FinAnswer program aimed to characterize program specific energy and demand impacts for commercial and industrial retrofit and new construction measures. The impact evaluation of California's Energy FinAnswer program aimed to characterize energy and demand impacts for incented projects in the 2009 through 2011 program years, including:

- Quantifying the impacts of all measures and activities on annual gross energy consumption while accounting for any interactions among technologies.
- Establishing post-implementation performance profiles for installed measures and activities.
- Explaining discrepancies between the results of this study and the reported savings estimates.

Evaluation metrics and parameters reported through this study include:

- Gross program demand and energy savings estimates and realizations rates for incented projects.
- Energy usage profiles for C&I technologies metered through on-site Measurement & Verification (M&V) activities.
- Net program savings estimates and realization rates as a function of both spillover and free ridership.

The impact evaluation methodology included the following steps:

- Evaluation Approach
- Project File Review
- Sampling Framework Development
- Gross Energy & Demand Realization Rate Calculation
- Net-to-Gross Estimates
- Program Cost-Effectiveness Calculation

3.1.1 Evaluation Approach

The Energy FinAnswer programs include only custom projects. The most common evaluation method employed for these projects involves International Performance and Measurement Verification Protocols (IPMVP) Option B; through which the evaluation team either metered the individual equipment power consumption or obtained facility data showing records of equipment operation. In cases where the project affects a significant portion of energy use on a utility meter, such as with pumps in isolated

locations, the evaluation team employed IPMVP Option C for savings analysis, normalized by equipment usage records from the facility. Occasionally IPMVP Option A may be used if the equipment operates at a constant power level on a known schedule.

3.1.2 Project File Reviews

A thorough review of the Energy FinAnswer project files allowed the evaluation team to increase the accuracy of calculated measure savings and demand reductions, thereby ensuring that they were representative of installation conditions.

For each project file reviewed, the evaluation team characterized any data gaps, consistency issues, and the accuracy of the information used to estimate project level savings. The evaluation team also assessed the variability/uncertainty between Pacific Power's input assumptions and secondary studies along with the relative impact on energy and demand savings. This type of sensitivity analysis was crucial in prioritizing and aligning task resources. The results of this effort were used to develop recommendations for input assumption revisions based on prior evaluation studies, upcoming policy requirements, and geographic factors. Examples of *secondary resources* that were leveraged through this task include:

- Regional Technical Forum (RTF)[11]
- Commercial and Institutional Building Energy Use Survey (CIBEUS)[12]
- Database for Energy-efficient Resources (DEER)[13]
- Buildings Energy Data Book (BEDB)[14]
- Commercial Buildings Energy Consumption Survey (CBECS)[15]

Figure 2 presents an example of the overview of parameters verified through the project file review process. Overall, the evaluation team found the Energy FinAnswer project files and assumptions to be sound and within industry standards.

[11] Regional Technical Forum, RTF Unit Energy Savings (UES) Measures and Supporting Documentation, http://www.nwcouncil.org/energy/rtf/measures/Default.asp

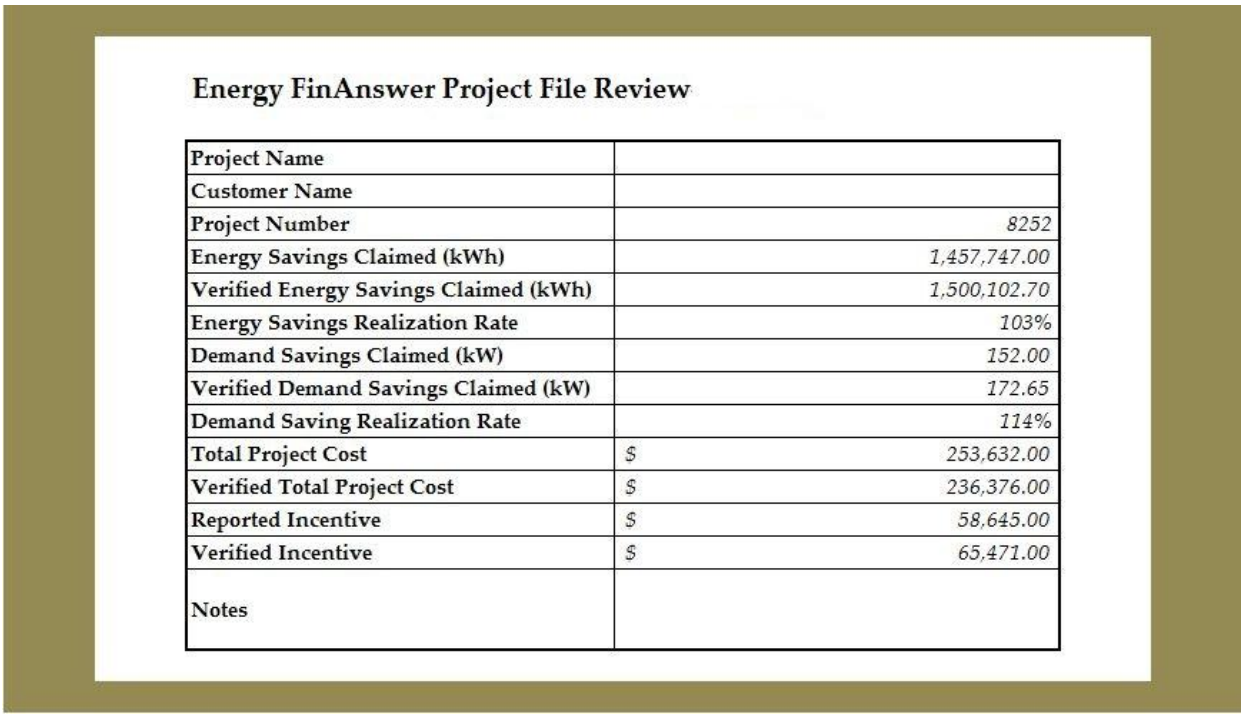
[12] Demand Policy and Analysis Division of the Office of Energy efficiency, Commercial and Institutional Building Energy Use Detailed Statistical Report, December 2002

[13] California Public Utilities Commission, Database for Energy-efficient Resources, 2008

[14] U.S. Department of Energy, 2008 Buildings Energy Data Book, 2008

[15] Energy Information Administration, Commercial Buildings Energy Consumption Survey, 2003

Figure 2: Parameters Verified through the Project File Reviews (Example)



Energy FinAnswer Project File Review

Project Name		
Customer Name		
Project Number		8252
Energy Savings Claimed (kWh)		1,457,747.00
Verified Energy Savings Claimed (kWh)		1,500,102.70
Energy Savings Realization Rate		103%
Demand Savings Claimed (kW)		152.00
Verified Demand Savings Claimed (kW)		172.65
Demand Saving Realization Rate		114%
Total Project Cost	$	253,632.00
Verified Total Project Cost	$	236,376.00
Reported Incentive	$	58,645.00
Verified Incentive	$	65,471.00
Notes		

Continuing to understand and document the available data and considerations within each unique project file allowed the evaluation team to make informed recommendations for future evaluation cycles and custom calculation revisions.

3.1.3 Sampling Frame Development

For the evaluation of the Energy FinAnswer Program, the evaluation team adopted a *Ratio Estimation* approach to sampling which achieved increased precision and reliability by taking advantage of a relatively stable correlation between an auxiliary variable and the variable of interest (i.e., the ratio of actual savings to program reported savings). This approach served to reduce the overall coefficient of variation within the population.

As an example, consider two Energy FinAnswer projects where savings may range anywhere from 3,709 kWh to 1,628,571 kWh based on the size of each participating facility and measures installed. Both the average size and the average savings for this group of customers have very large coefficients of variation, thereby increasing the sample size required to achieve a specific confidence/precision threshold if the evaluation aims to estimate the *magnitude* of program savings.

However, evaluation experience has demonstrated that a majority of customers have a ratio of actual savings to program reported savings between 70 to 100 percent, regardless of the *magnitude* of each individual project's energy savings. This ratio is the ***realization rate*** for gross evaluated savings and a core objective of this Impact Evaluation. As such, the standard deviation of the realization rate is generally much smaller than that of the magnitude of individual project savings. It follows that the sample sizes required to achieve a specific confidence/precision threshold may be greatly improved by estimating the realization rate instead of total energy savings.

Per the 2004 California Evaluation Framework[16], sample sizes developed using the Stratified Ratio Estimation approach comply with the following equation:

$$n = \frac{\left(\frac{Z * \varepsilon}{rp}\right)^2}{1 + \left(\frac{Z * \varepsilon}{rp}\right)^2 / N}$$

Where:

n = Sample Size
Z = Z-Score for Desired Confidence Level
ε = Assumed Error Ratio[17]
rp = Desired Relative Precision
N = Population Size

Moreover, the evaluation team proportionately stratified the sample by program reported savings. Under this approach, the sample population was divided into subgroups by claimed savings (i.e., strata). The evaluation team selected projects proportionately within each stratum to ensure:

1.) The largest projects and contributors to program performance are evaluated, and;

2.) The medium and smaller projects receive fair representation in the evaluation. Collectively, these projects also reflect a large percentage of program level savings.

The impact evaluation planned for 90/10 confidence and precision across the 2009 through 2011 program years by energy (kWh) savings[18]. Table 9 provides an overview of the impact evaluation framework representing 99 percent of the reported Energy FinAnswer Program savings for the 2009-2011Program Years[19].

Table 9: Overview of the Impact Evaluation Sampling Framework

Program	Projects in the 2009-2011 Program Year	Program Population Savings (kWh)	Projects in Impact Evaluation Sample	Sample Evaluated Savings (kWh)	Percent of Population Savings Evaluated
Energy FinAnswer	7	2,922,770	4	2,895,014	99%

3.1.4 Gross Energy and Demand Realization Rate Calculation

Gross energy and demand realization rates for each project in the impact evaluation sample were combined to form *program level* realization rates for each program year. The evaluation team researched the following technical issues in order to accurately determine *gross* program impacts and realization rates:

» Determining the appropriateness of the pre-installation technology performance baseline via project files and secondary literature review.

[16] TecMarket Works, *The California Evaluation Framework*, June 2004

[17] The evaluation team assumed a *conservative* error ratio of 0.4 for developing the sample framework. The error ratio corresponds to the expected standard deviation of the realization rate for the program and was selected based on previous PacifiCorp evaluations.

[18] The evaluation team planned for 90/10 by program and state; the final confidence/precision for California's Energy FinAnswer is 90/1.7. Industry standard is a minimum of 80/20.

[19] Note that since one project accounted for nearly all of the savings (i.e. over 99 percent), the statistical precision represented here is based on that one project.

» Verifying installation and quantity of claimed energy efficiency measures (EEMs).

» Verifying the baseline and measure performance characteristics of the measures installed, and revising or computing performance variables (e.g., operating hours) as needed.

» Estimating the load shapes for the EEMs installed through the programs, including the coincidence of each EEM with peak demand periods.

» Determining the demand savings (kW) and energy savings (kWh) impacts of the EEMs installed for projects sampled. This was accomplished by first calculating *case weights* for each evaluated project; the case weight is the number of projects in the population in each stratum divided by the number of projects in the final sample in the corresponding stratum.[20]

Calculating evaluated realization rate. Evaluated realization rate presents energy savings verified in a facility at the time of M&V. The program level realization rate was then calculated as the ratio between the product of case weights and *verified* savings estimates and the product of case weights and *reported* savings estimates. This is illustrated in the equation below:

$$Program\ Realization\ Rate_i = \frac{\sum_{i=1}^{n} Case\ Weight_i \times Verified\ Savings\ Estimate_i}{\sum_{i=1}^{n} Case\ Weight_i \times Reported\ Savings\ Estimate_i}$$

3.1.5 Net-to-Gross (NTG) Estimates

This section contains a brief overview of the Net-to-Gross (NTG); a more detailed explanation is provided in the appendices.[21] Using self-reported responses, the evaluation team's estimation of net savings first attempted to assess the program's influence on the participants' decision to implement an energy efficiency project and what would have occurred absent program intervention. This estimation included an examination of the program's influence on three key characteristics of the project: its timing, its level of efficiency, and its scope (i.e., the size of the project). This estimate represents the amount of savings attributed to the program that would have occurred without its intervention and is often referred to as "*free-ridership.*"

The team's measurement of net savings then estimated program influence on the broader market as a result of the indirect effects of the program's activities. This estimate, often referred to as "*spillover,*" represents the amount of savings that occurred because of the program's intervention and influence but that is not currently claimed by the program. Spillover savings can be broken into two categories of savings: "participant" spillover and "non-participant" spillover. Participant spillover savings occur directly (i.e., program participants install additional energy efficient equipment), while non-participant spillover savings occur indirectly (i.e., market allies install additional energy efficient equipment to customers that choose not to participate as a result of the program).

A program's net savings are adjusted by both free-ridership and spillover savings at the measure level and then extrapolated to the program. The net savings are the program-reported savings minus any free-ridership savings plus any identified spillover savings, or:

Net Program Savings = Gross Program Savings – Free-Ridership Savings + Spillover Savings

[20] The TecMarket Works Team, The California Evaluation Framework, Prepared for the California Public Utilities Commission and the Project Advisory Group, June 2004.

[21] Appendices contain a chapter dedicated to Net Savings methodology.

Often, this finding is described as a "net-to-gross ratio." This ratio is the net program savings divided by the gross program savings, or:

Net-to-Gross Ratio (NTG) = Net Program Savings / Gross Program Savings

The findings of the NTG analysis are presented in Section 4.2.

3.1.6 Program Cost Effectiveness

Program and measure group cost-effectiveness calculations were performed using the same cost-effectiveness models and assumptions developed within the Pacific Power planning department. The evaluation team worked closely with Pacific Power to discuss the implications of evaluated measure savings on cost-effectiveness test results along with other additional cost-effectiveness inputs (beyond measure incremental costs, Effective Useful Life (EUL), Remaining Useful Life (RUL), and the validity of measure savings) reviewed as part of this exercise.[22]

The evaluation team ran the cost-effectiveness tests with updated evaluation findings, including:

1. Gross Program Savings Estimates
2. Gross Program Realization Rates
3. Net-to-Gross Ratios
4. Program Costs (Administrative and Incentive)
5. Measure End – Use Load Shapes as provided by Pacific Power

3.2 Notes on Validity and Reliability of Impact M&V Findings[23]

The evaluation team identified several sources of uncertainty associated with estimating the impacts of the Energy FinAnswer program. Examples of such sources include:

» Sample selection bias.

» Physical measurement bias (e.g., meter bias, sensor placement, non-random selection of equipment or circuits to monitor).

» Engineering analysis error (e.g., baseline construction, engineering model bias, modeler bias).

The evaluation team remained cognizant of these issues throughout the evaluation process and adopted methods to reduce the uncertainty arising from these sources, thereby improving the validity and reliability of study findings. Key uncertainty sources and mitigation strategies are discussed further below.

Reducing Uncertainty from Sample Selection Bias

The problem that selection bias creates for program evaluation is recognized in the evaluation industry. Although projects were chosen in the impact evaluation sample according to prescribed protocols, bias may have been introduced if the selected projects did not choose to participate in the evaluation effort. In an effort to minimize non-response bias, the evaluation team established and implemented the following

[22] The evaluation team found the measure life input assumptions to be within range of industry standards and similar programs offered in other jurisdictions (e.g., The Database for Energy Efficient Resources (DEER), http://www.energy.ca.gov/deer/). The evaluation team expects to monitor and refine these input assumptions in future evaluation cycles based on primary data collection activities.

[23] Note that since one project accounted for nearly all of the savings (i.e. over 99 percent), the statistical precision represented here is based on that one project.

recruitment protocols:

- » Notified participants as early as possible in the evaluation process.
- » Accurately characterized M&V activities and the duration of the evaluation process.
- » Maintained brief and frequent communication with participants and informed them of any changes/additions to the evaluation effort.

The intent of these protocols was to give each participant ample time to prepare documentation and secure the appropriate resources to support the evaluation effort. Brief and frequent contact with each participant ensured the participant remained engaged.

In the event that a non-respondent was encountered[24], the evaluation team first identified the nature of the project (i.e., measure type). Non-response for non-certainty projects was addressed by oversampling projects within each of the original stratum. These "alternative" projects were substituted into the impact sample in the event that a project did not respond to evaluation requests. Non-response for certainty projects were generally addressed by choosing similar projects (i.e., measure technologies) with equivalent, or larger savings. Collectively, this effort ensured that precision levels were met within the overall impact evaluation sample.

Reducing Uncertainty of Physical Measurement Error

There is inevitably some error associated with all physical measurement. For the impact evaluation of the Energy FinAnswer program, a large measurement effort involved installing lighting/current/power loggers to determine the operating characteristics of incented technologies across a broad range of applications. Several steps were taken to minimize the uncertainty resulting from bias/error that may have been introduced in this process:

- » Prior evaluation experience indicates that lighting loggers sometimes fail in the field due to flickering or battery issues.[25] To account for the possibility that some of these loggers might fail in this evaluation, the evaluation team deployed backup loggers for each site. This ensured that the sample size requirements would be met even if a percentage of the loggers failed.
- » To minimize measurement error from improper calibration of the lighting/current/power loggers, the evaluation team checked all loggers used in the field to ensure that they were properly calibrated prior to being deployed. Field staff was also trained to use consistent measurement intervals whenever possible, and to synchronize the logger deployment activities (e.g., time delay). This ensured that the data could be compared across a uniform time period.
- » To minimize biases arising because of improper placement of the loggers, field staff was given a prescribed protocol for the placement and installation of loggers on circuits (e.g., CT placement) and fixtures (e.g., uniform distance from the lamps).
- » Usage patterns for retrofit measures may vary from month-to-month. Sampling for a short duration could therefore introduce a degree of error into the overall results. To reduce this type of error, loggers were typically deployed for a minimum of two weeks and supplemented with available facility records (e.g., EMS trends, production logs, etc.). The logged data was used to calibrate the facility records which spanned multiple months or years. These extended logging

[24] The impact evaluation only encountered three non-respondents in this study which is lower than what is generally observed for C&I program evaluations.

[25] Evaluation experience has found that 'typical' failure rates generally range between 5 percent to 10 percent.

intervals minimized the bias introduced from extrapolating short term metering results to longer periods of time.

» Poor quality data can also be a significant source of error and uncertainty. To minimize the potential impact of this problem, various quality assurance checks were applied to the logger results. This included consistent spot measurements that could be compared against logger data. Additionally, qualified analysts reviewed all logger files to ensure that the results were representative of the technology being investigated:

- Lighting loggers were reviewed to identify inconsistencies in operating characteristics and/or extended periods of inactivity. If a particular file was deemed suspicious, the evaluation team followed up with field staff and facility managers to ensure that the findings were reasonable. Inaccurate results were removed from the analysis.

Reducing Uncertainty of Engineering Analysis Error

There are several opportunities for biases in engineering analyses that may compound the error and uncertainty of *evaluated* savings estimates. The evaluation team adopted the following protocols to minimize uncertainty from engineering analysis error in this study:

» All project analysis findings were peer reviewed to ensure that consistent methods and assumptions were used throughout the impact evaluation.

» The evaluation team developed data collection protocols that yielded appropriate inputs into the analysis models and reviewed all field observations with the evaluation team. Collectively, this served to reduce potential modeling error in this study.

3.3 Process Methodology

This section describes the methodology used to complete the process evaluation of California's Energy FinAnswer Program. First, the section describes a high-level overview of the steps taken to collect and analyze the data for this evaluation. This is followed by a list of the research questions that guided the evaluation. Next, a detailed description of the data collection activities is provided, and this section concludes by describing methods used to analyze the process data.

3.3.1 Overview of Steps in the Process Evaluation

To meet the objectives of this evaluation, the evaluation team undertook the following activities:

» **Process Evaluation Research Questions Development.** Key evaluation questions were established from the development of the 2009 - 2011 evaluation plan with Pacific Power staff.

» **Program Documentation Review.** The evaluation team reviewed program documentation, including regulatory filings, brochures, application forms, and website.

» **Logic Model Development.** The evaluation team worked with program staff to define a logic model for the program that described the intended program design, activities, outputs, and outcomes.

» **Process Data Collection Activities.** The evaluation team collected process data through interviews with program staff, energy engineers working with the program, and near participants who did not finish projects with the program as well as telephone surveys with participating customers and with non-participating customers.

» **Process Data Analysis and Synthesis.** The effectiveness of the program processes was assessed by analyzing program tracking data, in-depth interview data, non-participant survey data, and participant survey data.

3.3.2 Process Evaluation Research Questions

Discussions with program staff and a review of the program theory and logic identified six overarching research questions to guide the process evaluation.

1. What are the program goals, concept, and design? Are they based on sound theory and practice, and, if not, where are the gaps?
2. Do program staff have the resources and capacity to implement the program as planned, and if not, what is needed?
3. Is the program being delivered as planned, and if not, how and why?
4. Is the program reaching the intended target population, and if not, why? Specifically, are eligible customers aware of the program, how are they becoming aware, and what is the program influence on their actions?
5. What barriers are preventing customers from taking actions to reduce energy consumption and demand, and which jeopardize program cost-effectiveness?
6. Are participants achieving desired outcomes, and if not, how and why?

These questions were explored through a mixed-methods approach. Table 10 shows the overarching research questions and associated data collection activities used in the process evaluation. Data collection activities were analyzed to identify findings, which were then used to answer the overarching research questions.

Table 10: Approaches to Answer Research Questions (RQ)

Activity	RQ 1	RQ 2	RQ 3	RQ 4	RQ 5	RQ6
Program documentation review	X	X	X			
Program staff interviews	X	X	X			
Participant surveys			X	X	X	X
Near participant interviews			X	X	X	X
Non-participant surveys				X	X	
Energy engineer interviews			X	X		

3.3.3 Program Documentation Review

The evaluation team reviewed program regulatory filings, marketing materials, program website, program manuals, application materials, annual reports, previous evaluations, and project tracking data. This archival data review identified how the program is marketed, how engineers are supported, and how the process works for enrollment, administration, and tracking.

3.3.4 Logic Model Development

Based on the program documentation review and interviews with program staff , the evaluation team developed a program logic model. A logic model is a visual depiction of the program theory. Logic models illustrate the flow of activities that create needed behavioral outputs, which in turn achieve desired outcomes over the course of the program. Activities are actions taken by the program staff or contractors, as part of the program, such as reviewing applications, developing and presenting reports to customers, or verifying installations. Outputs are measurable or verifiable tasks that result directly from

the program activities. Outcomes can be in the short, medium, or long-term, and they are the result of the activities and outputs. The evaluation team reviewed and revised the logic model through program administrative staff input (Figure 1 in Section 2.5).

3.3.5 Process Data Collection Activities

Program staff interviews supported the development of the program overview and logic model. And findings from the other four data collection activities were synthesized to draw overall conclusions and recommendations for the program.

3.3.5.1 Program Staff Interviews

The evaluation team interviewed two program administrative staff members. These interviews informed the development of the program logic model. The objectives of interviews with key program administration staff were to:

- Understand the design and goals of the program;
- Understand any program changes occurring during the 2009 through 2011 cycle;
- Identify program strengths from program staff perspective;
- Identify program weaknesses and opportunities for improvement from the program staff perspective; and
- Identify other actionable ideas the program staff hopes to gain from the evaluation.

3.3.5.2 Participant Surveys

The evaluation team defined participants as commercial and industrial class customers who completed an Energy FinAnswer project between 2009 and 2011. Surveys with participants specifically addressed the following questions in support of the process evaluation objectives:

- How do customers come to participate in the program?
- How satisfied are customers overall with the program, including application materials, inspections, and the incentive?
- What is the extent of program influence on customer actions, including free-ridership and spillover?
- What barriers are customers facing that prevent increasing energy efficiency?
- What kinds of commercial and industrial customers are participating?

The evaluation team defined the unit of analysis for Energy FinAnswer as a project. For each project, the evaluation team examined all measures included in the project and focused the participant survey on the two measures that were associated with the greatest energy savings in the tracking data. There were seven projects completed by six unique participants with the California Energy FinAnswer program during program years 2009 through 2011. In May and June of 2012, the evaluation team attempted a census of all six unique participants and was able to reach five participants.[26]

[26] Note: the impact evaluation included four projects, as stated in Table 3.2. The process evaluation was conducted in parallel, but separate from, the impact evaluation.

3.3.5.3 Near Participant Interviews

The evaluation team defined near participants as commercial and industrial class customers who began working on a project with the Energy FinAnswer program between 2009 and 2011 but had not completed the project. Interviews with near participants specifically addressed the following questions in support of process evaluation objectives:

- How do customers come to begin working with the program?
- What would they change in order to participate?
- What energy efficient projects are near participants installing (outside the program)?
- What barriers are customers facing that prevent increasing energy efficiency?

The evaluation team defined the unit of analysis for Energy FinAnswer near participants as a project at a site. The evaluation team selected near participants from all projects for which the status was listed as "on hold" with a last update date before June of 2011; sites with multiple projects that met the criteria for inclusion were only asked about one project that they did not complete. This focus on earlier projects ensured that the evaluation team did not reach out to participants whose projects were still on track for completion in 2012. Near participant data did not contain information about potential project measures, so the evaluation team was unable to prioritize any project over another with respect to potential savings; all project contacts were attempted with a goal of reaching five near participants. In May of 2012, the evaluation team completed interviews with five out of thirteen near participants.

3.3.5.4 Non-Participant Surveys

The evaluation team defined non-participants as industrial customers in qualifying rate classes who did not participate in any Pacific Power C&I demand side management program during the 2009 through 2011 program years.[27] Non-participant surveys targeted C&I portfolio level considerations through the following questions:

- Are non-participating customers aware of the programs?
- Why are they not participating (if they are aware of the programs)?
- What energy efficient projects are non-participants installing (outside the programs)?
- What barriers are customers facing that prevent increasing energy efficiency?

There were 115 non-participant industrial customers identified, and 23 of them completed a survey. At 90 percent confidence, this implies a precision of +/- 15.5 percent. Some commercial class customers would qualify for this program; however, non-participant customer data did not include building size, so eligible commercial class customers could not be identified directly. Based on the most recent federal commercial building statistics, about 10 percent of buildings are 25,000 square feet or larger.[28] Therefore, it is possible that about 10 percent of the commercial customers, or 753 of 7,530 non-participating commercial customers, would qualify for this program.

[27] The non-participants included in the sample frame were drawn from a database of non-participating customers provided by the Company as a subset of the population of non-participants; total non-participant counts are based on the total number of customers per class (provided by the Company) minus the number of participants in all programs in the state per class.

[28] US EIA, Commercial Building Characteristics 2003, June 2006, Table B2.

3.3.5.5 *Energy Engineer Interviews*

Energy Engineers are contracted by the Company to complete energy analyses for Energy FinAnswer participants. Interviews with energy engineers specifically addressed the following questions in support of process evaluation objectives:

- How are energy analyses completed (for simple and more complex projects requiring scoping)?
- How are savings measured, verified, and communicated?
- How is quality assured in measurement and verification?
- How does the energy-engineering peer review process work? Does this improve their operations? Does it improve the quality of their work?
- How satisfied are these market actors with their role in the program?
- How does the Energy FinAnswer program affect their business?
- What would they do to improve the program?

The evaluation team identified active energy engineers working with the Company for the Energy FinAnswer program using information from the program tracking database, program staff interviews, and participant surveys. Senior evaluation staff, knowledgeable about the programs and appropriate technologies, interviewed five active energy engineers via telephone in July and August of 2012.[29]

3.3.6 Process Data Analysis and Synthesis

The process data collection activities included both quantitative and qualitative data. The evaluation team used statistical software, specifically SPSS™ (originally, Statistical Package for the Social Sciences), to analyze the survey responses from participants and non-participants. Interview responses from near participants and energy engineers were analyzed directly as textual data. In both cases, the evaluation team reviewed data for missing or erroneous entries. Analysis included recoding data in some instances to disaggregate "other" responses or to combine similar responses into one category. Where appropriate, the evaluation team tabulated frequencies of responses. After data from each data collection activity were analyzed individually for findings, the evaluation team identified common process findings across activities.

[29] The evaluation team offered a $50 gas card as an incentive to complete the interview.

4. Impact Evaluation Findings

Leveraging the evaluation strategies previously discussed for the Energy FinAnswer Program, this section summarizes the Impact Evaluation findings for each project included in the 2009-2011 evaluation sampling framework. The *Project* level savings estimates informed the overall *Program* level realization rates for both energy and demand savings. These findings provide Pacific Power staff with the feedback they need to increase program efficacy and to advance the research and policy objectives of the California Public Utilities Commission by providing an independent quantitative review of program achievements.

4.1 Gross kWh and kW Savings

Of the seven projects that participated in the 2009-2011 program years, four projects (representing 99 percent of claimed savings) were included in on-site verification activities. The 2009 through 2011 *gross* program demand savings realization rate was 112 percent, and the *gross* program energy savings realization rate was 102 percent. Table 11 provides the separate and combined realization rates for the Energy FinAnswer Program from 2009 through 2011.

Table 11: Program-Level Gross Realization Rates for the Energy FinAnswer Program

Program Year	Program Reported kW	Gross Program Evaluated kW	Gross Program kW Realization Rate	Program Reported kWh	Gross Program Evaluated kWh	Gross Program kWh Realization Rate
2009	13.0	13.2	102%	63,643.0	62,657	98%
2010	3.0	4.5	150%	7,088.0	11,000	155%
2011	194.0	217.1	112%	2,852,039.0	2,910,407	102%
All	210.0	234.9	112%	2,922,770	2,984,064	102%

The realization rates reflect the difference between expected savings at the time of installation and evaluated savings one to two years after project completion. However, customers often modified their operating profiles during this time interval for a myriad of reasons that cannot always be attributed to program influence. For example, the C&I sector is particularly sensitive to economic changes as production throughput, occupancy, and operating schedules are driven by customer demand. Similarly, changes in equipment usage also affect the efficiency of the baseline and replacement technologies incented through the Energy FinAnswer program. Throughout the impact evaluation, the evaluation team remained cognizant of these factors which could influence project level savings. And though the economic downturn did not significantly influence the projects in the impact evaluation sample, the evaluation team emphasizes that program savings are continuously evolving due to a dynamic business climate and that the aforementioned realization rates are a *snapshot* of program performance in time. Table 12 provides project level demand and energy savings for the four projects in the impact evaluation sample. This is followed by a detailed discussion on realization rate outliers and the on-site observations, operating characteristics, participant feedback, and unique conditions resulting in the evaluation findings.

In select cases, the evaluation yielded significant differences between the reported and evaluated savings estimates for projects in the impact evaluation sample. The evaluation team notes the explanatory factors driving the lower (or higher) realization rates for specific projects in the following subsection.

4.1.1 Project Level Observations and Considerations for the Energy FinAnswer Program

The evaluation team evaluated four projects across three sites for the California Energy FinAnswer program.

Table 12: Demand (kW) and Energy (kWh) Savings for Evaluated Energy FinAnswer Projects

Project ID	Measure Group	Reported kWh	Reported kW	Evaluated kWh	Evaluated kW	Energy Realization Rate	Demand Realization Rate
Site 1	Project Total	2,846,094	193	2,904,340	216	102%	112%
	Boiler Controls	*1,388,347*	*41*	*1,388,031*	*59*	*100%*	*144%*
	Lighting	*1,457,747*	*152*	*1,516,309*	*157*	*104%*	*103%*
Site 2A	Pump upgrade #1	17,777	3	8,600	2.7	48%	90%
Site 2B	Pump upgrade #2	7,088	3	11,000	4.5	155%	150%
Site 3	Project Total	24,055	8	32,246	8.5	134%	106%
	Building Shell (Skylights)	*22,288*	*8*	*30,479*	*8.5*	137%	106%
	HVAC	*1,767*	*0*	*1,767*	*0*	100%	100%

Project level observations and considerations are presented in the following sections:

4.1.1.1 Site 1

The boiler controls for Site 1 resulted in evaluated savings of 1,388,031 kWh/year and 59 kW/year. Evaluated savings for the lighting portion of the project at Site 1 are 1,516,309 kWh and 157 kW, slightly over the *reported* savings of 1,457,747 kWh and 152 kW. Since the report did not detail the assumed hours or some of the claimed fixture wattages, it is unclear the exact reason for this discrepancy, although it is likely due to variations in hours of operation or claimed fixture wattages.

4.1.1.2 Site 2A and 2B

Based on billing records, the claimed annual hours for the first pump were substantially higher than were seen over the last four years, although they did match 2008 when the study was performed. However it appeared that 2008 was an unusually high use year for the first pump, so decreased operational hours resulted in annual savings of 8,600 kWh, a 48 percent realization rate. Contrastingly, the claimed hours for the second pump appeared reasonable, but the actual power usage was substantially lower than the verification report indicated. Consequently, the *evaluated* annual savings of 11,000 kWh per year represent a 155 percent realization rate. In both cases, the discrepancy in *reported* and *evaluated* savings appear to be due to changes in operation.

4.1.1.3 Site 3

The verified skylight count does not match the project documentation, nor the as-built construction documents. The evaluation team counted the skylights, which Google satellite imagery confirms. Photos taken during the initial verification also show an aspect of the building that confirms the actual number of units installed deviates from the as-built design.

Daily electric lighting use profile does fall off as the solar resource increases. Typical daily use peaks at 50 percent of the connected load. A typical office environment is expected to have an average use profile of 80 percent. However, given that most of the staff at this facility spend the majority of their time away from the site, a baseline use of 50 percent is reasonable.

The evaluation team confirmed the HVAC measures are still in use and that the rated efficiency of these units exceeds minimum code requirements. The evaluation team reviewed the analysis documentation that is part of the incentive application; the original analysis via temperature bins is reasonable. Therefore, the evaluated savings match the claimed savings.

4.2 Net kWh and kW Savings

The Evaluation Team calculated an average Net-to-Gross (NTG) Ratio of 0.99 for the Energy FinAnswer program across the evaluated period, for program years 2009 through 2011. Table 13 presents the evaluated program-level demand and energy savings with the NTG ratio of 0.99 applied.

Table 13. Program-Level Net Realization Rates for California Energy FinAnswer

Program Year	Program Reported kW	Net Program Evaluated kW	Net Program kW Realization Rate	Program Reported kWh	Net Program Evaluated kWh	Net Program kWh Realization Rate
2009	13.0	13.1	*101%*	63,643.0	62,156	*98%*
2010	3.0	4.5	*149%*	7,088.0	10,912	*154%*
2011	194.0	215.4	*111%*	2,852,039.0	2,887,123	*101%*
All	210.0	233.0	*111%*	2,922,770	2,960,191	*101%*

The program weighted NTG ratio was calculated by weighting a sample of project level NTG ratios by their claimed energy savings values. The methodology used in this calculation is provided in detail in Section 3.1.5, Net kWh and kW Savings. The project level NTG ratios are presented in Table 14:

Table 14: California Energy FinAnswer Project-Level Net-to-Gross Ratios

Site ID	Year	Measure Group	NTG
Site 1	2011	Boiler Controls and Lighting	1.0
Site 2A	2009	Pump	0.5
Site 2B	2010	Pump	1.0
Site 3	2009	Building Shell and HVAC	0.5

4.3 *Cost Effectiveness Calibration and Analysis*

The cost-effectiveness of utility funded programs in the state is typically analyzed using tests prescribed by the California Standard Practice Manual.[30] For the purposes of this evaluation, Pacific Power specifically required the following cost-effectiveness tests:

- Pacific Power Total Resource Cost Test (PTRC)
- Total Resource Cost Test (TRC)
- Utility Cost Test (UCT)
- Ratepayer Impact (RIM)
- Participant Cost Test (PCT)

With the exception of the PTRC, all other tests are explained in the California Standard Practices Manual. The evaluation team worked with Pacific Power to understand the PTRC and construct a tool that calculates the PTRC at measure, program and portfolio level. Table 15 presents details of generally accepted cost-effectiveness tests:

Table 15: Details of Cost-Effectiveness Tests

Test	Acronym	Key Question Answered	Summary Approach
Participant cost test	PCT	Will the participants benefit over the measure life?	Comparison of costs and benefits of the customer installing the measure
Utility cost test	UCT	Will utility revenue requirements increase?	Comparison of program administrator costs to supply-side resource costs
Ratepayer impact measure	RIM	Will utility rates increase?	Comparison of program administrator costs and utility bill reductions to supply side resource costs
Total resource cost test	TRC	Will the total costs of energy in the utility service territory decrease?	Comparison of program administrator and customer costs to utility resource savings
Pacific Power Total Resource Cost Test	PTRC	Will the total costs of energy in the utility service territory decrease when a proxy for benefits of conservation resources is included?	Comparison of program administrator and customer costs to utility resource savings including 10 percent benefits adder.

The evaluation team spent considerable time initializing and validating the cost-effectiveness model used for this evaluation. This model was calibrated by using prior inputs and outputs from the previous evaluation cycle to ensure that similar inputs yielded similar outputs. The evaluation team worked through a range of input assumptions pertaining to avoided cost data formats, financial assumptions regarding discount and escalation rates, participant costs and benefits, and other input parameters.

For program years 2009 th 2010, the team used the 2008 IRP West System load shape decrement at $45 Carbon Stream to calculate avoided costs. For program year 2011, the evaluation team used the 2011 IRP West System load shape decrement at Medium Carbon Stream to calculate avoided costs.

[30] The California Standard Practice Manual is an industry accepted manual; it identifies the cost and benefit components and cost-effectiveness calculation procedures from five major perspectives: Participant, Ratepayer Impact Measure (RIM), and Total Resource Cost (TRC). Definitions and methodologies of these cost-effectiveness tests can be found at http://www.energy.ca.gov/greenbuilding/documents/background/07-J_CPUC_STANDARD_PRACTICE_MANUAL.PDF.

Cost-effectiveness inputs were provided by PacifiCorp staff, including data obtained from the 2008 and 2011 IRP and include program cost inputs, program savings by measure, and measure life. Table 16 provides an overview of cost-effectiveness input values used by the evaluation team in the cost-effectiveness analysis:

Table 16: Cost-Effectiveness Evaluation Input Values

Input Description	2009	2010	2011	2009-2011
Discount Rate	7.40%	7.40%	7.17%	7.32%
Inflation Rate	1.90%	1.90%	1.80%	1.87%
Commercial Line Loss	10.89%	8.88%	8.88%	9.55%
Industrial Line Loss	9.87%	8.14%	8.14%	8.72%
Commercial Retail Rate	$0.1016	$0.1016	$0.1185	$0.1072
Industrial Retail Rate	$0.0956	$0.0956	$0.1139	$0.1017
Gross Customer Costs	$51,115	$8,587	$347,211	$406,913
Program Costs	$60,602	$45,994	$197,407	$304,002
Utility Administrative	$52,296	$44,999	$82,156	$179,450
Incentives Costs	$8,306	$995	$115,251	$124,552

Table 17 through Table 20: illustrates the Costs, Benefits and Benefit/Cost Ratio for the cost-effectiveness tests used in this evaluation. Cost effectiveness results are also provided from the E3 Model.[31] Impacts were evaluated for 2009, 2010, 2011, and for combined 2009 through 2011 program years. Individual program year results are for comparison purposes only, as actual 90/1.7 confidence and precision was achieved. As indicated previously and in the tables below, the evaluation team was able to obtain good correlation between cost-effectiveness results in the current and prior program evaluations. Per the previous discussion, the evaluation team found gross energy savings realization rates for the Energy FinAnswer Program to be 102 percent.

Table 17: 2009 Evaluated Benefit Cost Ratios

Benefit/Cost Test Performed	Evaluated Gross Savings	Evaluated Net Savings	PacifiCorp Evaluated Costs	PacifiCorp Evaluated Benefits	PacifiCorp Model B/C Ratio	E3 Model B/C Ratio
Total Resource Cost Test (PTRC)	62,657	62,156	$103,002	$70,642	0.69	N/A
Total Resource Cost Test (TRC)	62,657	62,156	$103,002	$64,220	0.62	0.59
Utility Cost Test (UCT)	62,657	62,156	$60,602	$64,220	1.06	1.00
Rate Impact Test (RIM)	62,657	62,156	$127,737	$64,220	0.50	0.46
Participant Cost Test (PCT)	62,657	62,156	$51,115	$75,983	1.49	N/A

[31] Navigant utilized an energy efficiency calculator, E3 Calculator developed by Energy+Environmental Economics (E3) as a comparison for the benefit/cost test results performed using PacifiCorp's custom approach. The E3 Calculator is used by all California investor-owned utilities to compute the cost-effectiveness of energy efficiency programs. PacifiCorp originally used the version *Pacific Gas and Electric (PG&E_10-12 4g5)* for program design, consequently Navigant felt this version was appropriate for an accurate comparison.

Table 18: 2010 Evaluated Benefit Cost Ratios

Benefit/Cost Test Performed	Evaluated Gross Savings	Evaluated Net Savings	PacifiCorp Evaluated Costs	PacifiCorp Evaluated Benefits	PacifiCorp Model B/C Ratio	E3 Model B/C Ratio
Total Resource Cost Test (PTRC)	11,000	10,912	$53,517	$13,018	0.24	N/A
Total Resource Cost Test (TRC)	11,000	10,912	$53,517	$11,834	0.22	0.21
Utility Cost Test (UCT)	11,000	10,912	$45,994	$11,834	0.26	0.24
Rate Impact Test (RIM)	11,000	10,912	$58,027	$11,834	0.20	0.18
Participant Cost Test (PCT)	11,000	10,912	$8,587	$13,126	1.53	N/A

Table 19: 2011 Evaluated Benefit Cost Ratios

Benefit/Cost Test Performed	Evaluated Gross Savings	Evaluated Net Savings	PacifiCorp Evaluated Costs	PacifiCorp Evaluated Benefits	PacifiCorp Model B/C Ratio	E3 Model B/C Ratio
Total Resource Cost Test (PTRC)	2,910,407	2,887,123	$426,589	$2,988,238	7.00	N/A
Total Resource Cost Test (TRC)	2,910,407	2,887,123	$426,589	$2,716,580	6.37	7.27
Utility Cost Test (UCT)	2,910,407	2,887,123	$197,407	$2,716,580	13.76	15.8
Rate Impact Test (RIM)	2,910,407	2,887,123	$3,742,226	$2,716,580	0.73	0.95
Participant Cost Test (PCT)	2,910,407	2,887,123	$347,211	$3,688,657	10.62	N/A

Table 20: Combined 2009 through 2011 Evaluated Benefit Cost Ratios

Benefit/Cost Test Performed	Evaluated Gross Savings	Evaluated Net Savings	PacifiCorp Evaluated Costs	PacifiCorp Evaluated Benefits	PacifiCorp Model B/C Ratio	E3 Model B/C Ratio
Total Resource Cost Test (PTRC)	2,984,064	2,960,191	$583,108	$3,071,897	5.27	N/A
Total Resource Cost Test (TRC)	2,984,064	2,960,191	$583,108	$2,792,634	4.79	5.42
Utility Cost Test (UCT)	2,984,064	2,960,191	$304,002	$2,792,634	9.19	10.42
Rate Impact Test (RIM)	2,984,064	2,960,191	$3,927,990	$2,792,634	0.71	0.91
Participant Cost Test (PCT)	2,984,064	2,960,191	$406,913	$3,777,766	9.28	N/A

5. Process Evaluation Findings

This section provides findings from the process evaluation effort, including the Energy FinAnswer participant surveys, near participant interviews, California non-participant surveys, and energy engineer interviews. The findings provide a description of the sample size and findings for each of the four data collection methods. The evaluation team then synthesized findings from the four data collection methods to inform findings and recommendations for California's Energy FinAnswer program.

5.1 Participant Findings

In May and June of 2012, the evaluation team surveyed five of six total participants in the California Energy FinAnswer program. These five respondents were small firms, by number of employees; the number of employees at each firm ranged from zero to 129. Respondents represented the industries listed in Table 21.

Table 21: Primary Industry of Energy FinAnswer Survey Respondents

Primary Industry	Respondents
Arts, Entertainment, and Recreation	2
Manufacturing	1
Dairy/Agricultural	1
Government	1
Total	5

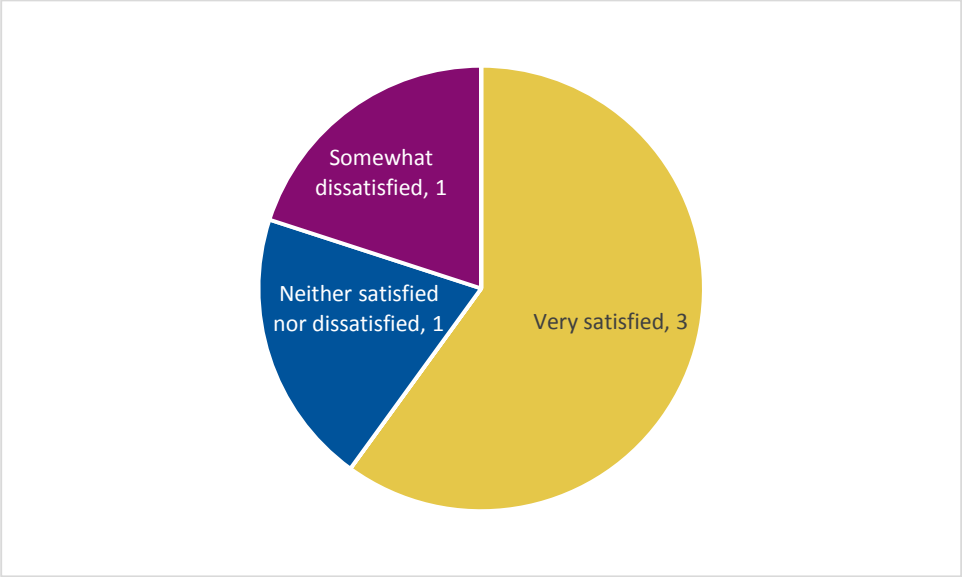
Electricity was a substantial portion of operating costs for these respondents. The respondents reported the percentage of their operating costs represented by their electricity bills ranged from 10 percent to 50 percent with a mean of 22.5 percent.

5.1.1 Program Satisfaction

Overall, participants reported mixed satisfaction with the Energy FinAnswer program. When asked to rate their overall satisfaction with the program, three respondents were "very satisfied," one was "neither satisfied nor dissatisfied," and one was "somewhat dissatisfied," as shown in Figure 3.

The two respondents who were less than somewhat satisfied with the program indicated the limited incentive was the main reason for their rating. One described the incentive as "insignificant." The other said that the incentive was not sufficient given the amount of work needed to facilitate the process.

Figure 3: Participant Satisfaction with the Energy FinAnswer Program Overall



When asked what changes they would like to see in the Energy FinAnswer program, one respondent had no suggestions. The other four respondents offered the following suggestions:

- Higher incentives (identified by the same two respondents who were less than satisfied),
- A simpler program process, and
- Fewer calls about the program.

Four of the five respondents reported contacting Pacific Power with questions or requests for assistance at some point during their participation in the program. Of these, all four found Pacific Power staff/representatives knowledgeable about program requirements and three reported finding them timely in addressing their questions.

5.1.2 Program Awareness and Motivation

Four of five respondents learned about Energy FinAnswer from their account representative or other Pacific Power staff. The remaining respondent discovered the program through his own search for a rebate program.

When asked about factors influencing their decisions to participate, four of the five indicated the incentive was important. Other factors, each noted by a single respondent, were to save money on electric bills and to "add more green features."

5.1.3 Program Participation Process

Participant responses indicate that the Energy FinAnswer program is working well Participation will be discussed here in three steps: pre-installation, measure installation, and post-installation.

5.1.3.1 Pre-Installation

Before participants install equipment with the Energy FinAnswer program, an energy engineer conducts a site visit. Of the three respondents who recalled the initial site visit step, two gave ratings of "somewhat satisfied" and "very satisfied" to their level of satisfaction with the energy engineer conducting the visit. The third was unsure what rating to provide.

The energy engineer then develops an EAR that Pacific Power shares with the participant. The EAR includes suggested measures to install along with expected energy savings and costs. When asked about the EAR provided by the engineer, all five respondents reported they found the report valuable. Only one respondent indicated they did not install a measure suggested by the engineer. The participant decided against installing this item, a pump, for "financial reasons."

5.1.3.2 Installation of Energy Efficient Measures

With the Energy FinAnswer program, participants install measures identified in the EAR. Depending on the project, there can be one to several measures. Among the five respondents, seven unique energy efficiency measures were installed with the program. These measures are:

- Lighting upgrades,
- Skylights,
- Upgraded pump station wells,
- Pump with a VFD,
- Heat Pump,
- Boiler controls upgrade, and a
- High efficiency motor.

Installation of energy efficiency measures can include new installations or retrofits of existing equipment. Two measures were completely new installations while the other five measures replaced old equipment that was still functional (though two indicated the old equipment had some problems).

Respondents were asked about the benefits of the energy efficiency measures that they installed with the program, both expected energy benefits and other potential benefits. The majority of respondents indicated that the equipment was meeting energy savings expectations and also providing other non-energy benefits. Five of the seven measures that were installed reportedly met respondents' energy savings expectations; the respondents were unsure whether the remaining two measures were meeting expectations or not. When asked about the anticipated benefits of installed measures beyond energy efficiency, respondents identified the following additional advantages of their equipment for five of the seven measures:

- Better light
- Improved visibility of the organization
- More reliable equipment
- Better control
- Additional resource savings (fossil fuels).

Respondents were asked about their satisfaction with the measures that they installed through the program. All but one respondent was satisfied with the performance of their energy efficiency measures; the other one respondent indicated being "neither satisfied nor dissatisfied." When the respondent who was "neither satisfied nor dissatisfied" was asked why the measure was less than satisfactory, the respondent reported the heat pumps installed did not function well, were causing temperature problems, and were using a lot of electricity. At another point in the survey, this respondent mentioned that the heat pumps installed were of the incorrect model number.

5.1.3.3 Post-Installation

After installation, participants commission equipment in line with the recommendations in the EAR. Of the five projects completed by respondents, three were commissioned. Of the remaining two, one was not commissioned because commissioning was not recommended in the participant's EAR. In the remaining case, the respondent did not recall the reason for deciding against commissioning.

Following commissioning, the participant notifies the program of project completion, and an energy engineer goes out to the participant's site to conduct a post-installation inspection to verify proper installation and operation of equipment. Two of five respondents recalled post-installation inspections. Both of these respondents were satisfied with this step of the process.

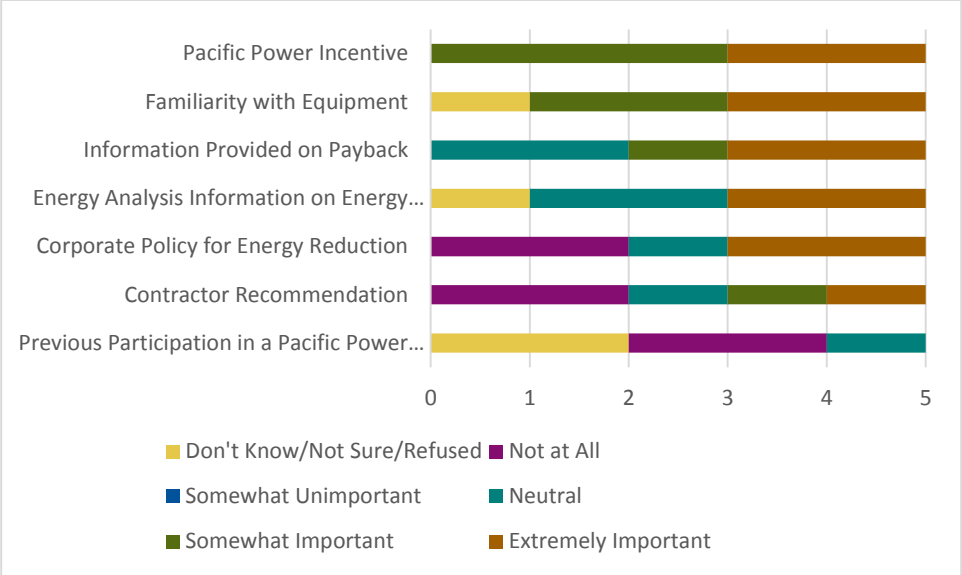
5.1.4 Program Influence

The evaluation team asked participants several questions about the program influence on the project that they completed with the Energy FinAnswer program. These questions can be grouped into three general areas of influence: Factors influencing the actual equipment installed as part of the project (Influential factors), what would have happened in the absence of the program (Free-ridership), and the program influence on future energy efficiency purchases (Spillover).

5.1.4.1 Influential Factors

Respondents were asked how influential seven factors were in their decision to purchase the actual equipment installed through the Energy FinAnswer program. They were asked to rate the importance of each factor on a scale of one to five, with one being "not at all important" and five being "extremely important." All five respondents indicated that the incentive from Pacific Power was at least somewhat important in their decision. Four of five respondents indicated that familiarity with the equipment was at least somewhat important, and three out of five respondents indicated that the information provided on the payback was at least somewhat important in their decision. As shown in Figure 4, there were mixed responses for contractor recommendations and corporate policies regarding energy reduction. Previous participation in a Pacific Power program was not indicated as important for any respondents.

Figure 4: Factors Influencing Project Decisions



5.1.4.2 Free Ridership

In order to determine to what extent the availability of the Energy FinAnswer program affected installation decisions, the survey team asked respondents what would have been different about their installations were the program not an option. When asked about each of the seven measures installed, about half (three) of the measures would have been installed at the same time while about half (three) would not have been installed at all. One measure would have been installed, but it would have been less efficient without the program.

The three measures that would have been installed at the same time were installed by two respondents; one of them had installed two measures with the Energy FinAnswer project. Both of these respondents had previously stated that the Pacific Power incentive was important in their decision to install this equipment. They were further asked to identify what influence the incentive actually had on the decision to install the measure, and one said that it helped the decision to move forward while the other said it changed the quantity that was installed. One of these respondents had also indicated that the energy analysis information was important in the decision to install this equipment. When pressed for the influence of the energy analysis, this respondent noted that they were influenced to do a larger project earlier rather than implement it in parts over time. After adjusting for inconsistencies, program influence on installations by measure are shown in Table 22.[32]

[32] These responses are based on specific respondents and measures installed. Program net savings, discussed in Section 4.2, are weighted by savings.

Table 22: Installations in the Absence of Energy FinAnswer by Measure

Type of Installation	Number of measures
The exact same measure and quantity at same time	1
A less efficient measure or less quantity within 12 months of actual installation	3
Some measure, but later than 12 months after actual installation	0
No measure at all	3
Total Count of Measures	7

5.1.4.3 Spillover

There is no conclusive evidence of the Energy FinAnswer program influencing additional energy efficiency installations. No respondents indicated installing "like," or similar, projects after the Energy FinAnswer project that was discussed in the survey. Therefore, there is no quanitifable spillover from this program.

One respondent indicated installing equipment after the Energy FinAnswer project without assistance from any utility program; this respondent installed an "unlike" or dissimilar measure than completed with the program—described as heat pumps. When prompted with the statement "*My experience with Rocky Mountain Power's FinAnswer Express program influenced me to install high efficiency equipment on my own*," the respondent "neither agreed nor disagreed."

5.1.5 Further Energy Efficiency Opportunities and Barriers

When asked whether there were additional energy efficiency improvements their organizations could make, three of the five respondents affirmed there were. When asked what these improvements might be, these three respondents indicated the following measures:

- Solar (Identified by two respondents)
- Efficient HVAC
- Efficient motors
- Efficient pump

All three of these respondents, however, indicated that no plans were in place to make these changes. When asked about factors preventing them from making these changes, respondents identified high upfront costs and their lack of access to the necessary capital.

5.2 Near Participant Findings

The evaluation team interviewed five Energy FinAnswer near participants in California. Near participants are those customers who are in the project tracking system with a project through the Energy FinAnswer program in 2009 through 2011 but are identified as cancelled or on hold as of the end of 2011. In total there were thirteen near participants in California in the 2009 through 2011 period.

All five respondents categorized their company's activity as Dairy/Agricultural. The three respondents who indicated their company size were small firms, employing fewer than four people; this is much smaller than the size of firms that completed projects with the program.

5.2.1 Causes of Non-Completion

When asked about the current status of their Energy FinAnswer projects, all five respondents reported their projects have been cancelled (i.e. they are not completing the project at all). Reasons for cancellation fell into three categories, as listed here:

- **Customer could not move forward because of cost.** Either the respondent lacked the necessary cash to move forward or the incentive was not large enough to offset higher cost of efficient equipment.
- **The project did not qualify.** Either the energy analysis showed that savings from the project would be too small to be approved for an incentive or the project would have had to be larger in scope than planned in order to qualify for incentive.
- **The energy analysis has not yet been completed**. The customer is waiting for an engineer to visit the site.

5.2.2 Program Satisfaction

Three out of five respondents were less than satisfied with the Energy FinAnswer overall; one was satisfied, and one was not sure. When asked why they were less than satisfied, respondents reported the program "didn't work out," "didn't work very well," and in the case of the "very dissatisfied" respondent, the engineer "never came out, and it has been a really long time."

Near participants were asked if they reached out to Pacific Power during their program involvement with questions in order to assess the customer service provided to them. Only one respondent reported contacting Pacific Power with questions or for assistance during program participation. This individual indicated Pacific Power representatives were timely in addressing questions and knowledgeable with respect to the program and its requirements.

5.2.3 Project Awareness and Motivation

Similar to program participants, near participants were asked how they became aware of the program. Only one of five interviewees could recall how they learned about the program. In this case, the respondent learned about Energy FinAnswer through the USDA Resource Conservation service. Near participants were also asked what motivated them to begin working with the Energy FinAnswer program. Four respondents were able to identify reasons their organizations decided to begin working with the program as described in Table 23. The most common motivation for getting involved with Energy FinAnswer was to save money on electric bills.

Table 23: Reasons for Interest in Energy FinAnswer

Reason	Response		
	Primary	Secondary	Total
To save money on electric bills	3	0	3
To replace old or poorly working equipment	1	0	1
To reduce maintenance costs	0	1	1

5.2.4 Further Energy Efficiency Opportunities and Barriers

When asked whether there were other changes their organizations might make to reduce electricity use, one respondent indicated "yes," two indicated "no," and two others did not know. The one respondent answering "yes" mentioned plans to install a variable speed pump, and those plans did not involve any incentives from Pacific Power nor from other organizations. This respondent was also asked what

barriers might stand in the way of the project. He mentioned its high up-front costs and, more challenging, a lack of access to the necessary capital.

5.3 *California Non-Participant Findings*

In May and June of 2012, the evaluation team surveyed 23 industrial class firms that did not participate in any Pacific Power programs between 2009 and 2011, according to program tracking data.. While only industrial class non-participating customers are included in this section, the evaluation team notes that some commercial class customers would qualify for the Energy FinAnswer program. However, they are not included here because eligible commercial class customers could not be identified directly from non-participant customer data.

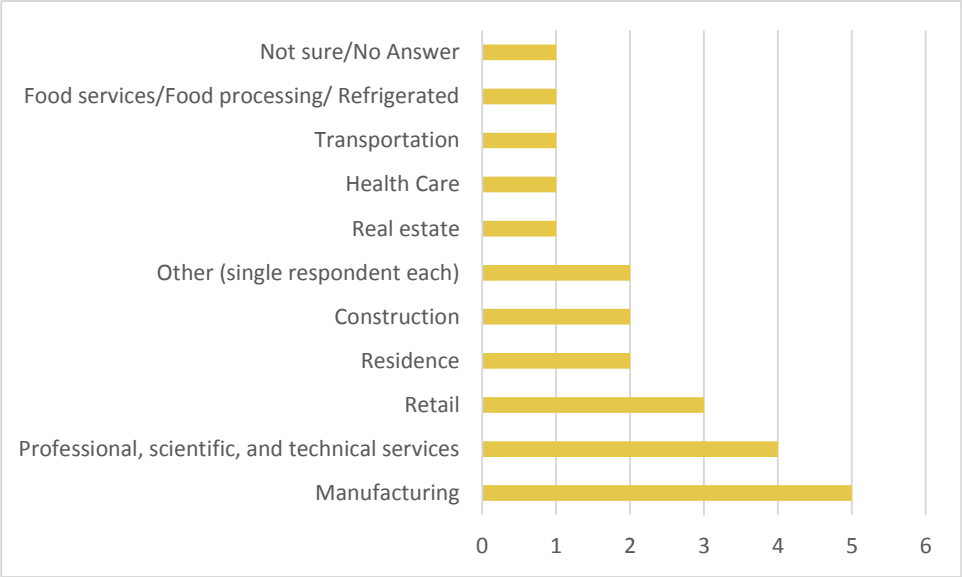
All of the non-participant respondents were from program eligible rate schedules. Table 24 shows qualifying rate schedules from tariff A-125 and the associated number of non-participant survey respondents.

Table 24. Industrial Non-Participant Survey Respondents by Rate Schedule

Qualifying Rate Schedule	Number of Respondents
A-25	12
A-32	7
A-33	0
A-36	4
AT-47	0
AT-48	0
LS-53	0
OL-42	0
PA-20	0
Total	23

These respondents represent diverse industries with the most common responses being manufacturing. The second most common response was "professional, scientific and technical services." Figure 5 shows the distribution of primary activities for the surveyed non-participants.

Figure 5: Primary Activity for Non-Participating Respondents



The majority of non-participant firms are small, based on number of employees, with 11 of 23 responding firms employing fewer than three people; however one firm was a larger enterprise, employing more than 100 people (shown in Table 25). The majority of participating firms had few employees, as well; one employed fewer than three people and one had 129 employees.

Table 25: Size of Non-Participant Firms, by Number of Employees

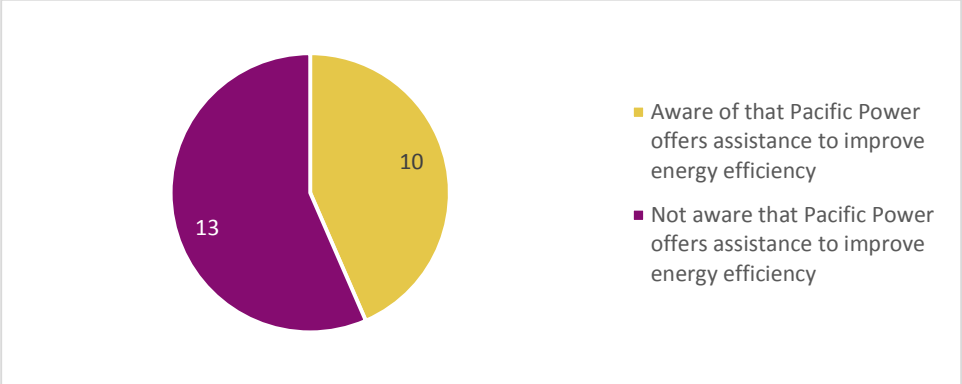
Number of Employees	Count of Respondents
Less than 3	11
3 to less than 10	3
10 to less than 100	6
100 to less than 1000	1
Greater than 1000	0
Not sure/Don't Know/Refused	2
Total	23

In order to understand the importance of electricity to non-participants, the evaluation team asked respondents to identify the portion of operating expenses represented by electricity costs. Similar to participating firms, non-participating firms had difficulty with this question; only seven out of 23 respondents provided a response. For these seven, the range was 1 percent to 50 percent. More than half of respondents (four out of seven) indicated that their firm's electric bills comprised 4 percent or less of their total annual operating expenses while the other three indicated that their firm's electric bills comprised 20 percent or more. The range of electricity costs to operating expenses is similar among these respondents and the participants surveyed for this evaluation who indicated a range from 10 percent to 50 percent.

5.3.1 Awareness of Pacific Power Programs

When asked if they were aware that Pacific Power offers incentives and technical assistance to help consumers reduce electricity usage, about 43 percent of non-participating respondents (10 of 23) affirmed they were, as shown in Figure 6.

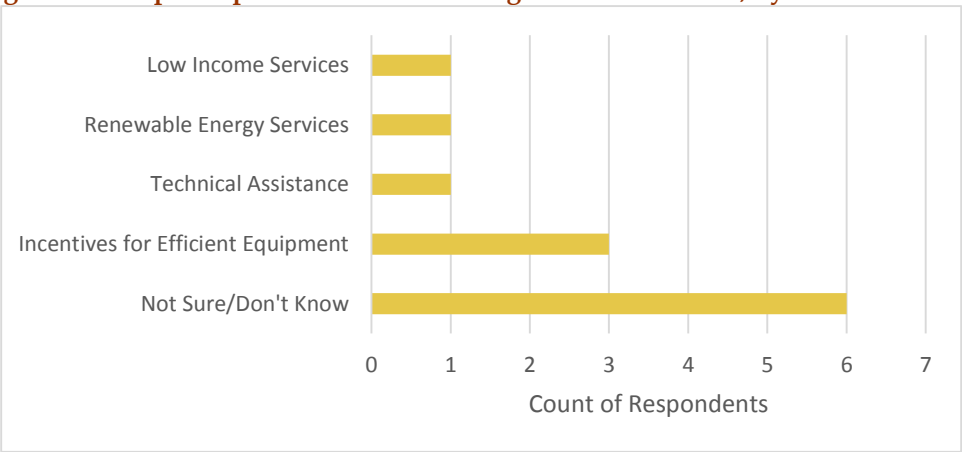
Figure 6: Non-Participant Awareness of Pacific Power Programs and Services



Those respondents who were aware that Pacific Power offers incentives and technical assistance aimed at helping customers reduce electricity usage were asked to identify what programs or services Pacific Power offers customers. This was an open-ended question, and customers were not prompted with a list of programs and were allowed to name as many programs or services that they could.

More than half of the respondents (six of 10) who were aware that Pacific Power offers incentives and technical assistance were not able to identify a particular Pacific Power program or service that would be available to them.[33] For those that could identify specific programs or services, the most common response was incentives for efficient equipment, as shown in Figure 7. In addition, low-income services, renewable energy services, and technical assistance programs were each identified by one respondent directly.

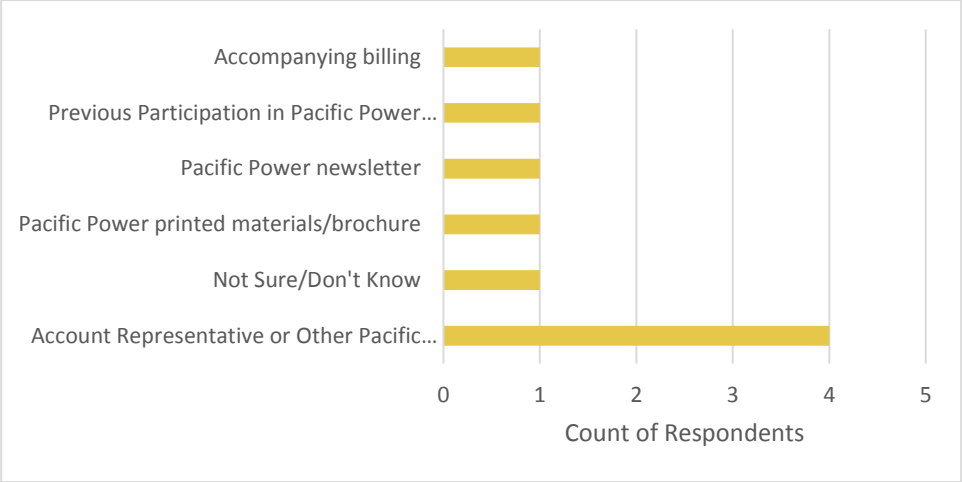
Figure 7: Non-participant Awareness of Programs and Services, by Customer Class



Of those who were aware that Pacific Power offers programs, the most common source of program information was from a Pacific Power representative. Figure 8 shows all responses of how non-participants indicated hearing about the programs.

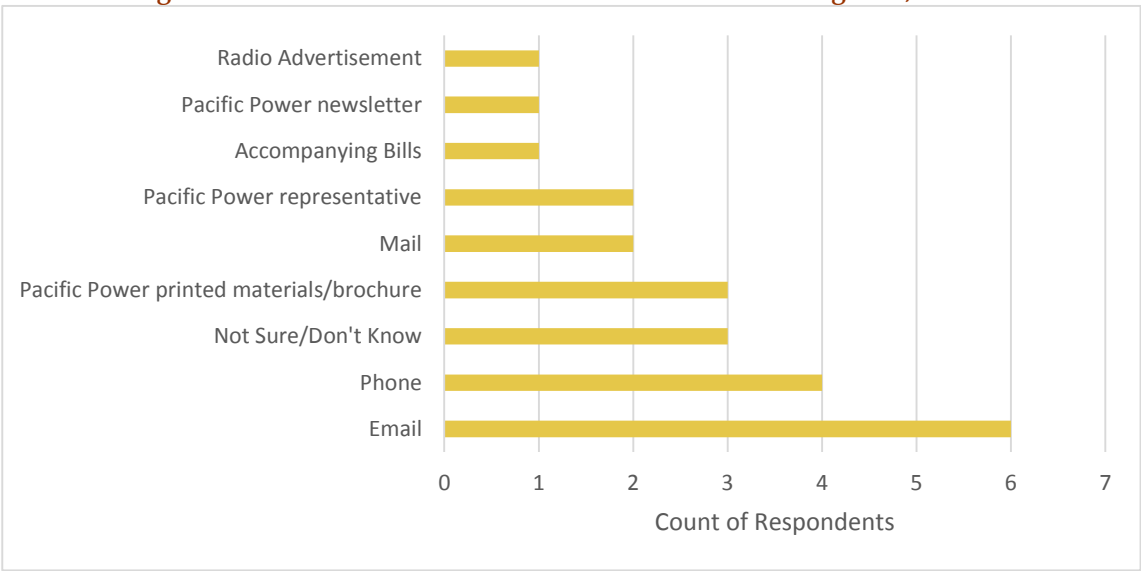
[33] More than one response was allowed. The four respondents who gave examples provided a total of six examples of programs or services.

Figure 8: How Non-Participants Heard about Pacific Power Programs, Overall



Respondents were also asked how they would prefer to learn about Pacific Power programs, as shown in Figure 9. The top two preferred methods were email (six respondents) and phone (four respondents). Comparing the preferred methods to learn about programs with actual methods that non-participants had heard about Pacific Power assistance shows that current marketing efforts through Pacific Power representatives, bill inserts, and newsletters are reaching non-participants. However, the most preferred methods to learn about programs were email and phone; these methods represent cost-effective options to reach out to customers in the rural California territory that could increase awareness and potentially participation.

Figure 9: Preferred Methods to Learn of Pacific Power Programs, Overall



5.3.2 Non-Participant Energy Efficiency Improvements

Non-participants were asked a series of questions about energy efficiency actions or improvements that they may have taken during the program years of 2009 to 2011. These questions were in regards to: high efficient equipment purchases, load or demand reduction efforts, systematic evaluations or energy

analyses of existing facilities[34]. None of the respondents indicated that their facilities were constructed since 2009, so all were assumed to be existing facilities.

Of the 23 non-participants with existing facilities in 2009, four respondents indicated that their firms installed high efficiency equipment between 2009 and 2011. One industrial class customer indicated that they had assistance from Pacific Power when they installed high efficiency equipment. The high efficient equipment installed by industrial non-participants included air compressors, metering, and building shell components. The three industrial non-participants who installed high efficiency equipment and did not apply for assistance from Pacific Power were asked why they did not. One was not aware of programs or services, another said that they had help from Pacific Power without applying, and the other was not sure.

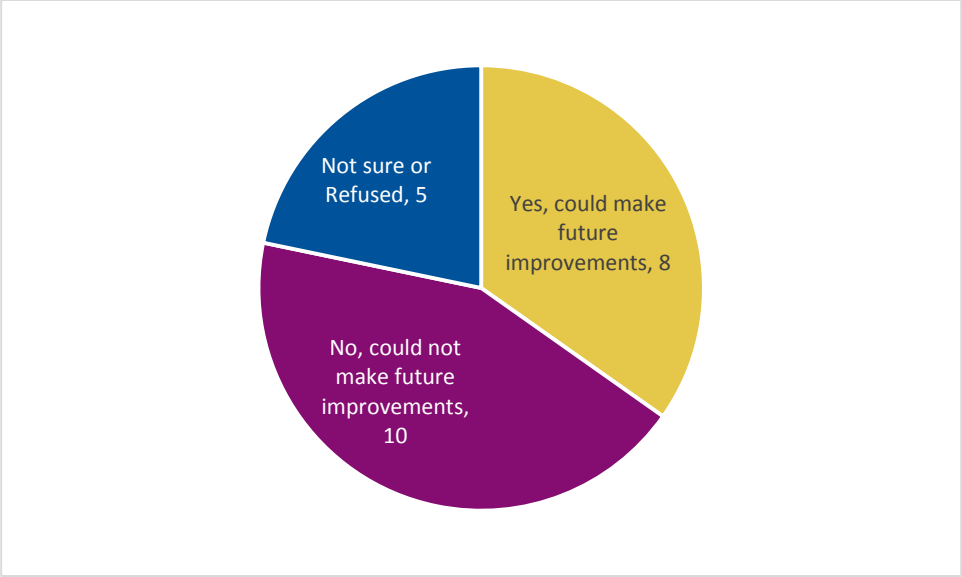
None of the 23 industrial non-participants stated that they had implemented load or demand reduction efforts. Pacific Power does not operate load control programs in California.

One industrial non-participant stated that they had completed a systematic evaluation of their facility with assistance from Pacific Power; the evaluation recommended an air compressor, which they installed.

5.3.3 Further Energy Efficiency Opportunities and Barriers

About one-third of the non-participating respondents (eight out of 23) indicated that they believed their firms could take additional steps in order to increase electric efficiency. A larger portion (10 out of 23) stated that they did not think their firm could make additional energy efficiency improvements. The rest (five out of 23) were not sure, as shown in Figure 10.

Figure 10: Non-Participant Indication of Further Energy Efficiency Opportunities



[34] Respondents were asked if they had received assistance from Pacific Power if they reported taking energy efficiency actions or improvements. The evaluation team assumes that this assistance is not in the form of program participation because the non-participant list was crosschecked with the participant tracking data by Pacific Power.

When asked for examples of measures that the responding firms could implement in order to increase electric efficiency, the eight respondents who believed they could make improvements offered the following:

- Purchase more efficient equipment/appliances/lighting
- Make upgrades in efficiency of equipment parts
- Improve building envelope
- Conduct/contract for technical assessment or energy analysis
- Install distributed generation/small-scale renewable energy
- Improve system and operation processes

These same eight non-participants who had indicated they believed their firms could take additional steps to improve electric efficiency were also asked what might prevent them from implementing electric efficiency improvements. The most common barrier, noted by three respondents, was "high upfront costs." The remaining potential reasons mentioned by non-participants were equally spread across six barriers, as shown in Table 26. The Energy FinAnswer program offers technical assistance and incentives which could overcome the barriers of high upfront costs, lack of information about savings and performance, and long payback period. Pacific Power currently does not have programs to overcome the barrier of lack of access to capital; a financing program could help with this barrier if Pacific Power seeks to address it. There is no action that Pacific Power can take to increase the priority of energy efficiency internal to firms or to change government permitting rules, so these barriers will need to be addressed outside of energy efficiency programs.

Table 26: Barriers to Implementing Electric Efficiency Improvements

Barriers to Implementation	Count of Respondents
High upfront costs	3
Lack of access to capital	1
Low priority/lack of interests of senior management/building owner	1
Government/legal permitting/rules	1
Lack of information about savings and performance	1
Long payback period; slow rate of return	1
Nothing	1
Total	9

5.4 Energy Engineer Findings

In July and August of 2012, the evaluation team interviewed energy engineers from five out of twenty-three Energy Engineering Firms who are contracted by the Company to conduct energy analyses throughout the territory, including Pacific Power territory in California. Engineers do not work in only one state because they tend to be experts in particular industrial or equipment areas.

5.4.1 Program Satisfaction

All of the energy engineers interviewed indicated that they were somewhat satisfied with their experience with the Energy FinAnswer program overall. They believe that the program is well designed and works well for customers.

Three engineers indicated some dissatisfaction with their role in the program. These engineers expressed concern with what they perceive is a shift away from their customer interactions towards working in the

background; all three noted that they used to have more interaction with customers and that customers still reach out to them. They also note that they have been discouraged from seeking additional project leads.

5.4.2 Program Awareness and Motivation

It is unclear how engineers become aware of the Energy FinAnswer program. All five engineers interviewed indicated that they had been working with the program for so long, or their company had started working with the program before they started working there, so they did not remember how they initially became aware of the Energy FinAnswer program.

Engineers appear to be motivated to work with the program as they would for any customer. Two engineers indicated that it was a good opportunity while one indicated that the Company was their first customer. Two engineers did not recall what motivated them to work with the Energy FinAnswer program.

5.4.3 Training, Roles and Communication

None of the interviewed engineers indicated that they had formal training from the program. These engineers either had internal training on the program (three) or did not recall training on the program (two). One indicated that their firm puts quite a bit of effort into ensuring that their engineers understand the program. Others indicated that they educated themselves about the program. All engineers indicated that they understood the program and their role in the program.

Engineers noted that the Company holds an annual meeting for consultants that they attend. Three of five engineers had comments on these meetings, in addition to stating that the information provided at the meetings was useful. Two engineers suggested changing the format of the meeting, indicating that they would prefer more dialogue. One engineer was particularly appreciative of the annual meeting and indicated that they were "quite valuable."

Engineers communicate mostly with the project manager who is associated with the area in which their project is located; communication is as needed throughout the project. Sometimes, engineers will communicate with the program manager. Two engineers indicated that they have noticed an increase in the consistency of communications with project managers over time. Two engineers were satisfied with their communications with the program contacts; one was not sure. Two engineers were neither satisfied nor dissatisfied; these two indicated that the project managers were busy, and the engineers may have to contact them more than once to get answers to questions. When they are able to reach the program contact, the contact has been able to answer their questions.

5.4.4 Energy Analysis Process

Engineers indicate that the bulk of their time (at least half) with the Energy FinAnswer program is spent doing contracted energy analyses, as opposed to quality control reviews of other engineering firm's work.

The interviewed engineers provided similar descriptions of the energy analysis process. They indicate that a project manager contacts them with an interested customer's information. They are able to review some information, depending on the project and customer, before going out to the customer's site. The engineer will collect as much information as possible while on the customer's site; this includes noting equipment and settings in place and talking with facilities personnel. After this initial site visit, the engineer will draft up a report that provides a rough estimate of savings opportunities; the report is sent to the project manager. The project manager and the customer will decide if they are moving forward with the project, and, if so, the project manager will contact the engineer again.

At this point, the engineer will determine whether they can do the work within the time allotted by the program without a proposal, or if the engineer will need more time.[35] If the engineer needs more time, the engineer submits a proposal to the project manager that details the required budget to complete the analysis.

Engineers sometimes must return to the site for the more detailed energy analysis, but sometimes they can conduct this work based on data already collected and through contact with the site. When they have completed the analysis, they prepare an EAR that they send to the project manager. The EAR is peer reviewed for quality control, and the engineer revises as necessary and resubmits the EAR to the project manager.

Two engineers noted that the EARs and associated quality control reviews were by far the most rigorous that they had seen among different programs over time. Three engineers offered additional comments on the EARs. One indicated that some projects might be better served with shorter, simpler reports. Projects that could be candidates for simpler reports are those with straightforward EEMs. Two others indicated that they were not clear on what level of detail should be included in reports; however, both of these engineers noted that new templates had recently been provided, and they expressed optimism that the new templates may relieve this confusion.

5.4.5 Quality Control Reviews

All five engineers that were interviewed also conducted quality control reviews of peer engineers' work. One engineer suggested that his firm spends about half their time with Energy FinAnswer conducting these reviews; the other five indicated less than 10 percent or less than 5 percent of their time working with Energy FinAnswer is spent on quality control reviews.

These quality control reviews are completed on EARs that are submitted by other engineering firms. All engineers believe that their peers provide them with constructive feedback most of the time. Reviews are valuable because they provide a different viewpoint and they can improve the value of the work. One engineer indicated that the quality control reviews had changed the way they work outside of the program because it increased diligence. Others indicated that the reviews did not change the way they did business; one noted that they always did internal quality control reviews.

All five engineers indicate that the time allotted for completion of quality control reviews is sufficient. Two stated that it is sometimes difficult to turn their attention to quality control reviews when they are in the middle of another project, but that they are able to work with the project managers to have more time if necessary.

5.4.6 Measurement and Verification Process

Engineers indicate that they conduct measurement and verification both with the program (where their work is funded by the Company) and as part of commissioning (where their work is funded by the customer). Engineers state that, formally, they find out about project completion from the project manager, who is notified by the customer. However, informally, they are in contact with the customer either because they have previously been retained to complete the commissioning or because the project manager asked them to keep up to date on the project's status. Engineers noted that customers sometimes are challenged to manage the project and stay in touch with the program from the EAR through commissioning.

[35] The program allowed 16 hours without a proposal in 2009 and 2010; in 2011, the program began allowing 24 hours of work without a proposal.

Engineers believe the commissioning step, for equipment that benefits from commissioning, is valuable because it provides four weeks of data with the equipment in operation as designed in the energy analysis (or improved after installation by the engineer). When the engineers conduct both commissioning and the final inspection on a project, they can usually combine the visits and split the costs between activities.

For verification, the engineers ensure that the equipment is installed and operating as designed in the EAR. They may take pictures of the installed equipment, note serial numbers, review invoices, take measurements, and speak to the site contact. If they did not conduct the commissioning, they will review the commissioning report, which includes information about actual operating energy use for four weeks.

The Final Inspection Report includes the engineer's estimate of annual energy savings based on the data that they have available.

Engineers note that they usually have enough time to conduct measurement and verification, but that the task is more difficult if the customer did not do commissioning. They are challenged to estimate savings without commissioning data within the time allotted for measurement and verification.

5.4.7 Business Impact

Engineers were asked how working with Energy FinAnswer had impacted their business. Engineers provided mixed responses. Two engineers indicated that they started doing energy analyses with the Company as their first customer. Two others noted that the program had no impact on their business beyond the project work that they did. One engineer was not sure how to describe the impact of the program on his business.

None of the five engineers we spoke with are doing the same kind of work for customers in the Pacific Power territory who do not work with the Pacific Power programs. They indicate that they would continue to offer the same kind of services, but they cannot foresee great demand for this work. However, one engineer indicated the challenge at identifying the market's willingness to seek energy analyses without the program because the utility has offered some form of assistance for so long.

5.5 Process Findings

From May through August 2012, the evaluation team surveyed or interviewed 33 cusomers: five participants, five near participants, and industrial class non-participants. The evaluation team also conducted in-depth interviews with five energy engineers. This section summarizes answers to the research questions for this process evaluation.

1. **What are the program goals, concept and design? Are they based on sound theory and practice, and, if not, in what respects?**

   The Energy FinAnswer program in California seeks to improve energy efficiency at commercial and industrial sites. The basic program theory is that providing technical assistance will help overcome information gaps for customers and providing an incentive will help the customers overcome cost barriers. The design is indicated in the program logic model in the program overview. The program concept and design are based on sound theory and practice in line with best practices for non-residential large comprehensive incentive program design.[36] No explicit energy savings, demand savings, or participation goals were outlined for the Energy FinAnswer program for 2009 or 2010; in

[36] Quantum Consulting. 2004. National Energy Efficiency Best Practices Study Vol. NR-5 Non-Residential Large Comprehensive Incentive Best Practices Report. Submitted to California Best Practices Project Advisory Committee.

2011, the program had an energy savings goal of 7,088 kWh, which was exceeded by reported savings.

2. **Do program staff have the resources and capacity to implement the program as planned?**

   Yes. Program staff indicated that they had the resources and capacity to implement the program as planned. Most participants (four out of five) reported contacting Pacific Power with questions or requests for assistance during their program participation. All of these said Pacific Power and its representatives were knowledgeable with respect to the program and its requirements, and all but one reported the representatives were timely in addressing their questions. One near participant reporting contacting Pacific Power and said that the representatives were both knowledgeable and timely. Energy engineers noted that there were some communications challenges and delays between the customer and the program.

3. **Is the program being delivered as planned, and if not, how and why?**

   Yes, the program is being delivered as planned. Both participants and energy engineers describe the program operating as expected from the logic model. Also, two near participants did not move forward with projects after the energy analysis because the savings based on their project scope were not large enough to qualify for the program; this indicates that the energy analysis and PM review is working to focus efforts towards projects with savings. The program also exceeded energy savings goals in 2011, the first year that goals were established.

   Based on the evaluation findings, 11 of 12 of the program outcomes expected from the logic model were positively affirmed. Table 27 lists the program outcomes indicated in the logic model along with findings based on the key indicators and data sources reviewed in the process evaluation (refer to Table 8 for key indicators and data sources). One of the outcomes indicated in the logic model, "customers are aware of the program" was not clearly supported through customer surveys; this is addressed in the next question.

4. **Is the program reaching the intended target population, and if not, why? Specifically, are eligible customers aware of the program, how are they becoming aware, and what is the program influence on their actions?**

   All industrial customers and commercial customers with facilities greater than 20,000 square feet are eligible for the Energy FinAnswer program. From 2009 to 2011 there were seven participating projects from six unique customers and thirteen nearly participating customers. This implies an estimated program reach of 2.1 percent of eligible customers (19 of 887).[37]

   Are eligible customers aware of the program? To understand if eligible customers are aware of the program, the evaluation team relies on program-eligible non-participant responses. Of a representative sample of industrial non-participants, nearly half (10 out of 23) affirmed that they were aware that Pacific Power offers incentives and technical assistance to customers in their class to help them reduce electricity usage. When asked what programs or services were offered to customers in their class, three identified incentives for efficient equipment and one identified technical assistance. No industrial non-participants were specifically aware of Energy FinAnswer as a program. The program is not expected to have high name recognition due to the intentional choice by Pacific Power to market the commercial programs as a portfolio and then match customers with the program that best fits their needs. However, low awareness that Pacific Power offers technical assistance and incentives may limit participation by eligible customers.

[37] Eligible customers are estimated at 887, the sum of: 6 participants, 13 near participants, 115 industrial class non-participants, and 753 commercial class non-participants (see methodology for explanation).

How are they becoming aware? Customers who do begin working with the program mostly find out about it directly from Pacific Power, as is expected from the program logic model. However, the logic model also presumes that customers will learn about the program advertisements and a customer efficiency focused website.[38] No participants, near participants or non participants indicated that they had heard about the program through any advertisements or the website. Non-participants indicated that they prefer to learn about programs and opportunities through email and phone.

What is the program influence on their actions? Participants are influenced by Pacific Power incentives, saving energy, and saving money on energy bills. Most measures installed are at least partially influenced by the program. Participants indicated that just one of seven measures would have been installed at the same time without the program, and three of seven measures would not have been installed at all without the program. There is no indication at this time of attributable spillover from the Energy FinAnswer program.

5. **What barriers are preventing customers from taking actions to reduce energy consumption and demand, and which jeopardize program cost-effectiveness?**

   High upfront costs and lack of access to capital are the most common barriers to further customer action to reduce energy consumption and demand. More telling is the portion of respondents who stated that there were no further actions that their firm could take to improve efficiency: 40 percent of participants, 40 percent of near participants, and 75 percent of non-participants. These responses indicated that one barrier might be that the eligible population truly does not have additional energy efficiency actions or is not aware of possible additional actions. Given that they believe there are no other opportunities, it may be a challenge to gain their attention and educate them otherwise.

6. **Are participants achieving desired outcomes, and if not, how and why?**

   For the most part, participants are achieving desired outcomes. Participants are mostly satisfied, keeping their equipment in operation, and achieving energy savings as expected based on the program logic model. Participants did not indicate program spillover, and the energy engineers were not doing similar work with eligible customers outside of the program.

[38] According to Pacific Power DSM Annual Report documents, the program was advertised in print advertisements seasonally in all three program years; the campaign included radio and print advertisements in spring 2009, fall 2009, and throughout 2010 and 2011. The website is http://www.pacificpower.net/wattsmart/.

Table 27: Program Outcomes and Findings

Outcome	Finding
Short-term Outcomes	
Customers are aware of the program	No, of 23 industrial class non-participants surveyed, none were aware of the program specifically, only one was aware of technical assistance, and only three were aware of incentives for efficient equipment. Nearly half, 10, were aware that Pacific Power offers assistance to customers to reduce electric energy use.
Customer expresses interest in the program	Yes, participants, near participants, and engineers describe customers expressing interest in the program.
Customer signs and returns LOI	Yes, program tracking data indicate receipt of LOI, and engineers describe this step in the process.
Energy engineers selected for project analysis and quality control	Yes, program staff and engineers describe this activity. Engineers for analysis and quality control are identified in the program tracking data.
Energy saving measures, costs, and benefits identified	Yes, participants, near participants, and energy engineers describe the energy analysis reports including this information.
Measures installed and commissioned as required	Mostly, only one recommended measure was not installed. Similarly, only one measure for which commissioning was recommended was not commissioned. Engineers describe working with participants to ensure that measures are installed and set properly during commissioning.
Installation of measures verified	Yes, post-installation inspections are occurring according to participants, engineers, and program tracking data.
Customers receive benefits and have reduced first costs	Yes, participants indicate they find the incentive valuable. Program tracking data include cost-recovery dates.
Mid-term Outcomes	
Customers have trusted information	Yes, participants and near participants find the Energy Analysis Report valuable.
Reduce kW and/or kWh at customer facility	Yes, most participants indicate that energy savings are meeting expectations.
Long-term Outcomes	
Achieve peak demand and energy use reduction targets	Yes, program exceeded energy savings target of 7,088 kWh in 2011. Program did not have reduction targets for 2009-2010.
Customers observe energy cost savings	Yes, most customers indicate that energy savings are meeting expectations.

6. Program Evaluation Recommendations

Based on the findings from this evaluation, the evaluation team has identified the following recommendations to enhance the delivery efficiency and effectiveness of the Energy FinAnswer Program in future program cycles:

Recommendation 1: Include email in the marketing strategy. Non-participants indicated that their preferred methods of learning about programs and opportunities from Pacific Power were email and phone. The program already sends mailings in the form of newsletters and bill inserts. In the future, as email addresses become available, extending the campaign to customer email would provide an additional avenue to generate program participation leads. This may also be the most cost-effective method of directly reaching out to the rural California territory. Pacific Power can adapt current marketing materials to email, or send them directly, and point customers to the general energy savings website http://www.pacificpower.net/wattsmart or specifically to information or case studies highlighting the Energy FinAnswer program. From there, customers can easily find more information about specific energy savings actions that they can take and services offered by Pacific Power to help them. Use of email in this manner should result in higher participation rates at lower cost.

Recommendation 2:. Do follow-up reviews with program participants. This would provide Pacific Power a channel for further program communication, and help to mitigate other program-related issues. Within a year of measure installation and receipt of program rebates, Pacific Power **sh**ould follow up to discuss satisfaction with the program/technology installed and to update customers on program and technology changes. During site visits, the Evaluation Team noted some sites in which customers had removed or replaced rebated lighting due to dissatisfaction with lighting levels, controls, etc. At other sites, customers inquired regarding new technologies available for rebates through the FinAnswer Express program and whether there were any changes to the current program. Pacific Power should send short follow up emails to customers to touch base on their satisfaction with the program and recommend new ways to participate in the program. These actions could also help to mitigate issues regarding updated addresses, equipment mismatches, and lack of program awareness.

Recommendation 3: Include energy and demand savings calculations in a spreadsheet format. By providing this information in one consolidated location, future evaluation efforts will be more efficient and reduce the potential for comparing verified savings to incorrect or outdated project assumptions.

- Although each project properly documented the reported energy and demand savings estimates, the absence of savings calculations (particularly for demand savings) reduces the transparency of reported savings, along with the efficiency of evaluation efforts. Providing both the input assumptions and savings calculation methodologies will ensure the comparability and accuracy of reported and evaluated savings and will reduce associated evaluation costs.
- Include the clearly identified final Energy Savings table in project files for the evaluation. The data should include both baseline and current energy and demand usage as well as savings estimates. Utilizing consistent formats based on the FINAL numbers is important for all follow up activities, and will provide decision makers the key information needed to quickly assess the situation and take appropriate action relative to the inspections conducted. It is noted that the key elements are included in the documentation for each project, but it is often difficult to identify the final set of parameters used because the project files capture multiple changes/revisions to the application process.

Final Evaluation Report for California's Energy FinAnswer Program (PY 2009-2011)

APPENDICES

Prepared for:
Pacific Power

Prepared by:

NAVIGANT In partnership with EMI

Navigant Consulting, Inc.
1375 Walnut Street
Suite 200
Boulder, CO 80302
303.728.2500
www.navigantconsulting.com

Energy Market Innovations, Inc.
83 Columbia St
Suite 400
Seattle, WA 98104
206-621-1160
www.emiconsulting.com

February 15, 2013

NAVIGANT

Table of Contents

Appendix A. Glossary of Frequently-Used Evaluation Terms

A.1 Glossary[1]

Adjustments: For M&V analyses, factors that modify baseline energy or demand values to account for independent variable values (conditions) in the reporting period.

Allowances: Allowances represent the amount of a pollutant that a source is permitted to emit during a specified time in the future under a cap and trade program. Allowances are often confused with credits earned in the context of project-based or offset programs, in which sources trade with other facilities to attain compliance with a conventional regulatory requirement. Cap and trade program basics are discussed at the following EPA Web site: <http://www.epa.gov/ airmarkets/cap-trade/index.html>.

Assessment boundary: The boundary within which all the primary effects and significant secondary effects associated with a project are evaluated.

Baseline: Conditions, including energy consumption and related emissions that would have occurred without implementation of the subject project or program. Baseline conditions are sometimes referred to as "business-as-usual" conditions. Baselines are defined as either project-specific baselines or performance standard baselines.

Baseline period: The period of time selected as representative of facility operations before the energy efficiency activity takes place.

Bias: The extent to which a measurement or a sampling or analytic method systematically underestimates or overestimates a value.

Co-benefits: The impacts of an energy efficiency program other than energy and demand savings.

Coincident demand: The metered demand of a device, circuit, or building that occurs at the same time as the peak demand of a utility's system load or at the same time as some other peak of interest, such as building or facility peak demand. This should be expressed to indicate the peak of interest (e.g., "demand coincident with the utility system peak") Diversity factor is defined as the ratio of the sum of the demands of a group of users to their coincident maximum demand. Therefore, diversity factors are always equal to one or greater.

Comparison group: A group of consumers who did not participate in the evaluated program during the program year and who share as many characteristics as possible with the participant group.

Confidence: An indication of how close a value is to the true value of the quantity in question. Confidence is the likelihood that the evaluation has captured the true impacts of the program within a certain range of values (i.e., precision).

[1] Glossary definitions are provided to assist readers of this report, and are adapted from the Model Energy Efficiency Program Impact Evaluation Guide, US Environmental Protection Agency, November 2007

Cost-effectiveness: An indicator of the relative performance or economic attractiveness of any energy efficiency investment or practice. In the energy efficiency field, the present value of the estimated benefits produced by an energy efficiency program is compared to the estimated total costs to determine if the proposed investment or measure is desirable from a variety of perspectives (e.g., whether the estimated benefits exceed the estimated costs from a societal perspective).

Database for Energy-Efficient Resources (DEER):
A California database designed to provide well-documented estimates of energy and peak demand savings values, measure costs, and effective useful life.

Demand Side Management (DSM): See "Energy efficiency."

Deemed savings: An estimate of an energy savings or energy-demand savings outcome (gross savings) for a single unit of an installed energy efficiency measure that
(a) has been developed from data sources and analytical methods that are widely considered acceptable for the measure and purpose and (b) is applicable to the situation being evaluated.

Demand: The time rate of energy flow. Demand usually refers to electric power measured in kW (equals kWh/h) but can also refer to natural gas, usually as Btu/hr, kBtu/ hr, therms/day, etc.

Direct emissions: Direct emissions are changes in emissions at the site (controlled by the project sponsor or owner) where the project takes place. Direct emissions are the source of avoided emissions for thermal energy efficiency measures (e.g., avoided emissions from burning natural gas in a water heater).

Effective Useful Life (EUL): An estimate of the median number of years that the efficiency measures installed under a program are still in place and operable.

Energy efficiency: The use of less energy to provide the same or an improved level of service to the energy consumer in an economically efficient way; or using less energy to perform the same function. "Energy conservation" is a term that has also been used, but it has the connotation of doing without a service in order to save energy rather than using less energy to perform the same function. Demand Side Management (DSM) is also frequently used to refer to actively-managed energy efficiency initiatives.
Energy Efficiency Measure (EEM): A permanently installed measure which can improve the efficiency of the Customer's electric energy use.

Engineering model: Engineering equations used to calculate energy usage and savings. These models are usually based on a quantitative description of physical processes that transform delivered energy into useful work such as heat, lighting, or motor drive. In practice, these models may be reduced to simple equations in spreadsheets that calculate energy usage or savings as a function of measurable attributes of customers, facilities, or equipment (e.g., lighting use = watts × hours of use).

Error: Deviation of measurements from the true value.

Evaluation: The performance of studies and activities aimed at determining the effects of a program; any of a wide range of assessment activities associated with understanding or documenting program performance, assessing program or program-related markets and market operations; any of a wide range of evaluative efforts including assessing program-induced changes in energy efficiency markets, levels of demand or energy savings, and program cost-effectiveness.

Evaluation, Measurement and Verification (EM&V): Data collection, monitoring, and analysis associated with the calculation of gross and net energy and demand savings from individual sites or projects which is performed in conjunction with a program or portfolio evaluation (see Evaluation).

Evaluated savings estimate: Savings estimates reported by an evaluator after the energy impact evaluation has been completed. Often referred to as ***Ex Post Savings*** (From the Latin for "from something done afterward.")

Free driver: A non-participant who has adopted a particular efficiency measure or practice as a result of the evaluated program.

Free rider: A program participant who would have implemented the program measure or practice in the absence of the program. Free riders can be total, partial, or deferred.

Gross savings: The change in energy consumption and/or demand that results directly from program-related actions taken by participants in an efficiency program, regardless of why they participated.

Impact evaluation: An evaluation of the program-specific, directly induced changes (e.g., energy and/or demand usage) attributable to an energy efficiency program.

Independent variables: The factors that affect energy use and demand, but cannot be controlled (e.g., weather or occupancy).

Interactive factors: Applicable to IPMVP Options A and B; changes in energy use or demand occurring beyond the measurement boundary of the M&V analysis.

Load shapes: Representations such as graphs, tables, and databases that describe energy consumption rates as a function of another variable such as time or outdoor air temperature.

Market effect evaluation: An evaluation of the change in the structure or functioning of a market, or the behavior of participants in a market, that results from one or more program efforts. Typically, the resultant market or behavior change leads to an increase in the adoption of energy-efficient products, services, or practices.

Market transformation: A reduction in market barriers resulting from a market intervention, as evidenced by a set of market effects, that lasts after the intervention has been withdrawn, reduced, or changed.

Measurement: A procedure for assigning a number to an observed object or event.

Measurement and Verification (M&V): Data collection, monitoring, and analysis associated with the calculation of gross energy and demand savings from individual sites or projects. M&V can be a subset of program impact evaluation.

Measurement boundary: The boundary of the analysis for determining direct energy and/or demand savings.

Metering: The collection of energy consumption data over time through the use of meters. These meters may collect information with respect to an end-use, a circuit, a piece of equipment, or a whole building (or facility). Short-term metering generally refers to data collection for no more than a few weeks. End-use metering refers specifically to separate data collection for one or more end-uses in a facility, such as lighting, air conditioning or refrigeration. Spot metering is an instantaneous measurement (rather than over time) to determine an energy consumption rate.

Monitoring: Gathering of relevant measurement data, including but not limited to energy consumption data, over time to evaluate equipment or system performance, e.g., chiller electric demand, inlet evaporator temperature and flow, outlet evaporator temperature, condenser inlet temperature, and ambient dry-bulb temperature and relative humidity or wet-bulb temperature, for use in developing a chiller performance map (e.g., kW/ton vs. cooling load and vs. condenser inlet temperature).

Net savings: The total change in load that is attributable to an energy efficiency program. This change in load may include, implicitly or explicitly, the effects of free drivers, free riders, energy efficiency standards, changes in the level of energy service, and other causes of changes in energy consumption or demand.

Net-to-gross ratio (NTGR): A factor representing net program savings divided by gross program savings that is applied to gross program impacts to convert them into net program load impacts.

Non-participant: Any consumer who was eligible but did not participate in the subject efficiency program, in a given program year. Each evaluation plan should provide a definition of a non-participant as it applies to a specific evaluation.

Normalized annual consumption (NAC) analysis: A regression-based method that analyzes monthly energy consumption data.

Participant: A consumer that received a service offered through the subject efficiency program, in a given program year. The term "service" is used in this definition to suggest that the service can be a wide variety of services, including financial rebates, technical assistance, product installations, training, energy efficiency information or other services, items, or conditions. Each evaluation plan should define "participant" as it applies to the specific evaluation.

Peak demand: The maximum level of metered demand during a specified period, such as a billing month or a peak demand period.

Persistence study: A study to assess changes in program impacts over time (including retention and degradation).

Portfolio: Either (a) a collection of similar programs addressing the same market (e.g., a portfolio of residential programs), technology (e.g., motor efficiency programs), or mechanisms (e.g., loan programs) or (b) the set of all programs conducted by one organization, such as a utility (and which could include programs that cover multiple markets, technologies, etc.).

Potential studies: Studies conducted to assess market baselines and savings potentials for different technologies and customer markets. Potential is typically defined in terms of technical potential, market potential, and economic potential.

Precision: The indication of the closeness of agreement among repeated measurements of the same physical quantity.

Primary effects: Effects that the project or program are intended to achieve. For efficiency programs, this is primarily a reduction in energy use per unit of output.

Process evaluation: A systematic assessment of an energy efficiency program for the purposes of documenting program operations at the time of the examination, and identifying and recommending improvements to increase the program's efficiency or effectiveness for acquiring energy resources while maintaining high levels of participant satisfaction.

Program: A group of projects, with similar characteristics and installed in similar applications. Examples could include a utility program to install energy-efficient lighting in commercial buildings, a developer's program to build a subdivision of homes that have photovoltaic systems, or a state residential energy efficiency code program.

Project: An activity or course of action involving one or multiple energy efficiency measures, at a single facility or site.

Rebound effect: A change in energy-using behavior that yields an increased level of service and occurs as a result of taking an energy efficiency action.

Regression analysis: Analysis of the relationship between a dependent variable (response variable) to specified independent variables (explanatory variables). The mathematical model of their relationship is the regression equation.

Reliability: Refers to the likelihood that the observations can be replicated.

Remaining Useful Life (RUL): An estimate of the remaining number of years that a technology being replaced under an early retirement program would have remained in place and operable. Accurate estimation of the RUL is important in determining lifetime program savings and cost effectiveness.

Reported savings estimate: Forecasted savings used for program and portfolio planning purposes. Often referred to as ***Ex Ante Savings*** (From the Latin for "beforehand.")

Reporting period: The time following implementation of an energy efficiency activity during which savings are to be determined.

Resource acquisition program: Programs designed to directly achieve energy and or demand savings, and possibly avoided emissions

Retrofit isolation: The savings measurement approach defined in IPMVP Options A and B, and ASHRAE Guideline 14, that determines energy or demand savings through the use of meters to isolate the energy flows for the system(s) under consideration.

Rigor: The level of expected confidence and precision. The higher the level of rigor, the more confident one is that the results of the evaluation are both accurate and precise.

Spillover: Reductions in energy consumption and/or demand caused by the presence of the energy efficiency program, beyond the program-related gross savings of the participants. There can be participant and/or nonparticipant spillover.

Statistically adjusted engineering (SAE) models: A category of statistical analysis models that incorporate the engineering estimate of savings as a dependent variable.

Stipulated values: See "deemed savings."

Takeback effect: See "rebound effect."

Uncertainty: The range or interval of doubt surrounding a measured or calculated value within which the true value is expected to fall within some degree of confidence.

Appendix B. Net Savings Methodology

B.1 Measurement of Net Savings Memo – January 27, 2012

To:	Shawn Grant, Esther Giezendanner, PacifiCorp
From:	Kevin Cooney, Matt Haakenstad, and Mike Yim, Navigant; Ellen Steiner, Jess Chandler, and Jeremy Kraft, Energy Market Innovations, Inc
Date:	January 27, 2012
Subject:	Measurement of Net Savings

This memorandum provides context and suggested approaches for estimating net savings so that the team can decide whether to move forward with this approach or continue to make changes.

Estimation of net savings attempts first to assess program influence on the participants' decision to implement an energy efficiency project. This estimation includes an examination of the program's influence on three key characteristics of the decision related to the project: timing, scope, and extent. Measurement of net savings then attempts to estimate program influence on the broader market with respect to non-program actions (free-ridership and spillover). These two efforts are combined for an overall estimate of net savings. First, the previous method is briefly described for context followed by our proposed method moving forward.

Previous method for measurement

The approach used in past evaluations for estimating program influence consisted of presenting program participants a battery of six core questions, used in combination, to derive free-ridership scores included in net-to-gross calculations. The six core questions were:

- Would the participant have installed the equipment without the program?
- Had the participant already ordered or installed the equipment before learning about the program?
- Would the participant have installed the equipment to the same level efficiency without the program incentive?
- Would the participant have installed the same quantity of equipment without the program?
- In absence of the program, when would the participant have installed the equipment; were they planning to install the equipment in the same year?
- Was the equipment included in the participant's most recent capital budget?

Responses to these survey questions were evaluated using a scoring matrix (for an example of this matrix see Appendix G.1 in Final Evaluation Report For Wyoming's FinAnswer Express Program[2]) to determine each participant's free-ridership score. Spillover was not quantitatively assessed in past evaluations.

[2] Navigant and EMI. *Final Evaluation Report For Wyoming's FinAnswer Express Program*. Prepared for Rocky Mountain Power. October 25, 2011.

Reasons for proposing a new method

Though a consistent net savings estimation technique across programs is desirable to ensure comparability, our experience with the previous method provided several "lessons learned." Based on this experience, we believe a more rigorous approach is advisable and that the benefits of improved validity outweigh the benefits of a consistent methodology between program years.

The changes recommended result in a more granular and holistic approach to assessing program influence. First, the previous method did not adjust the questions to get meaningful responses by measure type from the participants. This absence was particularly apparent on large custom projects, such as Energy FinAnswer. For Wyoming, the savings by measure could be accomplished only for lighting, and for previous evaluations, no attempt was noted in the reports to attempt to describe net savings by measure. Also, our methodology did not include any estimation of spillover savings attributed to the program and only assessed free-ridership. The absence of spillover in our net savings estimation results in a conservative estimate of program impacts.

Our recommended changes to the free-ridership battery are based on recent research conducted in Massachusetts on best practices in free-ridership and spillover estimation techniques[3]. This research is not only timely, but it has also been rigorously reviewed. The report was created by a team of experienced evaluators (Tetra Tech, KEMA, and NMR) and reviewed by program staff at eight utilities operating in Massachusetts including National Grid and NSTAR, two of the largest investor-owned utilities in New England both with long histories of energy efficiency programs. Members of the PacifiCorp's evaluation team were integral to both the development and implementation of these methodologies in 2007, 2009, and again in 2011. Implementing these recommendations provide the following benefits to the evaluation:

- Targeted questions improve internal validity of free-ridership estimates.
- The methodology creates a calculated estimate of free-ridership savings compared with the scored estimate previously used.

In addition to estimating program free-ridership, we also recommend that the evaluation quantitatively assess participant spillover. As programs mature and transform their target market, quantifying spillover allows for evaluators to recognize the programs' market effects[4]. Spillover savings can be classified into two categories based on measure types: "like" spillover and "unlike" spillover.

- "Like" spillover savings are the energy savings associated with additional high efficiency equipment installed outside of the program of the same end-use as what that participant installed through the program. For example, if the participant installed high-efficiency lighting fixtures as part of the program, "like" spillover would be limited to any additional high efficiency lighting installed without any assistance from PacifiCorp but influenced by program activity. This type of spillover is quantifiable using program tracking savings as a proxy. Historically, spillover results in a small portion of the overall program attribution (in the Massachusetts studies cited above, it represented 8.8 percent of the overall attribution score).

[3] Tetra Tech, KEMA, and NMR. *Cross-Cutting C&I Free-Ridership and Spillover Methodology Study Final Report*. Prepared for the Massachusetts Program Administrators. April 18, 2011.
[4] Saxonis, William P. New York State Department of Public Service. Free-Ridership and Spillover: A Regulatory Dilemma. IEPEC. 2007

- "Unlike" spillover savings are the savings associated with any other high efficiency equipment installed outside of the program that are not of the same end-use category as what installed through the program. Continuing the example above, if the participant installed high efficiency lighting through the program, the high efficiency HVAC equipment installed outside of the program would be considered "unlike" spillover as it is not the same end-use.

Spillover savings can come from participants, who are influenced by their program participation to conduct further energy efficiency improvements, known as "participant" spillover. Spillover questions can be added to the participant surveys conducted for projects completed at least 6 months prior. Asking participants who have just completed a project with the program about spillover from that program may not be productive, since participants are unlikely to have the opportunity to install any spillover measures.

Spillover savings can also come from non-participants. Non-participants may be influenced by program advertisements or other program actions (like contractor training, upstream buy-downs, etc.) and make energy efficiency improvements without assistance from any program. This is known as "non-participant" spillover. Non-participant spillover can be most easily quantified by interviewing participating vendors and other supply chain actors. During these interviews, the evaluation team can assess the amount of measure adoption that occurred outside of the program compared to what occurred through the program. Again, using program-tracking data as a proxy, we can estimate outside sales. This estimate of outside sales will capture both "like" and "unlike" spillover savings. We will remove "like" spillover estimates as reported by participants to avoid double-counting.

Limitations

There are limitations with our proposed changes (these limitations were also present in our previous methodology). Our participant estimates are still limited to self-reported responses to a hypothetical situation (i.e., what would have happened absent the program). However, we feel that proper survey design and fielding protocols can mitigate the problems associated with self-report[5,6] In addition, without detailed market level baseline data, the self-report methodology is still the most appropriate and cost-effective way to estimate program influence at the detail needed to assist in program design[7]. Likewise, our experience in Wyoming indicated that it was not fruitful or cost-effective to review project file text for the purposes of enhancing the self-reported responses.

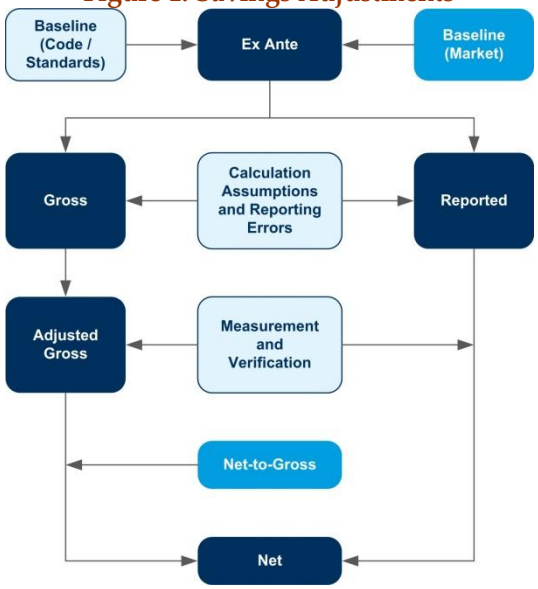
Figure 1 illustrates the adjustment steps taken when evaluating net savings. In contrast with the gross savings, which usually can be directly measured with instrumentation, the adjustments made to reach net savings are measured indirectly. This is important to keep in mind as the farther from the actual measure we get, the less precise findings can be.

[5] Keating, Kenneth M., PhD. Free-Ridership Borscht: Don't Salt the Soup. IEPEC. 2009

[6] Megdal, Lori, Megdal & Associates, LLC, Yogesh Patil, Energy & Resource Solutions, Inc., Cherie Gregoire and Jennifer Meissner, New York State Energy Research and Development Authority, and Kathryn Parlin, West Hill Energy & Computing, Inc. Feasting at the Ultimate Enhanced Free-Ridership Salad Bar. IEPEC. 200

[7] National Action Plan for Energy Efficiency (2007). Model Energy Efficiency Program Impact Evaluation Guide. Prepared by Diane Munns and Jim Rogers. <www.epa.gov/eeactionplan

Figure 1. Savings Adjustments



For illustration purposes, consider a participant in the FinAnswer Express program:

A participant installs a variable frequency drive on a fan motor with the program and gets an incentive. The program and evaluators can measure the energy consumed by the new variable frequency drive either directly, depending on configuration, or based on the hours it is observed to be operating and its features. This consumption is compared to a baseline estimate of what would have been consumed by a direct drive in the same case. There is high confidence that the savings are accurate.

Then, the evaluators ask the participant if they would have installed the same variable frequency drive at the same time without the incentive; the participant can consider whether the previous drive needed to be replaced at the same time and the relative costs to decide what might have happened. Then, the evaluators ask the participant if they installed any other variable frequency drives since participating in the program and how much the program influenced their choice; the participant can consider the time frame of installation and determine (probably more easily with this equipment type than some others) if something similar was installed.

Exploring still further, the evaluators ask the participant if they installed any other efficient equipment – now the participant has to think about the time frame and relative efficiencies of any equipment purchased since the program involvement. When asked how influential the program was on these purchases, the participant is expected to think through many decisions.

As a thought exercise, we can imagine that gross savings for a program and measure type are estimated to be 100 kWh. Based on participant responses, the free-ridership ratio is estimated to be 20%; the sample was random and drawn to meet 90% confidence and 10% precision, so the range of this estimate is 18% to 22%. Of all the possible spillover, only "like" spillover can be quantitatively assessed, and it is estimated to be 10% with the same confidence and precision leading to an estimate of 9% to 11%. The unlike participant spillover questions revealed that participants are more likely to install efficient unlike

equipment than like equipment and attribute it to program influence, and market allies confirm that they are seeing activity outside of the program.

These adjustments result in net savings of 90 kWh with a range of 87 kWh to 93 kWh. However, these numbers cannot capture the other spillover that we can only qualitatively assess. We may say we think it is closer to the higher number because participant and market ally responses reflect additional program influence, but this is a subjective assessment and may not be appropriate given the need for defensible savings estimates. In some cases, we may find high free-ridership responses and not identify any quantifiable "like" spillover even if much unquantifiable spillover can be described. In these cases, reporting net savings may reflect poorly on the actual program influence.

Though this method provides net savings that are much less precisely estimated than the gross savings, we feel that, given the design of the PacifiCorp programs, it is the most cost-effective and consistent method to assess program attribution.

Proposed method for measurement

This section includes brief recommendations for measuring free-ridership and spillover to get to a net savings estimate.

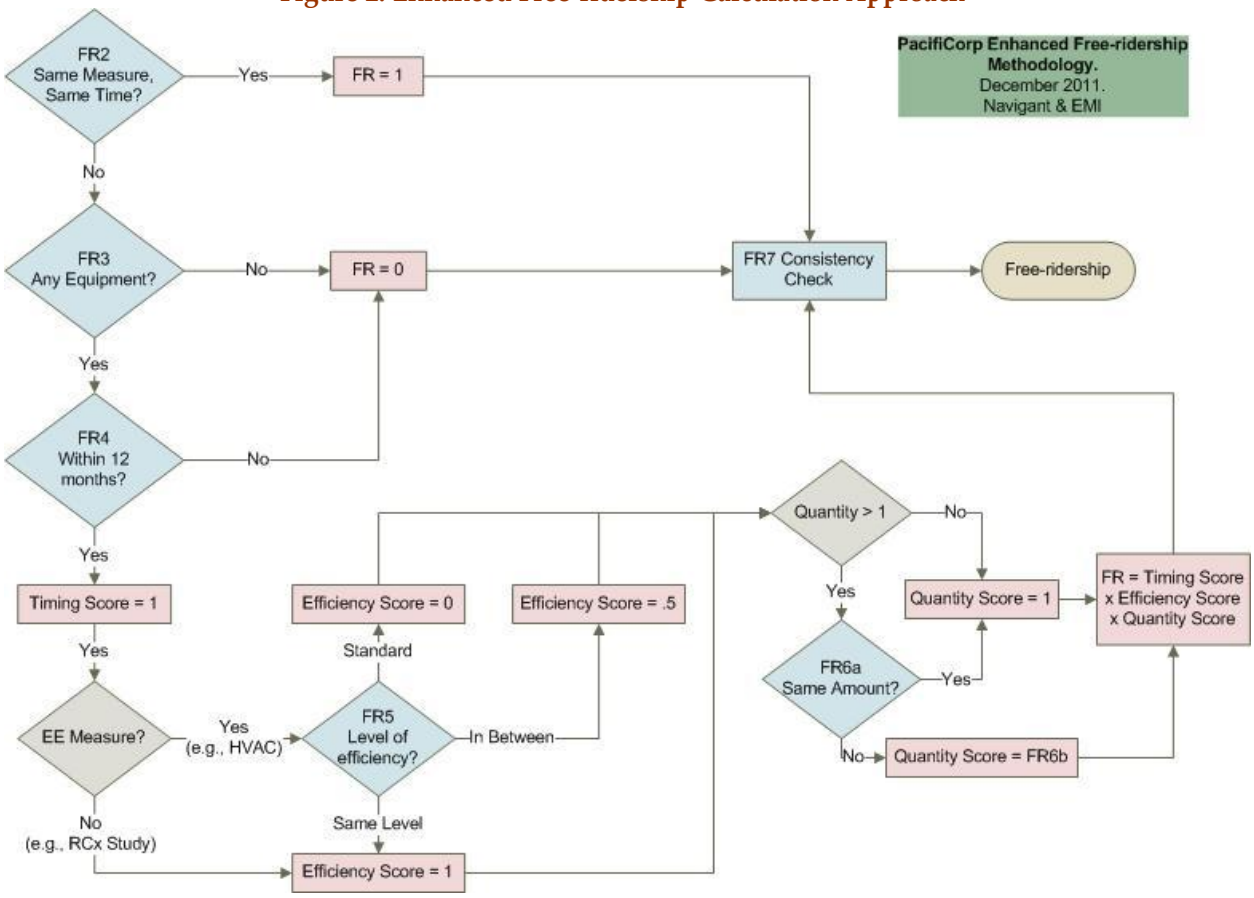
Free-ridership

To improve the test of the counterfactual (i.e., what would have the participant done without the assistance of the program), we recommend more targeted free-ridership questions. As a start, we recommend refining the initial free-ridership question (Would the participant have installed the equipment without the program?). This question would be altered to include "at the same time" to clarify the timing component of the decision. It would also be preceded by a brief description of all the assistance the customer received as part of their participation in the program (e.g., technical design assistance, the amount of any monetary incentives, any program-subsidized financing). This description would be customized by program and by project (as data are available). This description is intended to remind the participant of all the ways the program may have influenced their decision to move forward with a specific project.

Then, we recommend asking targeted questions about quantity and efficiency of equipment that would have been installed (or actions that would have been taken) without the program while referencing what the participant did with the program.

Including these revisions in the free-ridership battery will allow the evaluation team to use a calculation approach to estimating the amount of energy savings that may have occurred without the program. This approach is detailed in Figure 2 below.

Figure 2. Enhanced Free-ridership Calculation Approach



Based on the participant's responses, the team can estimate the percentage of equipment that would have been installed at the same time without the program (the quantity score) and the percentage of that installed equipment that would have been high efficiency equipment (the efficiency score)[8]. The product of these two estimates is the initial free-ridership ratio.

Free-Ridership Ratio = Quantity Score x Efficiency Score

For example, a participant that installed four high efficiency HVAC units through the program reports that, without the program, they would have not installed the same measures at the same time. Following up, the respondent states they would have installed some equipment and it would have been installed within 12 months. When probed about the level of efficiency of the equipment that would have been installed absent the program, the participant reports that they would have installed equipment that was more efficient than baseline but not as efficient as the program-eligible equipment. Finally, they report they only would have installed one unit (instead of four). Using the scoring above, this participant's efficiency score would be set to 0.5 and the quantity score would be set to 0.25. Their initial, unadjusted free-ridership score is then the product[9] of these two scores or 0.125. This figure indicates that 12.5 percent of the savings attributed to this project would have occurred absent the program.

[8] Question text will be altered for projects where quantity is not applicable. For example, if a project consisted of the installation of an EMS, the quantity question would be skipped.

[9] This multiplicative approach is appropriate as the score is the result of a product of the quantity installed and not a product of probabilities (Keating. *Free-Ridership Borscht: Don't Salt the Soup.* IEPEC. 2009).

This ratio can then be adjusted by the responses to other questions already referenced in the battery. These include any reported changes in the timing of projects as a result of the program and the reported influence of various factors on the decision to install the equipment. These adjustments are not detailed in this document, as they will be tailored to individual program design. As part of these adjustments, we recommend that the list of factors be expanded to include "other PacifiCorp program participation." This addition will allow evaluators to adjust free-ridership based on PacifiCorp's portfolio level outreach efforts. For example, if a participant received sequential incentives from two different PacifiCorp programs, his or her participation in the first program may have increased their awareness of the secondary program. In this situation, their responses to free-ridership questions regarding the secondary program may present this participant as a free-rider. In this situation, we can use the responses to the influence questions to assess if the secondary project was influenced by PacifiCorp actions from another program. If so, PacifiCorp should receive attribution for those savings and free-ridership would be adjusted downward.

This methodology requires several adjustments when applied to programs that offer custom incentives or to programs that utilize unique mechanisms to achieve savings. First, the self-report survey should include complete and accurate descriptions of what measures were implemented as part of custom projects. Also, as custom programs often work with participants to implement a variety of end-uses under the "custom" umbrella, custom projects should be evaluated holistically and not at the end-use level. Similarly, unique programs may require additional refinements to question wording. For example, when assessing a recommissioning program, the interview may seek to assess the decision to conduct the initial project study instead of the decision to implement the energy-saving opportunities identified. Finally, for complex or large projects, the self-reported estimate can be verified by a review of project documentation (if available) and follow-up interviews with the contractors associated with the project. These additional steps can be costly and should only be considered when the savings of the project make up a significant portion of the program's overall savings or contractor outreach is a significant part of the program design.

As an example, we provide recommended free-ridership questions for the Energy FinAnswer program in Figure 3.

Figure 3. Free Ridership Battery Extract from Energy FinAnswer Survey DRAFT[10]

...[READ: "With the Energy FinAnswer program, FIRM received technical assistance and financial incentives. FIRM installed LIST_MEASURES with the program."
REPEAT FOR EACH MEASURE_TYPE_# LISTED UP TO 2.
READ: "For these next questions, please focus on MEASURE_TYPE_# which includes MEASURE_TYPE_#_INST for your project."]

FR2. Without the program, meaning without either the technical assistance or the financial incentive, would you have still installed the exact same MEASURE_TYPE_# at the same time?
[IF 1=YES] => REPEAT for next MEASURE_TYPE or go on to spillover
[IF 1=NO] => go to 2

FR3. Without the program, would you have installed any MEASURE_TYPE_# equipment?
[IF 2=YES]=> go to 3
[IF 2=NO]=> GO BACK TO 1 for next MEASURE_TYPE or go on to spillover

FR4. Without the program, would you have installed this equipment within 12 months of when you did with the program?
[IF 3=YES]=> go to 4
[IF 3=NO]=> GO BACK TO 1 for next MEASURE_TYPE or go on to spillover

[IF APPLICABLE] FR5. Relative to the energy efficiency of MEASURE_TYPE_# installed through the program, how would you characterize the efficiency of equipment you would have installed without the program?
a. Just as efficient as installed with the program
b. Lower than installed through the program, but better than the standard efficiency
c. Standard efficiency

[IF APPLICABLE] FR6. Would you have installed the same amount of MEASURE_TYPE_#?
a. Yes
b. No => FR6a
FR6a. More or less?
FR6b. How much more or less?
GO BACK TO 1 for next MEASURE_TYPE or go on to consistency or spillover...

[10] Variables and notes to the interviewer are in ALL CAPS. The variable MEASURE_TYPE is grouped and worded by measure types, such as "lighting equipment" or "HVAC equipment" with specific measures installed identified for the respondent to be sure they understand what is meant.

Spillover

We recommend asking participants about both "like" and "unlike" spillover with an understanding that the "like" spillover can by quantitatively assessed and the "unlike" spillover will be characterized qualitatively (though efforts will be made to use deemed estimates if possible). With "like" spillover, we can use the gross savings estimates from the program tracking database as a proxy for the "like" equipment. With no savings data to use as comparison, our ability to confidently assign savings to reported "unlike" spillover projects is limited by the amount of data participants are able to provide. For example, if a participant reports that they installed "some high efficiency lighting" but cannot recall how much or what type, we can only qualitatively report that project as spillover. However, if the participant is able to provide detailed specifications about the project (e.g., 40 T8s with ballasts), we can then use deemed savings values as a reference for assigning savings. Savings for measures without deemed values (e.g., recommissioning projects, industrial process improvements) can only be verified via on-site and our spillover assessments will be qualitative in nature.

We also recommend asking market allies about program-eligible sales outside of the programs. Market ally responses and participant "unlike" spillover responses will allow a qualitative discussion about the estimated magnitude of spillover relative to the "like" spillover that can be quantified. In addition, interviews with market allies will provide an assessment of spillover across the entire program year. As we are planning to interview participants quarterly regarding their projects, our estimates of participant-reported spillover savings will under-represent annual savings as potential spillover projects completed after that three month period will not be captured. However, market ally interviews will only be conducted once per evaluation year and cover the entire program year, capturing all spillover projects in the process. Likewise, the spillover reported by market allies will capture "unlike" spillover savings that we were only able to qualitatively assess from the participant reports.

Similar to the free-ridership battery, question wording will be adjusted for unique programs (e.g., recommissioning) or for custom projects. The like spillover questions will be repeated for the same two measure types as used for the free-ridership battery, as applicable.
The participant spillover questions recommended as part of the participant surveys and interviews are listed below for both like an unlike spillover.

LIKE

- Since participating in this program, have you purchased and installed any additional [measures]?
- What did you purchase or install? How many did you purchase or install?
- Did you receive assistance from [utility] or another organization?
- On a scale from 1 to 5, with 1 indicating that you "strongly disagree" and 5 indicating that you "strongly agree", please rate the following statement: *My experience with* [utility]'s *energy efficiency program influenced my decision to install other high efficiency equipment on my own.*
- Why did you not apply for an incentive from [utility] for this equipment?

UNLIKE

- Since participating in this program, have you purchased on installed any OTHER energy efficiency improvements?
- What did you purchase or install? (PROBE FOR AS MUCH DETAIL AS POSSIBLE)
- How many did you purchase or install?
- Did you receive assistance from [utility] or another organization?
- I'm going to read a statement about the equipment that you purchased on your own. On a scale from 1 to 5, with 1 indicating that you "strongly disagree" and 5 indicating that you "strongly agree", please rate the following statement: *My experience with* [utility]*'s energy efficiency program influenced my decision to install other high efficiency equipment on my own.*
- Why did you not apply for an incentive from [utility] for this equipment?

The non-participant spillover questions recommended as part of market ally interviews are listed below.

- Approximately what percent of *all* [measure] sales in [state] last year would you estimate was from program-eligible equipment?
- Approximately what percent of *your* [measure] sales in [state] last year was from program-eligible equipment, that is [description of eligibility requirements]?
- Did you sell more program-eligible equipment last year?
- According to our records, you sold [quantity] [measure] as part of projects that received program incentives. To the best of your knowledge, did you complete any [measure] projects with [utility] customers that did **not** receive program incentives? If so, how many?
- Do the [utility] program incentives influence your stocking/selling of program-eligible [measures]?
- Does the [utility] program information influence your stocking/selling of program-eligible [measures]?

Net savings

Spillover savings can be combined with free-ridership savings to create a comprehensive picture of program influence. This combination is often referred to as a net-to-gross ratio and is calculated by adding the spillover ratio to the inverse of the free-ridership ratio or:

Net-to-Gross Ratio = (1-Free-Ridership Ratio) + Spillover Ratio

Gross savings are then multiplied by the resulting ratio to find net savings by measure type and program.

B.2 Net Savings Scoring – June 18, 2012

To: Shawn Grant, Esther Giezendanner, PacifiCorp

From: Kevin Cooney, Matt Haakenstad, Mike Yim, and Jeff Erickson, Navigant; Ellen Steiner, Jess Chandler, and Jeremy Kraft, Energy Market Innovations, Inc

Date: June 18, 2012

Subject: Net Savings Scoring

This memorandum provides a detailed description of how the evaluation team plans to estimate a net-to-gross (NTG) ratio for the portfolio of the PacifiCorp energy efficiency programs. An NTG ratio is a comprehensive picture of program influence and is the ratio of net savings to gross savings and is an indication of the programs' influence on customers' decision-making regarding energy efficiency at their facility.

Overview

Using self-reported responses, the evaluation team's estimation of net savings first attempts to assess the program's influence on the participants' decision to implement an energy efficiency project and what would have occurred absent the program's intervention. This estimation includes an examination of the program's influence on three key characteristics of the project: its timing, its level of efficiency, and its scope (i.e., the size of the project). This estimate represents the amount of savings attributed to the program that would have occurred without its intervention and is often referred to as "*free-ridership.*" The team's measurement of net savings then attempts to estimate program influence on the broader market as a result of the indirect effects of the program's activities. This estimate, often referred to as "*spillover,*" represents the amount of savings that occurred because of the program's intervention and influence but that is not currently claimed by the program. Spillover savings can be broken into two categories of savings: "participant" spillover and "non-participant" spillover. Participant spillover savings occur directly (i.e., program participants install additional energy efficient equipment), while non-participant spillover savings occur indirectly (i.e., market allies install additional energy efficient equipment to customers that choose not to participate as a result of the program).

A program's net savings are adjusted by both free-ridership and spillover savings at the measure level and then extrapolated to the program. The net savings are the program-reported savings minus any free-ridership savings plus any identified spillover savings, or:

Net Program Savings = Gross Program Savings – Free-Ridership Savings + Spillover Savings

Often, this finding is described as a "net-to-gross ratio." This ratio is the net program savings divided by the gross program savings, or:

Net-to-Gross Ratio = Net Program Savings / Gross Program Savings

Free-ridership Calculation

To determine free-ridership, the interview presents respondents with a series of questions regarding their decision to install the equipment promoted by the program. The team then scores the responses to these questions to determine the level of free-ridership. A score of 1.0 indicates the respondent is a

complete free-rider; they would have installed the exact same equipment at the same time and in the same quantity without the program's assistance. A score of 0.0 (zero) indicates the respondent is not a free-rider; that is, without the program they either would not have installed any equipment within 12 months of when they did or they would have installed baseline efficient equipment.

As the first step in scoring, the evaluation team reviews the interview responses to determine if the exact same project (in terms of scope and efficiency level) would have occurred at the same time without the program. If so, the respondent is scored as a complete free-rider. If not, the evaluation team reviews the responses to determine whether the project would have occurred at all within the same 12 month period. If not, the respondent is scored as a non-free-rider. If the project would have occurred within the same 12 month period but altered in respect to its size or efficiency level, the respondent is scored as a partial free-rider. To assess the level of partial free-ridership, the evaluation team uses the respondents' estimates of the percentage of equipment that would have been installed within 12 months without the program (*the quantity score*) and the percentage of the installed equipment that would have been high efficiency equipment (*the efficiency score*)[11]. If the project would have occurred with some changes absent the program, the product of these two estimates is the initial free-ridership ratio or:

Initial Free-Ridership Ratio = Quantity Score x Efficiency Score

After scoring the initial free-ridership ratio, a series of consistency check questions is reviewed. These questions ask about the influence of the program's interventions (e.g., financial incentives, technical assistance) and address the counter-factual (e.g., what would have happened without the program). For example, if the respondent states that the financial incentive was extremely important to their decision (FR1D = 5) but that they would have installed the exact same equipment at the same time without the program (FR2 = 1), the interviewer asks them to describe in their own words what impact the program had on their decision (FR7). During the scoring process, these responses are reviewed by analysts to determine which scenario is correct and are scored accordingly to create an adjusted free-ridership score.

Finally, the free-ridership score is adjusted to account for prior program participation. Given PacifiCorp's efforts to cross-promote their entire portfolio of energy efficiency programs, a respondent's prior participation in a PacifiCorp program may have been influential in their decision to participate in the current program. Ideally, this influence would be attributed to the prior program as spillover savings since that program was responsible for the influence. However, given the portfolio-level marketing approach that PacifiCorp implements, respondents are unlikely to be able to identify the prior program by name. Therefore, the evaluation team will attribute the savings credit to the current program. To calculate this credit, the team will review the respondents' rating of the influence of the prior program. If the respondent rates their previous participation as a "4" or "5," their adjusted free-ridership is reduced by either 50 percent or 75 percent respectively.

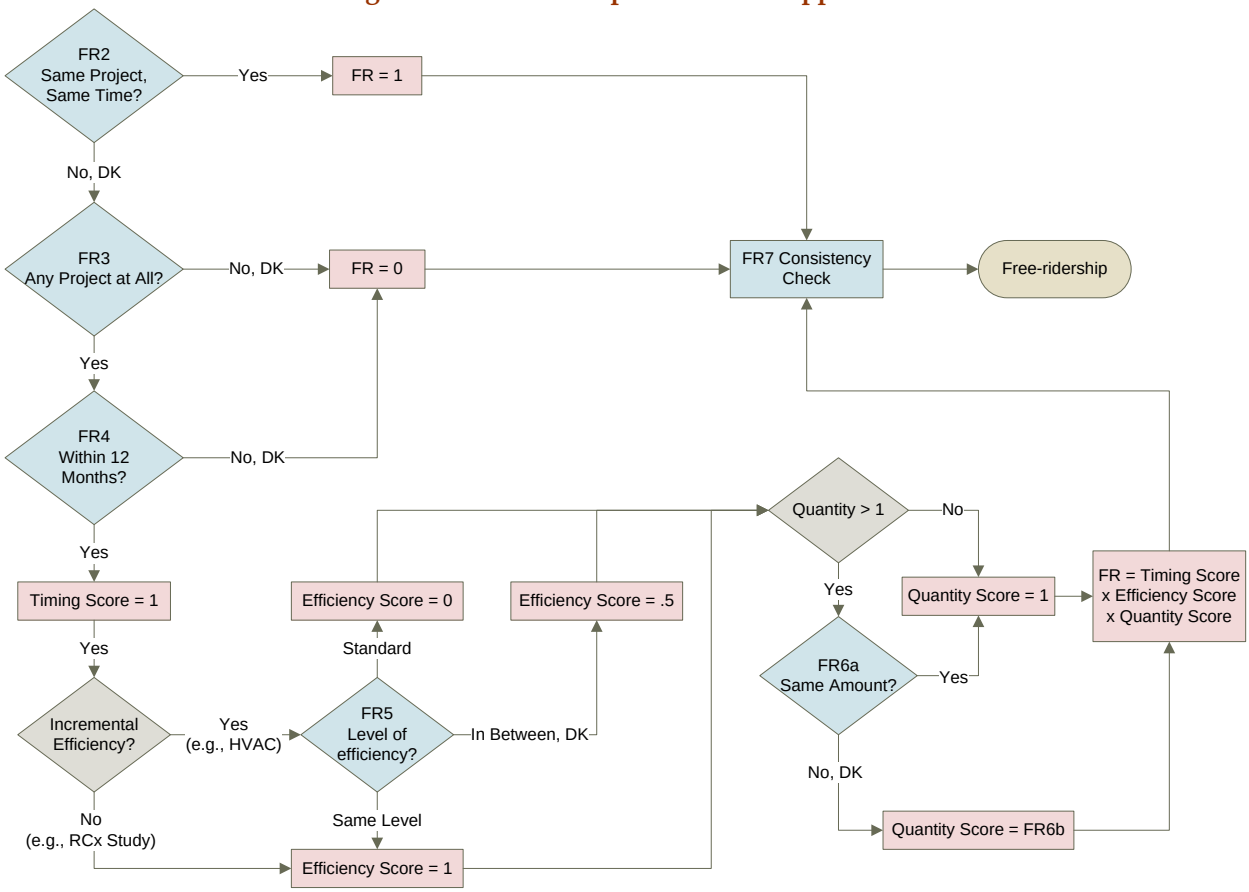
Figure 4 illustrates the series of questions asked to support this calculation while Table 1 provides detailed scoring and descriptions of each question.

[11] Question text will be altered for projects where quantity is not applicable. For example, if a project consisted of the installation of an EMS, the quantity question would be skipped.

Table 1. Free-ridership Calculation Approach

Question	Question Text	Scoring
FR1B	On a scale from 1 to 5, with 1 being not important at all and 5 being extremely important, how important were the following factors in deciding which equipment to install: information provided by PacifiCorp on energy saving opportunities	Consistency Check
FR1D	On a scale from 1 to 5, with 1 being not important at all and 5 being extremely important, how important were the following factors in deciding which equipment to install: the PacifiCorp incentive	Consistency Check
FR2	Without the program, meaning without the financial incentive and technical assistance, would you have still installed the exact same [MEASURE] at the same time?	If yes, free-ridership = 1
FR3	Without the program, would you have installed any [MEASURE] equipment?	If no, free-ridership = 0
FR4	Would you have installed this equipment within 12 months of when you did with the program?	If no, free-ridership = 0
FR5	Relative to the energy efficiency of [MEASURE] installed through the program, how would you characterize the efficiency of equipment you would have installed without the program?	If high efficiency, efficiency score = 1
		If between high efficiency and baseline, efficiency score = 0.5
		If baseline efficiency, efficiency score = 0
FR6a	Would you have installed the same amount of [MEASURE]?	If yes, quantity score = 1
FR6b	Would you have installed more or less equipment?	If less, quantity score = percentage of equipment not installed
FR7	Varies based on inconsistency identified	If inconsistent, adjusted free-ridership = 50% of initial free-ridership
FR1F	On a scale from 1 to 5, with 1 being not important at all and 5 being extremely important, how important were the following factors in deciding which equipment to install: previous participation with a PacifiCorp program	If FR1F = 5, reduce adjusted free-ridership by 75% If FR1F = 4, reduce adjusted free-ridership by 50%

Figure 4. Free-ridership Calculation Approach



For example, a participant that installed four high efficiency HVAC units through the program reports that, without the program, they would have not installed the same measures at the same time. Following up, the respondent states they would have installed some equipment and it would have been installed within 12 months. When probed about the level of efficiency of the equipment that would have been installed absent the program, the participant reports that they would have installed equipment that was more efficient than baseline but not as efficient as the program-eligible equipment. Finally, they report they only would have installed one unit (instead of four). Using the scoring above, this participant's efficiency score would be set to 0.5 and the quantity score would be set to 0.25. Their initial, unadjusted free-ridership score is then the product[12] of these two scores or 0.125. Likewise, they state that the incentive was important and that previous participation was not important. These responses indicate a consistent installation scenario and no further adjustment is necessary.

[12] This multiplicative approach is appropriate as the score is the result of a product of the quantity installed and not a product of probabilities (Keating. *Free-Ridership Borscht: Don't Salt the Soup.* IEPEC. 2009).

Spillover Calculation

Participant-reported Spillover

Similar to free-ridership, to determine spillover, the interviewer presents respondents with a series of questions regarding their decision to implement projects outside of the program (i.e., projects that did not receive any assistance from the program). These responses are then scored to determine the level of spillover. The evaluation team will ask participants about both "like" and "unlike" spillover projects. "Like" spillover is associated with equipment that is similar to the equipment incented by the program. In comparison, "unlike" spillover is associated with equipment that is not similar to the equipment that was incented by the program. Using the program-reported per-unit savings as a proxy, "like" spillover savings can by quantitatively assessed. However, as it has no comparative program savings data, "unlike" spillover can only be characterized qualitatively (though efforts will be made to use deemed estimates if possible).

To assess "like" spillover, the evaluation team first reviews interview responses and determines whether the respondent installed any additional equipment similar to what was incented through the program. If additional equipment was installed, the team determines whether it was rebated through a PacifiCorp program. If not, the team then estimates the amount of *potential spillover savings* associated with the project. This estimation is created by using the program-tracking savings as a proxy for per-unit savings and adjusting for the amount of equipment installed. The team will also adjust for equipment similar to that installed through the program but of a lower efficiency. If the respondent states that efficiency level is lower than what was installed through the program but better than standard efficiency, the potential spillover savings are reduced by half. Since the energy savings associated with the reduced efficiency project will be less than the project incented by the program, this adjustment credits the program with some, but not all, of the savings.

In order to account for the program's influence on the spillover savings, the team then adjusts the quantified spillover savings by the free-ridership rate identified earlier or:

Spillover Savings = Potential Spillover Savings X Free-ridership Factor

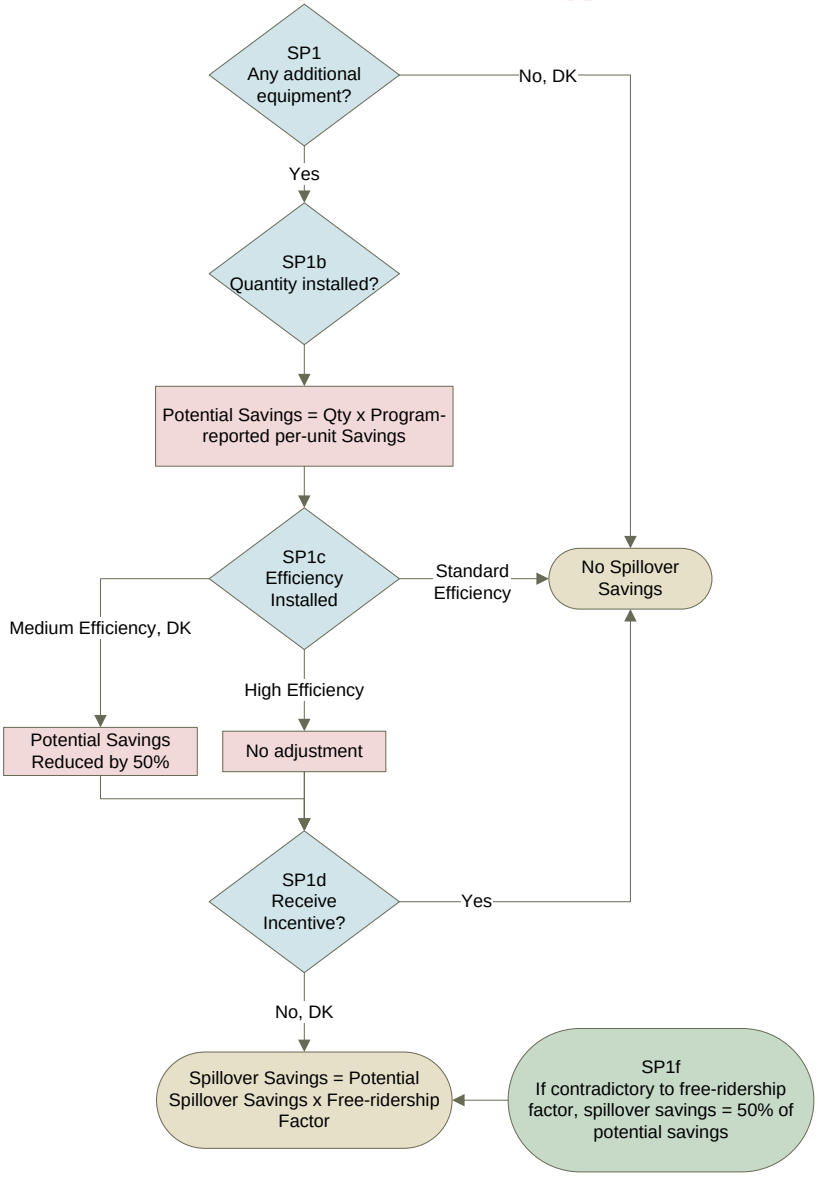
As a consistency check, the team uses an additional question to check the evaluated free-ridership rate. Respondents are asked to rate the level of influence from the program on their decision to purchase the additional equipment. The team compares these responses to the identified free-ridership rate to identify any contradictory responses (i.e., free-ridership factor of 1.0 but spillover influence is high or free-ridership factor of zero but spillover influence is low). If the responses are contradictory, the potential spillover savings are reduced by 50 percent. Without further evidence, the team cannot objectively determine which statement of influence is correct. Adjusting the potential spillover savings by 50 percent acknowledges this uncertainty without overly penalizing or rewarding the program.

Figure 5 illustrates the series of questions asked to support this calculation while Table 2 provides detailed scoring and descriptions of each question.

Table 2. Spillover Calculation Approach

Question	Question Text	Scoring
SP1	Since participating in this program, have you purchased on installed any additional [MEASURE]?	If no, potential spillover savings = 0.
SP1b	How many did you purchase or install?	SP1b x program-reported per-unit savings = potential spillover savings
SP1c	Relative to the energy efficiency of [MEASURE] installed through the program, how would you characterize the efficiency of this equipment?	If lower than program but higher than standard, reduce potential spillover savings by half. If standard efficiency, potential spillover savings = 0.
SP1d	Did you receive an incentive from PacifiCorp or another organization?	If yes, potential spillover savings = 0.
SP1f	On a scale from 1 to 5, with 1 indicating that you "strongly disagree" and 5 indicating that you "strongly agree", please rate the following statement: *My experience with the PacifiCorp program influenced my decision to install this additional high efficiency equipment on my own.*	Consistency Check

Figure 5. Spillover Calculation Approach



A similar process is used for "unlike" spillover. However, since the measure is not the same as the in-program measure, the team has less information from which to calculate the measure's savings. Thus the team's ability to confidently assign savings to reported "unlike" spillover projects is limited by the amount of data participants are able to provide about the measure and its use. For example, if a participant reports that they installed "some high efficiency lighting" but cannot recall how much or what type, we cannot reliable assign any spillover savings to that project. However, if the participant is able to provide detailed specifications about the project (e.g., 40 T8s with ballasts), we can then use values based on savings from similar measures in the program-tracking database as a reference for assigning potential spillover savings. Savings for measures without deemed values (e.g., recommissioning projects, industrial process improvements) can only be verified via on-site and our spillover assessments will be qualitative in nature. If "unlike" spillover projects of significant magnitude are identified, on-site visits may be cost-effective. In this situation, the team will discuss conducting visits in order to quantify the savings.

Nonparticipant Spillover

To capture a comprehensive picture of spillover, the team also asks market allies about program-eligible sales outside of the programs as part of our in-depth interviews with this group. By examining the amount of program-eligible sales occurring outside of the program, the team can create high-level estimates of nonparticipant spillover that can be added to the participant-reported spillover savings.

First, the team determines whether the market ally installed any program-eligible equipment that did not receive incentives from the program. If so, the team compares the quantity of equipment installed outside of the program to the quantity tracked through the program-tracking database. Using the savings associated with that market ally in the program-tracking database, the team can then estimate the amount of savings installed outside of the program. Note that market allies may have difficultly reporting the amount of equipment that did not receive program assistance. As these "don't know" response will not be used in analysis, our estimate will likely be conservative.

Finally, the team determines the influence of the program on these sales in order to attribute the nonparticipant spillover savings to the program. The team examines responses to three questions regarding the influence of the program incentive and information on the stocking and selling of program-eligible equipment. Respondents are asked to rate the influence of the program on a scale of 1 to 5 where 1 is "no influence" and 5 is "a great deal of influence." If the average response is greater than 4, 100 percent of the savings installed outside of the program are attributed to the program. If the average response is greater than 3 but less than or equal to 4, 75 percent of the savings are attributed to the program. If the score is greater than 2 but less than or equal to 3, 50 percent of the savings are attributed to the program. None of the savings associated with market allies with average influence scores lower than 2 are attributed to the program.

Table 3 describes in detail the questions asked and their associated scoring.

Table 3. Nonparticipant Spillover Calculation Approach

Question	Question Text	Scoring
21	According to our records, you sold [NUMBER OF PROJECTS] of [TYPE] as part of projects that received program incentives. To the best of your knowledge, did you complete any [TYPE] projects [IF LIGHTING OR HVAC: that would have been eligible for the program] that did not receive program incentives? If so, how many?	(Projects outside of program/Projects through program) X program savings associated with market ally = potential nonparticipant spillover
22	Do the program incentives influence your selling of program-eligible equipment for [TYPE]?	Average program influence score
23	Do the program incentives influence your stocking of program-eligible equipment for [TYPE]?	
24	Does the program information influence your selling of program-eligible equipment for [TYPE]?	

Net-to-Gross Ratio

The evaluation team will determine measure-specific free-ridership and spillover rates. To determine program-level rates, the team will weigh the rates by savings and for any disproportionate sampling.

This weighting ensures that the analysis is representative of the overall program both in terms of its distribution of savings and its mix of measures. For example, projects that account for a larger proportion of the program's overall savings will have more influence on the final program-level rate. In addition, if projects that are part of certain sub-groups within a program are intentionally selected more frequently (i.e., over-sampled) as part of the sample design, those projects will have less influence on the program-level rate.

Likewise, the team will apply similar weights to the market-ally reported nonparticipant spillover savings to determine measure-level estimates. To avoid double-counting, participant-reported spillover estimates will be subtracted from the market ally-reported estimates. If, at the measure level, the participant-reported spillover estimate is less than the estimate reported by market allies, the team will add the difference to the spillover rate. If the participant-reported estimate is greater than the estimate identified by market allies, the team will not add any nonparticipant spillover savings to the overall estimate.

The team will then create the final net-to-gross ratio. This ratio is the net program savings divided by the gross program savings or:

Net-to-Gross Ratio = Net Program Savings / Gross Program Savings

The net program savings are the program-reported savings minus any free-ridership savings plus any identified participant and nonparticipant spillover savings or:

Net Program Savings = Gross Program Savings – Free-Ridership Savings + Participant Spillover Savings + Nonparticipant Spillover Savings

Note that as the nonparticipant spillover ratio is created for each market ally and not each participant, the final ratio is adjusted at an aggregated level.

Appendix C. Process Evaluation Survey Instruments

C.1 Participant Survey Instrument

Note: Energy FinAnswer Participants are those customers who completed a project through the Energy FinAnswer program during 2009-2011. Participants are questioned about up to two measure subtypes based on the largest kWh savings. Measure subtypes will be determined during sampling and will likely be grouped by end-use (e.g., lighting equipment, HVAC equipment).

Objectives

These surveys are designed to meet the following list of objectives.

- To describe how customers come to participate in the program
- To understand overall customer satisfaction with the program, including: incentive agreement, report, inspections, customer service, and the incentive
- To understand program influence on customer actions, including free-ridership and spillover
- To understand barriers customers are facing that prevent increasing energy efficiency
- To characterize participating firms

Variables

Variable Name	Description	Type
&CONTACT	Respondent name	Text
&FIRM	Company name	Text
&PROGRAM	Energy FinAnswer	Text
&SITE	Address	Text
&YEAR	Year of project completion	YYYY
&PACIFICORP	Rocky Mountain Power, Pacific Power	Text
&PREINSPECTDATE	Date of first inspection	Date MMYYYY
&POSTINSPECTDATE	Date of post inspection	Date MMYYYY
&INSTALLED_MEASURES	List of installed measures	Text
&MEASURE_TYPE_1	Name of Measure 1	Text
&MEASURE_TYPE_2	Name of Measure 2	Text
&INCENTIVE	Value of incentive paid to participant	Numeric
&NC	Flag for New Construction project	BINARY
&EAFIRM	Engineering Firm	Text

Survey Instrument

Introduction and Screen

INTRO1. Hello, this is INTERVIEWER, calling on behalf of &PACIFICORP. We are conducting an independent evaluation of &PACIFICORP's energy efficiency programs. This is not a sales call. May I please speak with &CONTACT?

1. YES, THAT IS ME → **SKIP TO INTRO3**
2. YES, LET ME TRANSFER YOU
3. NOT NOW → **SCHEDULE APPT AND CALL BACK**
4. NO/REFUSED → **TERMINATE**

INTRO2. Hello, this is INTERVIEWER, calling on behalf of &PACIFICORP. We are conducting an independent evaluation of &PACIFICORP's energy efficiency programs. This is not a sales call. &PACIFICORP is evaluating its &PROGRAM program and would appreciate your input."

I'd like to let you know that this call may be monitored or recorded for quality assurance purposes. Also, all of your responses will be kept confidential and will not be revealed to anyone outside of the research team. Do you have a few minutes to answer questions about your experience with the program? **[IF NEEDED, READ: "This survey is for research purposes only and will take about 15 minutes."]**

1. YES → **SKIP TO IS2**
2. NOT NOW → **MAKE APPT. TO CALL BACK**
3. NO/REFUSED → **TERMINATE**

INTRO3. &PACIFICORP is evaluating its &PROGRAM program and would appreciate your input. I'd like to let you know that this call may be monitored or recorded for quality insurance purposes. Also, all of your responses will be kept confidential and will not be revealed to anyone outside of the research team. Do you have a few minutes to answer questions about your experience with the program? **[IF NEEDED, READ: "This survey is for research purposes only and will take about 15 minutes."]**

4. YES
5. NOT NOW → **MAKE APPT. TO CALL BACK**
6. NO/REFUSED → **TERMINATE**

[IF VERIFICATION IS NEEDED, TELL THEM THEY CAN CALL SHAWN GRANT AT 801-220-4196].

IS2a. &PACIFICORP records indicate that your firm received an incentive from the &PROGRAM program in &YEAR after installing &INSTALLED_MEASURES at &SITE, is this correct?

1. YES → **SKIP TO AP1**
2. NO, DID NOT PARTICIPATE
3. NO, ONE OR MORE MEASURES ARE INCORRECT → **SKIP TO IS2d**
4. NO, ADDRESS IS INCORRECT → **SKIP TO IS2e**

88. DON'T KNOW/NOT SURE
99. REFUSED

IS2b. Is there someone else that might be familiar with this project?

1. Yes
2. No → **TERMINATE**

88. Don't know → **TERMINATE**

IS2c. May I speak with that person?

1. Yes → **RETURN TO INTRO2**
2. Not now→ **SCHEDULE CALLBACK**
3. No → **TERMINATE**

IS2d. What measures were installed?

1. [RECORD RESPONSE]
88. DON'T KNOW/NOT SURE
99. REFUSED

IS2e. What is the correct address?

1. [RECORD RESPONSE]
88. DON'T KNOW/NOT SURE
99. REFUSED

IS3. Are you the person most familiar with &FIRM's decision to implement this project?

1. YES
2. NO → **SKIP to IS2b**
88. DON'T KNOW/NOT SURE → **SKIP to IS2b**
99. REFUSED → **SKIP to IS2b**

Awareness & Participation

AP1. How did you first become aware of &PROGRAM? **[DO NOT READ RESPONSES; ALLOW MULTIPLE RESPONSES]**

1. ACCOUNT REPRESENTATIVE OR OTHER &PACIFICORP STAFF
2. &PACIFICORP RADIO ADVERTISEMENT
3. &PACIFICORP PRINT ADVERTISEMENT
4. &PACIFICORP PRINTED MATERIALS/BROCHURE
5. &PACIFICORP ONLINE ADVERTISEMENT
6. &PACIFICORP TV ADVERTISEMENT
7. &PACIFICORP NEWSLETTER
8. &PACIFICORP WEBSITE
9. PREVIOUS PARTICIPATION IN &PACIFICORP PROGRAMS
10. CONFERENCE, WORKSHOP, OR EVENT [SPECIFY:_____]
11. &PACIFICORP SPONSORED ENERGY AUDIT OR TECHNICAL ASSESSMENT
12. FROM TRADE ALLY, VENDOR OR CONTRACTOR
13. ANOTHER BUSINESS COLLEAGUE
14. FAMILY, FRIEND, OR NEIGHBOR
15. OTHER **[SPECIFY]: _____**
88. DON'T KNOW/NOT SURE
99. REFUSE

AP2. Why did your firm decide to participate in the program? [DO NOT READ RESPONSES; ALLOW MULTIPLE RESPONSES]

1. To save money on electric bills.
2. To obtain an incentive.
3. To replace old or poorly working equipment.
4. To replace broken equipment.
5. To acquire the latest technology.
6. To reduce maintenance costs.
7. Because the program was sponsored by &PACIFICORP
8. Previous experience with &PACIFICORP
9. To protect the environment.

10. To save energy
11. Recommendation by contractors/trade allies
12. Recommended by colleague
13. Recommended by family, friend or neighbor
14. To improve operations, production, or quality
15. To improve value of property
16. To improve comfort
17. Other [SPECIFY]: _____
88. DON'T KNOW/NOT SURE
99. REFUSE

[IF more than one response to AP2]
AP2a.
Of those reasons, which one was most influential in the decision to participate in the program? [ALLOW ONLY ONE RESPONSE]

1. To save money on electric bills.
2. To obtain an incentive.
3. To replace old or poorly working equipment.
4. To replace broken equipment.
5. To acquire the latest technology.
6. To reduce maintenance costs.
7. Because the program was sponsored by &PACIFICORP
8. Previous experience with &PACIFICORP
9. To protect the environment.
10. To save energy
11. Recommendation by contractors/trade allies
12. Recommended by colleague
13. Recommended by family, friend or neighbor
14. To improve operations, production, or quality
15. To improve value of property
16. To improve comfort
17. Other [SPECIFY]: _____
88. DON'T KNOW/NOT SURE
99. REFUSED

Pre-Installation

[IF &PREINSPECTDATE>0] EE1. When you first became involved with the &PACIFICORP program, an energy engineer "[If (IS NOT NULL(&EAFIRM)) "with &EAFIRM"] came out to your facility to identify potential savings opportunities. Using a scale of 1 to 5 where 1 indicates 'very dissatisfied' and 5 indicates 'very satisfied', how satisfied were you with the energy engineer who came out to your facility?

1. VERY DISSATISFIED
2. SOMEWHAT DISSATISFIED
3. NEITHER SATISFIED OR DISSATISFIED
4. SOMEWHAT SATISFIED → **SKIP TO EE3**
5. VERY SATISFIED → **SKIP TO EE3**
88. DON'T KNOW/NOT SURE → **SKIP TO EE3**
99. REFUSED → **SKIP TO EE3**

EE2. Why were you less than satisfied with the energy engineer?

1. **[RECORD RESPONSE]**

88. DON'T KNOW/NOT SURE
99. REFUSED

EE3. As part of the program, you received a report documenting the findings from the energy analysis that included recommended equipment and changes. Did you find this report valuable? [NOTE: May have received more than one version of the report; interested in the final version.]

1. YES
2. NO
3. DON'T RECALL RECEIVING A REPORT → **SKIP TO IM1**
88. DON'T KNOW/NOT SURE
99. REFUSED

EE4. Were there recommendations in the report that you decided not to install?

1. YES
2. NO → **SKIP TO IM1**
88. DON'T KNOW/NOT SURE → **SKIP TO IM1**
99. REFUSED → **SKIP TO IM1**

EE5a. What were they?

1. **[RECORD RESPONSE]**
88. DON'T KNOW/NOT SURE
99. REFUSED

EE5b. Why did you decide against the recommendation(s)?

1. **[RECORD RESPONSE]**
88. DON'T KNOW/NOT SURE
99. REFUSED

Installed Measures

READ: I'm going to ask a few questions about the equipment that you installed.
[REPEAT FOR EACH &MEASURE_TYPE UP TO TWO MEASURES]

[IF &NC=1, SKIP to IM3]IM1. Did the &MEASURE_TYPE# installed through the program replace existing equipment or was it a new installation?

1. REPLACED EXISTING EQUIPMENT → **SKIP TO IM2**
2. TOTALLY NEW INSTALLATION → **SKIP TO IM3**
88. DON'T KNOW/NOT SURE → **SKIP TO IM1A**
99. REFUSED → **SKIP TO IM1A**

IM1A. Could you please provide contact information for the person who would know about the equipment that was installed with this project, and we can ask them specifically about equipment?

1. [COLLECT: IM_CONTACT_NAME, IM_CONTACT_PHONE, and IM_CONTACT_EMAIL] → **SKIP TO PI1**

IM2. What was the operating condition of the equipment that the &MEASURE_TYPE# replaced?

1. EXISTING EQUIPMENT HAD FAILED
2. EXISTING EQUIPMENT WORKING BUT WITH PROBLEMS
3. EXISTING EQUIPMENT WORKING WITH NO PROBLEMS
4. OTHER **[SPECIFY]:** _____
88. DON'T KNOW/NOT SURE
99. REFUSED

IM3. Have the energy savings related to this equipment met your expectations?

1. YES
2. NO
88. DON'T KNOW/NOT SURE
99. REFUSED

IM4. What other benefits, if any, do you anticipate from the &MEASURE_TYPE#?

1. NONE
2. YES **[RECORD RESPONSE]: _____**
88. DON'T KNOW/NOT SURE
99. REFUSED

IM5. Using a scale of 1 to 5 where 1 indicates 'very dissatisfied' and 5 indicates 'very satisfied', overall, how satisfied were you with the performance of the &MEASURE_TYPE#?

1. VERY DISSATISFIED
2. SOMEWHAT DISSATISFIED
3. NEITHER SATISFIED OR DISSATISFIED
4. SOMEWHAT SATISFIED → **SKIP TO PI1**
5. VERY SATISFIED → **SKIP TO PI1**
88. DON'T KNOW/NOT SURE → **SKIP TO PI1**
99. REFUSED → **SKIP TO PI1**

IM6. Why were you less than satisfied with the performance of the &MEASURE_TYPE#?

1. **[RECORD RESPONSE]**
88. DON'T KNOW/NOT SURE
99. REFUSED

Post-Installation

PI1. After you finished the installation, did you complete or contract to complete commissioning on your new equipment per the guidance in the energy analysis?

1. YES → **SKIP TO PI3**
2. NO, Opted out of commissioning
3. NO**,** Commissioning not recommended → **SKIP TO PI3**
88. DON'T KNOW/NOT SURE → **SKIP TO PI3**
99. REFUSED → **SKIP TO PI3**

PI2. Why did you opt out of commissioning the equipment?

1. Too costly
2. Don't have the expertise
3. Not cost-effective
4. OTHER [SPECIFY:}_____
88. DON'T KNOW/NOT SURE
99. REFUSED

PI3. After you notified &PACIFICORP of your project completion, around &POSTINSPECTDATE, an engineer came out to your facility to measure and verify savings from your installation. Using a scale of 1 to 5 where 1 indicates 'very dissatisfied' and 5 indicates 'very satisfied', how satisfied were you with the engineer's inspection?

1. VERY DISSATISFIED
2. SOMEWHAT DISSATISFIED

3. NEITHER SATISFIED OR DISSATISFIED
4. SOMEWHAT SATISFIED → **SKIP TO FR1**
5. VERY SATISFIED → **SKIP TO FR1**
88. DON'T KNOW/NOT SURE → **SKIP TO FR1**
99. REFUSED → **SKIP TO FR1**

PI4. Why were you less than satisfied with the engineer's visit?

1. **[RECORD RESPONSE]**
88. DON'T KNOW/NOT SURE
99. REFUSED

Free Ridership

FR1. With the &PROGRAM program, &FIRM received technical assistance and financial incentives of &INCENTIVE. &FIRM installed &INSTALLED_MEASURES with the program.

On a scale from 1 to 5, with 1 being not important at all and 5 being extremely important, how important were the following factors in deciding which equipment to install.

A. RECOMMENDATION FROM CONTRACTOR OR VENDOR _____
B. INFORMATION PROVIDED BY THE &PACFICORP ENERGY ANALYSIS ON ENERGY SAVING OPPORTUNITIES _____
C. INFORMATION ON PAYBACK _____
D. THE &PACFICORP INCENTIVE _____
E. FAMILIARITY WITH THIS EQUIPMENT _____
F. PREVIOUS PARTICIPATION WITH A &PACIFICORP PROGRAM
G. CORPORATE POLICY REGARDING ENERGY REDUCTION _____

[REPEAT FR2-FR7 FOR EACH &MEASURE_TYPE# UP TO TWO_MEASURES]

[READ: "When answering these next questions, think specifically about &MEASURE_TYPE_# installed through the program."]

FR2. Without the program, meaning without either the technical assistance or the financial incentive, would you have still installed the exact same &MEASURE_TYPE_# at the same time?

1. YES → **SKIP TO FR7a**
2. NO
88. DON'T KNOW/NOT SURE
99. REFUSED

FR3. Without the program, would you have installed any &MEASURE_TYPE_# equipment?

1. YES
2. NO → **SKIP TO FR7a**
88. DON'T KNOW/NOT SURE
99. REFUSED

FR4. Without the program, would you have installed this equipment within 12 months of when you did as part of the program?

1. YES
2. NO → **SKIP TO FR7a**
88. DON'T KNOW/NOT SURE
99. REFUSED

FR5. Relative to the energy efficiency of &MEASURE_TYPE_# installed through the program, how would you characterize the efficiency of equipment you would have installed without the program?

1. Just as efficient as installed with the program
2. Lower than installed through the program, but better than the standard efficiency
3. Standard efficiency

FR6a. Would you have installed the same amount of &MEASURE_TYPE_#?

1. YES → **START NEXT MEASURE**
2. NO

88. DON'T KNOW/NOT SURE → **START NEXT MEASURE**
99. REFUSED → **START NEXT MEASURE**

FR6b. Would you have installed more or less equipment?

1. MORE→ **How much more?**
2. LESS→ **How much less?**

88. DON'T KNOW/NOT SURE
99. REFUSED

[IF FR1D < 3 AND FR3 = 2]

FR7a. Previously, you said that the incentive was not important in your decision to install the &MEASURE_TYPE#. However, you also said that without the program, you would not have installed any equipment. In your own words, can you please describe what impact the program had on your decision to install the equipment?

1. [RECORD RESPONSE]

88. DON'T KNOW/NOT SURE
99. REFUSED

[IF FR1D < 3 AND FR4 = 2]

FR7b. Previously, you said that the incentive was not important in your decision to install the &MEASURE_TYPE#. However, you also said that without the program, you would not have installed any equipment with 12 months of when you did. In your own words, can you please describe what impact the program had on your decision to install the equipment?

1. [RECORD RESPONSE]

88. DON'T KNOW/NOT SURE
99. REFUSED

[IF FR1D > 3 AND FR2 = 1]

FR7c. Previously, you said that the incentive was important in your decision to install the &MEASURE_TYPE#. However, you also said that without the program, you would have installed the exact same equipment at the same time. In your own words, can you please describe what impact the program had on your decision to install the equipment?

1. [RECORD RESPONSE]

88. DON'T KNOW/NOT SURE
99. REFUSED

[IF FR1B < 3 AND FR3 = 2]

FR7d. Previously, you said that the technical assistance was not important in your decision to install the &MEASURE_TYPE#. However, you also said that without the program, you would not have installed any equipment. In your own words, can you please describe what impact the program had on your decision to install the equipment?

1. [RECORD RESPONSE]

88. DON'T KNOW/NOT SURE

99. REFUSED

[IF FR1B < 3 AND FR4 = 2]
FR7e. Previously, you said that technical assistance was not important in your decision to install the &MEASURE_TYPE#. However, you also said that without the program, you would not have installed any equipment with 12 months of when you did. In your own words, can you please describe what impact the program had on your decision to install the equipment?

1. [RECORD RESPONSE]
88. DON'T KNOW/NOT SURE
99. REFUSED

[IF FR1B > 3 AND FR2 = 1]
FR7f. Previously, you said that the technical assistance was important in your decision to install the &MEASURE_TYPE#. However, you also said that without the program, you would have installed the exact same equipment at the same time. In your own words, can you please describe what impact the program had on your decision to install the equipment?

1. [RECORD RESPONSE]
88. DON'T KNOW/NOT SURE
99. REFUSED

Spillover

REPEAT SP1 for each &MEASURE_TYPE#

SP1. Since participating in this program, have you purchased on installed any additional &MEASURE_TYPE#?

1. YES
2. NO → **START next measure or SKIP TO SP2**
88. DON'T KNOW/NOT SURE → **START next measure or SKIP TO SP2**
99. REFUSED → **START next measure or SKIP TO SP2**

SP1a. What did you purchase or install? (PROBE FOR AS MUCH DETAIL AS POSSIBLE)

1. [RECORD RESPONSE]
88. DON'T KNOW/NOT SURE
99. REFUSED

SP1b. How many did you purchase or install?

1. [RECORD RESPONSE]
88. DON'T KNOW/NOT SURE
99. REFUSED

SP1c. Relative to the energy efficiency of &MEASURE_TYPE_# installed through the program, how would you characterize the efficiency of this equipment?

1. Just as efficient as installed with the program
2. Lower than installed through the program, but better than the standard efficiency
3. Standard efficiency

SP1d. Did you receive an incentive from &PACIFICORP or another organization?

1. YES

2. NO → **SKIP TO SP1f**
88. DON'T KNOW/NOT SURE → **SKIP TO SP1f**
99. REFUSED → **SKIP TO SP1f**

SP1e. What program or sponsor provided an incentive?

1. &PACIFICORP
2. [RECORD RESPONSE]
88. DON'T KNOW/NOT SURE
99. REFUSED

SP1f. I'm going to read a statement about the additional &MEASURE_TYPE# that you purchased on your own. On a scale from 1 to 5, with 1 indicating that you "strongly disagree" and 5 indicating that you "strongly agree", please rate the following statement:
My experience with &PACIFICORP's &PROGRAM program influenced my decision to install additional high efficiency equipment on my own.

Would you say you…[**READ 1-5]**

1. STRONGLY DISAGREE
2. SOMEWHAT DISAGREE
3. NEITHER AGREE OR DISAGREE
4. SOMEWHAT AGREE
5. STRONGLY AGREE
88. DON'T KNOW/NOT SURE
99. REFUSED

[IF SP1e not 1] SP1g. Why did you not apply for an incentive from &PACIFICORP for this equipment?

1. [RECORD RESPONSE]
88. DON'T KNOW/NOT SURE
99. REFUSED

SP2. Since participating in this program, have you purchased on installed any OTHER energy efficiency improvements?

1. YES
2. NO → **SKIP TO B1**
88. DON'T KNOW/NOT SURE → **SKIP TO B1**
99. REFUSED → **SKIP TO B1**

SP2a. What did you purchase or install? (PROBE FOR AS MUCH DETAIL AS POSSIBLE)

1. [RECORD RESPONSE]
88. DON'T KNOW/NOT SURE
99. REFUSED

SP2b. How many did you purchase or install?

1. [RECORD RESPONSE]
88. DON'T KNOW/NOT SURE
99. REFUSED

SP2c. How would you characterize the efficiency of this equipment?

1. The most efficient or ENERGY STAR certified

2. Lower than the most efficient, but better than the standard efficiency
3. Standard efficiency

SP2d. Did you receive an incentive from &PACIFICORP or another organization?

1. YES
2. NO → **SKIP TO SP2f**
88. DON'T KNOW/NOT SURE → **SKIP TO SP2f**
99. REFUSED → **SKIP TO SP2f**

SP2e. What program or sponsor provided an incentive?

1. &PACIFICORP
2. [RECORD RESPONSE]
88. DON'T KNOW/NOT SURE
99. REFUSED

SP2f. I'm going to read a statement about the other equipment that you purchased on your own. On a scale from 1 to 5, with 1 indicating that you "strongly disagree" and 5 indicating that you "strongly agree", please rate the following statement:
My experience with &PACIFICORP's &PROGRAM program influenced my decision to install other high efficiency equipment on my own.

Would you say you…[**READ 1-5]**

1. STRONGLY DISAGREE
2. SOMEWHAT DISAGREE
3. NEITHER AGREE OR DISAGREE
4. SOMEWHAT AGREE
5. STRONGLY AGREE
88. DON'T KNOW/NOT SURE
99. REFUSED

[IF SP2e not 1] SP2g. Why did you not apply for an incentive from &PACIFICORP for this equipment?

1. [RECORD RESPONSE]
88. DON'T KNOW/NOT SURE
99. REFUSED

Barriers

B1. Do you think there are other changes that you could make to improve electric efficiency at &FIRM?

1. YES
2. NO → **SKIP TO IC1**
88. DON'T KNOW/NOT SURE → **SKIP TO IC1**
99. REFUSED → **SKIP TO IC1**

B2. Could you provide some examples of changes you think would improve electric efficiency at &FIRM?

1. [RECORD RESPONSE: PROBE FOR ADDITIONAL]
88. DON'T KNOW/NOT SURE
99. REFUSED

B3. Are plans in place to make any of those changes?

1. YES
2. NO → **SKIP TO B5**
88. DON'T KNOW/NOT SURE → **SKIP TO B5**
99. REFUSED → **SKIP TO B5**

B4. Are incentives from &PACIFICORP or another organization part of those plans?

1. NO
2. YES
88. DON'T KNOW/NOT SURE
99. REFUSED

B5. What factors could prevent &FIRM from making these changes? **[DO NOT READ RESPONSES; ALLOW MULTIPLE RESPONSES]**

1. HIGH UPFRONT COSTS
2. LACK OF ACCESS TO CAPITAL
3. LONG PAYBACK PERIOD; SLOW RATE OF RETURN
4. LOW PRIORITY/LACK OF INTEREST OF SENIOR MANAGEMENT IN ENERGY EFFICIENCY
5. LACK OF INFORMATION ABOUT SAVINGS AND PERFORMANCE
6. LACK OF RESPONSIBLE/ACCOUNTABLE ENERGY STAFF
7. OTHER (SPECIFY _____)
88. DON'T KNOW/NOT SURE
99. REFUSED

[IF MORE THAN ONE RESPONSE TO B5] B6. Which of these do you think is the most challenging factor?

1. HIGH UPFRONT COSTS
2. LACK OF ACCESS TO CAPITAL
3. LONG PAYBACK PERIOD; SLOW RATE OF RETURN
4. LOW PRIORITY/LACK OF INTEREST OF SENIOR MANAGEMENT IN ENERGY EFFICIENCY
5. LACK OF INFORMATION ABOUT SAVINGS AND PERFORMANCE
6. LACK OF RESPONSIBLE/ACCOUNTABLE ENERGY STAFF
7. OTHER (SPECIFY _____)
88. DON'T KNOW/NOT SURE
99. REFUSED

Satisfaction

IC1. Using a scale of 1 to 5 where 1 indicates 'very dissatisfied' and 5 indicates 'very satisfied', how satisfied were you overall with the program?

1. VERY SATSIFIED
2. SOMEWHAT DISSATISFIED
3. NEITHER SATISFIED OR DISSATISFIED
4. SOMEWHAT SATISFIED → **SKIP TO IC2**
5. VERY SATISFIED → **SKIP TO IC2**
88. DON'T KNOW/NOT SURE → **SKIP TO IC2**
99. REFUSED → **SKIP TO IC2**

IC1A. Why were you less than satisfied with the program overall?

1. **[RECORD RESPONSE]**
88. DON'T KNOW/NOT SURE

99. REFUSED

IC2. If you could change anything about the &PROGRAM program, what would you change?

1. **[RECORD RESPONSE]**
88. DON'T KNOW/NOT SURE
99. REFUSED

IC3. During your involvement with &PROGRAM did you ever contact &PACIFICORP with questions or requests for assistance?

1. **YES**
2. NO → **SKIP TO FB1**
88. DON'T KNOW/NOT SURE → **SKIP TO FB1**
99. REFUSED → **SKIP TO FB1**

IC4. Were &PACIFICORP and its representatives timely in addressing your questions in regards to the program?

1. YES
2. NO
88. DON'T KNOW/NOT SURE
99. REFUSED

IC5. Were &PACIFICORP and its representatives knowledgeable in regards to the program and the program eligibility requirements?

1. YES
2. NO
88. DON'T KNOW/NOT SURE
99. REFUSED

Firmographics

FB1 INTRO.

Now I have a few final, general questions about your company for comparison purposes only.

FB1. 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. MINING
16. OIL AND GAS
17. OTHER **[SPECIFY]** _____

88. DON'T KNOW/NOT SURE
99. REFUSED

FB2. Approximately, what percent of your total annual operating costs does your electricity bill represent?

1. **[RECORD RESPONSE]**
88. DON'T KNOW/NOT SURE
99. REFUSED

FB3. About how many people does your firm employ?

1. **[RECORD RESPONSE]**
88. DON'T KNOW/NOT SURE
99. REFUSED

End

END1. Those are all of the questions that I have for you. Is there anything about your experiences with &PACIFICORP's &PROGRAM program you'd like to mention that we did not talk about today?

1. **[RECORD RESPONSE]**
88. DON'T KNOW/NOT SURE
99. REFUSED

[THANK RESPONDENT AND TERMINATE SURVEY]

C.2 Near-Participant Survey Instrument

Note: Energy FinAnswer and FinAnswer Express Near Participants are those customers who are in the project tracking system with a project through the Energy FinAnswer or FinAnswer Express program during 2009-2011 but are identified as cancelled or on hold as of the end of 2011.

Objectives

These surveys are designed to meet the following list of objectives.

- To describe how customers come to participate in the program
- To characterize the current status of projects identified as on hold or cancelled
- To understand overall customer satisfaction with the program, while participating
- To understand what it would take to motivate near participants to participate
- To understand barriers customers are facing that prevent increasing energy efficiency
- To characterize near-participant firms

Variables

Variable Name	Description	Type
&CONTACT	Respondent name	Text
&FIRM	Company name	Text
&PROGRAM	Energy FinAnswer, FinAnswer Express	Text
&SITE	Address	Text
&YEAR	Year of project start	YYYY
&PACIFICORP	Rocky Mountain Power, Pacific Power	Text

Interview Instrument

Introduction and Screen

INTRO1. Hello, this is INTERVIEWER, calling on behalf of &PACIFICORP. We are conducting an independent evaluation of &PACIFICORP's &PROGRAM and would like to hear about your experiences. This is not a sales call. May I please speak with &CONTACT?

1. YES, THAT IS ME → **SKIP TO INTRO3**
2. YES, LET ME TRANSFER YOU → **SKIP TO INTRO2**
3. NOT NOW → **SCHEDULE APPT AND CALL BACK**
4. NO/REFUSED → **TERMINATE**

INTRO2. Hello, this is INTERVIEWER, calling on behalf of &PACIFICORP. We are conducting an independent evaluation of &PACIFICORP's &PROGRAM and would like to hear about your experiences. This is not a sales call."

I'd like to let you know that this call may be monitored or recorded for quality assurance purposes. Also, all of your responses will be kept confidential and will not be revealed to anyone outside of the research team. Do you have a few minutes to answer questions about your experience with the program? **[IF NEEDED, READ: "This survey is for research purposes only and will take about 10 minutes."]**

1. YES → **SKIP TO IS2a**
2. NOT NOW → **MAKE APPT. TO CALL BACK**

3. NO/REFUSED → **TERMINATE**

INTRO3. Do you have a few minutes to answer questions about your experience with the program? **[IF NEEDED, READ: "This survey is for research purposes only and will take about 10 minutes."]** I'd like to let you know that this call may be monitored or recorded for quality assurance purposes. Also, all of your responses will be kept confidential and will not be revealed to anyone outside of the research team.

4. YES
5. NOT NOW → **MAKE APPT. TO CALL BACK**
6. NO/REFUSED → **TERMINATE**

[IF VERIFICATION IS NEEDED, TELL THEM THEY CAN CALL SHAWN GRANT AT 801-220-4196].

IS2a. &PACIFICORP records indicate that you were considering a project to improve efficiency at &SITE with the &PROGRAM program in &YEAR but did not complete the project and get an incentive, is this correct?

1. YES → **SKIP TO AP1**
2. NO, DID NOT PARTICIPATE
3. NO, COMPLETED PROJECT AND GOT INCENTIVE → **CONFIRM &TERMINATE**

88. DON'T KNOW/NOT SURE
99. REFUSED

IS2b. Is there someone else that might be familiar with this project?

1. Yes
2. No → **TERMINATE**

88. Don't know → **TERMINATE**

IS2c. May I speak with that person?

1. Yes → **RETURN TO INTRO2**
2. Not now→ **SCHEDULE CALLBACK**
3. No → **TERMINATE**

IS3. Are you the person most familiar with &FIRM's decision to begin this project?

1. YES
2. NO → **SKIP to IS2b**

88. DON'T KNOW/NOT SURE → **SKIP to IS2b**
99. REFUSED → **SKIP to IS2b**

Awareness & Participation

AP1. How did you first become aware of &PROGRAM? **[DO NOT READ RESPONSES]**

1. ACCOUNT REPRESENTATIVE OR OTHER &PACIFICORP STAFF
2. &PACIFICORP RADIO ADVERTISEMENT
3. &PACIFICORP PRINT ADVERTISEMENT
4. &PACIFICORP PRINTED MATERIALS/BROCHURE
5. &PACIFICORP ONLINE ADVERTISEMENT
6. &PACIFICORP TV ADVERTISEMENT
7. &PACIFICORP NEWSLETTER
8. &PACIFICORP WEBSITE
9. PREVIOUS PARTICIPATION IN &PACIFICORP PROGRAMS

10. CONFERENCE, WORKSHOP, OR EVENT [SPECIFY:_____]
11. &PACIFICORP SPONSORED ENERGY AUDIT OR TECHNICAL ASSESSMENT
12. FROM TRADE ALLY, VENDOR OR CONTRACTOR
13. ANOTHER BUSINESS COLLEAGUE
14. FAMILY, FRIEND, OR NEIGHBOR
15. OTHER **[SPECIFY]:** _____
88. DON'T KNOW/NOT SURE
99. REFUSE

AP2. Why did you decide to participate in the program? **[DO NOT READ RESPONSES; SELECT ALL THAT APPLY]**

1. To save money on electric bills.
2. To obtain an incentive.
3. To replace old or poorly working equipment.
4. To replace broken equipment.
5. To acquire the latest technology.
6. To reduce maintenance costs.
7. Because the program was sponsored by &PACIFICORP
8. Previous experience with &PACIFICORP
9. To protect the environment.
10. To save energy
11. Recommendation by contractors/trade allies
12. Recommended by colleague
13. Recommended by family, friend or neighbor
14. Recommended by &PACIFICORP staff
15. To improve operations, production, or quality
16. To improve value of property
17. To improve comfort
18. Other [SPECIFY]: _____
88. DON'T KNOW/NOT SURE
99. REFUSE

[IF more than one response to AP2]

AP2a. Of those reasons, which one was most influential in your decision to participate in the program? [ALLOW ONLY ONE RESPONSE]

1. To save money on electric bills.
2. To obtain an incentive.
3. To replace old or poorly working equipment.
4. To replace broken equipment.
5. To acquire the latest technology.
6. To reduce maintenance costs.
7. Because the program was sponsored by &PACIFICORP
8. Previous experience with &PACIFICORP
9. To protect the environment.
10. To save energy
11. Recommendation by contractors/trade allies
12. Recommended by colleague
13. Recommended by family, friend or neighbor
14. Recommended by &PACIFICORP staff

15. To improve operations, production, or quality
16. To improve value of property
17. To improve comfort
18. Other [SPECIFY]: _____
88. DON'T KNOW/NOT SURE
99. REFUSED

Near Participant

NP1. Thinking back to the project that you started under the &PROGRAM program at this site, how would you characterize its status today? **[IF NECESSARY, READ OPTIONS]**

1. NOW DOING PROJECT
2. PLANNING TO DO PROJECT /PROJECT ON HOLD
3. COMPLETED PROJECT WITHOUT PROGRAM → **SKIP TO NP5**
4. NOT DOING PROJECT/ PROJECT CANCELLED → **SKIP TO NP6**
5. OTHER[SPECIFY_____] → **SKIP TO NP7**

88. DON'T KNOW/NOT SURE → **SKIP TO NP7**
99. REFUSED → **SKIP TO NP7**

NP2. Why did you put the project on hold?

1. Not on hold
2. Needed to acquire capital funding
3. Delays from contractor
4. Other [**RECORD RESPONSE]**

88. DON'T KNOW/NOT SURE
99. REFUSED

NP3. Will th e project be completed under a &PACIFICORP program?

1. YES
2. NO → **SKIP TO NP5**

88. DON'T KNOW/NOT SURE → **SKIP TO NP5**
99. REFUSED → **SKIP TO NP5**

NP4. Which program will you complete the project under? **[READ LIST]**

1. SELF-DIRECTION CREDIT → **SKIP TO B1**
2. ENERGY FINANSWER → **SKIP TO B1**
3. FINANSWER EXPRESS→ **SKIP TO B1**
4. OR SOMETHING ELSE (SPECIFY_____) → **SKIP TO B1**

88. DON'T KNOW/NOT SURE → **SKIP TO B1**
99. REFUSED → **SKIP TO B1**

NP5. Why did you decide do the project without participating in any programs?

1. **[RECORD RESPONSE] → SKIP TO NP7**
88. DON'T KNOW/NOT SURE**→ SKIP TO NP7**
99. REFUSED**→ SKIP TO NP7**

NP6. Why did you decide not do to the project?

1. **[RECORD RESPONSE] → SKIP TO NP7**
88. DON'T KNOW/NOT SURE**→ SKIP TO NP7**
99. REFUSED**→ SKIP TO NP7**

NP7. What would need to change for you to participate in &PROGRAM or similar program?

1. **[RECORD RESPONSE]**
88. DON'T KNOW/NOT SURE
99. REFUSED

Barriers

B1. Do you think there are other changes that you could make to improve electric efficiency at &FIRM?

1. YES
2. NO **→ SKIP TO IC1**
88. DON'T KNOW/NOT SURE **→ SKIP TO IC1**
99. REFUSED **→ SKIP TO IC1**

B2. Could you provide some examples of changes you think would improve electric efficiency at &FIRM?

1. **[RECORD RESPONSE]**
88. DON'T KNOW/NOT SURE
99. REFUSED

B3. Are plans in place to make any of those changes?

1. YES
2. NO **→ SKIP TO B5**
88. DON'T KNOW/NOT SURE **→ SKIP TO B5**
99. REFUSED **→ SKIP TO B5**

B4. Are incentives from &PACIFICORP or another organization part of those plans?

1. NO
2. YES
88. DON'T KNOW/NOT SURE
99. REFUSED

B5. What factors could prevent &FIRM from making these changes? **[DO NOT READ RESPONSES; ALLOW MULTIPLE RESPONSES]**

1. HIGH UPFRONT COSTS
2. LACK OF ACCESS TO CAPITAL
3. LONG PAYBACK PERIOD; SLOW RATE OF RETURN
4. LOW PRIORITY/LACK OF INTEREST OF SENIOR MANAGEMENT IN ENERGY EFFICIENCY
5. LACK OF INFORMATION ABOUT SAVINGS AND PERFORMANCE
6. LACK OF RESPONSIBLE/ACCOUNTABLE ENERGY STAFF
7. OTHER (SPECIFY _____)

88. DON'T KNOW/NOT SURE
99. REFUSED

[IF MORE THAN ONE RESPONSE TO B5] B6. Which of these do you think is the most challenging factor?

1. HIGH UPFRONT COSTS
2. LACK OF ACCESS TO CAPITAL
3. LONG PAYBACK PERIOD; SLOW RATE OF RETURN
4. LOW PRIORITY/LACK OF INTEREST OF SENIOR MANAGEMENT IN ENERGY EFFICIENCY
5. LACK OF INFORMATION ABOUT SAVINGS AND PERFORMANCE
6. LACK OF RESPONSIBLE/ACCOUNTABLE ENERGY STAFF
7. OTHER (SPECIFY _____)

88. DON'T KNOW/NOT SURE
99. REFUSED

Satisfaction

IC1. Using a scale of 1 to 5 where 1 indicates 'very dissatisfied' and 5 indicates 'very satisfied', how satisfied were you overall with the experience that you had with the program?

1. VERY DISSATSIFIED
2. SOMEWHAT DISSATISFIED
3. NEITHER SATISFIED OR DISSATISFIED
4. SOMEWHAT SATISFIED → **SKIP TO IC2**
5. VERY SATISFIED → **SKIP TO IC2**

88. DON'T KNOW/NOT SURE → **SKIP TO IC2**
99. REFUSED → **SKIP TO IC2**

IC1A. Why were you less than satisfied with the program overall?

1. **[RECORD RESPONSE]**

88. DON'T KNOW/NOT SURE
99. REFUSED

IC2. During your involvement with &PROGRAM did you ever contact &PACIFICORP with questions or requests for assistance?

1. YES
2. NO → **SKIP TO FB1**

88. DON'T KNOW/NOT SURE → **SKIP TO FB1**
99. REFUSED → **SKIP TO FB1**

IC3. Were &PACIFICORP and its representatives timely in addressing your questions in regards to the program?

1. YES
2. NO
88. DON'T KNOW/NOT SURE
99. REFUSED

IC4. Were &PACIFICORP and its representatives knowledgeable in regards to the program and the program eligibility requirements?

1. YES
2. NO
88. DON'T KNOW/NOT SURE
99. REFUSED

Firmographics

FB1. Now I have a few final, general questions about your company for comparison purposes only. 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. MINING
16. OIL AND GAS
17. OTHER **[SPECIFY]** _____
88. DON'T KNOW/NOT SURE
99. REFUSED

FB2. Approximately, what percent of your total annual operating costs does your electricity bill represent?

1. [RECORD RESPONSE]
88. DON'T KNOW/NOT SURE
99. REFUSED

FB3. About how many people does your firm employ?

1. **[RECORD RESPONSE]**
88. DON'T KNOW/NOT SURE
99. REFUSED

End

END1. Those are all of the questions that I have for you. Is there anything about your experiences with &PACIFICORP's &PROGRAM program you'd like to mention that we did not talk about today?

1. **[RECORD RESPONSE]**

88. DON'T KNOW/NOT SURE

99. REFUSED

[THANK RESPONDENT AND TERMINATE SURVEY]

C.3 Non-Participant Survey Instrument

Note: Non-participants are C&I customers who are not identified as having started participating in any PacifiCorp programs between 2009 and 2011.

Objectives

These surveys are designed to meet the following list of objectives.

- To assess awareness of PacifiCorp programs among non-participants
- To identify non-participant efficient purchasing
- To understand barriers customers are facing that prevent increasing energy efficiency
- To characterize non-participant firms

Variables

Variable Name	Description	Type
&FIRM	Company name	Text
&PHONE	Phone number	Numeric
&SITE	Address	Text
&PACIFICORP	Rocky Mountain Power, Pacific Power	Text
&CLASS	Revenue Class	Text

Survey Instrument

Introduction and Screen

INTRO1. Hello, this is INTERVIEWER, calling on behalf of &PACIFICORP. We are conducting an independent evaluation of &PACIFICORP's energy efficiency programs so that they better suit the needs of customers like you. This is not a sales call. May I please speak with the person who is responsible for the $_CLASS electric account for $_FIRM?

1. YES, THAT IS ME → **SKIP TO INTRO3**
2. YES, LET ME TRANSFER YOU
3. NOT NOW → **SCHEDULE APPT AND CALL BACK**
4. NO/REFUSED → **TERMINATE**

INTRO2. Hello, this is INTERVIEWER, calling on behalf of &PACIFICORP. We are conducting an independent evaluation of &PACIFICORP's efficiency programs so that they better suit the needs of customers like you. This is not a sales call. Do you have a few minutes? **[IF NEEDED, READ: "This survey is for research purposes only and will take about 10 minutes."]**

7. YES → **SKIP TO IS2a**
8. NOT NOW → **MAKE APPT. TO CALL BACK**
9. NO/REFUSED → **TERMINATE**

INTRO3. Great. I'd like to let you know that this call may be monitored or recorded for quality assurance purposes. Also, all of your responses will be kept confidential and will not be revealed to anyone outside of the research team.

[IF NEEDED, READ: "This survey is for research purposes only and will take about 10 minutes."]

1. CONTINUE WITH INTERVIEW

2. NOT NOW → **MAKE APPT. TO CALL BACK**
3. NO/REFUSED → **TERMINATE**

[IF VERIFICATION IS NEEDED, TELL THEM THEY CAN CALL SHAWN GRANT AT 801-220-4196].

V1. First, I'd like to verify my records. Which utility company provides electricity at &SITE?

1. &PACIFICORP
2. OTHER → **TERMINATE**
88. DON'T KNOW/NOT SURE
99. REFUSE

[IF &_CLASS "COMMERCIAL" OR "INDUSTRIAL"]V2. Was this facility at &SITE constructed before or after 2009?

1. BEFORE 2009
2. 2009 OR LATER

Awareness

A1. Are you aware that &PACIFICORP offers incentives and technical assistance to &CLASS customers to help them reduce electricity usage?

1. YES
2. NO → **SKIP to A4**
88. DON'T KNOW/NOT SURE → **SKIP TO A4**
99. REFUSED → **SKIP TO A4**

A2. How did you become aware that &PACIFICORP offers energy efficiency program(s)? **[DO NOT READ RESPONSES, SELECT ALL THAT APPLY]**

16. ACCOUNT REPRESENTATIVE OR OTHER &PACIFICORP STAFF
17. &PACIFICORP RADIO ADVERTISEMENT
18. &PACIFICORP PRINT ADVERTISEMENT
19. &PACIFICORP PRINTED MATERIALS/BROCHURE
20. &PACIFICORP ONLINE ADVERTISEMENT
21. &PACIFICORP TV ADVERTISEMENT
22. &PACIFICORP NEWSLETTER
23. &PACIFICORP WEBSITE
24. PREVIOUS PARTICIPATION IN &PACIFICORP PROGRAMS
25. CONFERENCE, WORKSHOP, OR EVENT [SPECIFY:_____]
26. &PACIFICORP SPONSORED ENERGY AUDIT OR TECHNICAL ASSESSMENT
27. FROM TRADE ALLY, VENDOR OR CONTRACTOR
28. ANOTHER BUSINESS COLLEAGUE
29. FAMILY, FRIEND, OR NEIGHBOR
30. OTHER **[SPECIFY]:** _____
89. DON'T KNOW/NOT SURE
99. REFUSE

A3. Which programs or services can you think of that &PACIFICORP offers to &CLASS customers? **[DO NOT READ RESPONSES, SELECT ALL THAT APPLY]**

1. ENERGY FINANSWER
2. FINANSWER EXPRESS
3. SELF-DIRECTION CREDIT
4. RECOMMISSIONING
5. IRRIGATION LOAD CONTROL
6. IRRIGATION ENERGY SAVERS
7. INCENTIVES FOR EFFICIENT EQUIPMENT
8. TECHNICAL ASSISTANCE/ ENERGY ANALYSIS
9. DEMAND RESPONSE / LOAD CONTROL
10. Other [SPECIFY]: _____

88. DON'T KNOW/NOT SURE
99. REFUSED

A4. In the future, what is the best for &PACFICORP to keep you informed about programs they offer that could help your firm save energy?

1. ACCOUNT REPRESENTATIVE OR OTHER &PACIFICORP STAFF
2. RADIO ADVERTISEMENT
3. PRINT ADVERTISEMENT
4. PRINTED MATERIALS/BROCHURE
5. ONLINE ADVERTISEMENT
6. TV ADVERTISEMENT
7. NEWSLETTER
8. WEBSITE
9. CONFERENCE, WORKSHOP, OR EVENT [SPECIFY:_____]
10. TRADE ALLY, VENDOR OR CONTRACTOR
11. OTHER **[SPECIFY]:** _____

90. DON'T KNOW/NOT SURE
99. REFUSE

Energy Efficient Actions by Non-Participants

[IF V2=2, SKIP TO EE21]

EE1. Between 2009 and 2011, did you have a systematic evaluation or audit of your facility, at &SITE, to identify and implement operational improvements? [IF NEEDED: "this includes building and equipment audits, system analyses, energy engineering analysis, other detailed studies."]

1. YES
2. NO → **SKIP TO EE8**

88. DON'T KNOW/NOT SURE → **SKIP TO EE8**
99. REFUSED → **SKIP TO EE8**

EE2. What factor or factors motivated you to have your facility undergo a systematic evaluation? **[DO NOT READ RESPONSES; ALLOW MULTIPLE RESPONSES]**

1. To save money on electric bills.
2. To obtain an incentive.
3. To replace old or poorly working equipment.
4. To replace broken equipment.
5. To acquire the latest technology.

6. To reduce maintenance costs.
7. Because the program was sponsored by &PACIFICORP
8. Previous experience with &PACIFICORP
9. To protect the environment.
10. To save energy
11. Recommendation by contractors/trade allies
12. Recommended by colleague
13. Recommended by family, friend or neighbor
14. To improve operations, production, or quality
15. To improve value of property
16. To improve comfort
17. Other [SPECIFY]: _____
88. DON'T KNOW/NOT SURE
99. REFUSED

EE3. Did you receive assistance from &PACIFICORP or another organization? [IF NEEDED: assistance may include technical assistance or incentives]

1. YES
2. NO → **SKIP TO EE5**
88. DON'T KNOW/NOT SURE → **SKIP TO EE5**
99. REFUSED → **SKIP TO EE5**

EE4. What program or sponsor provided assistance?

1. &PACIFICORP → SKIP TO EE8
2. [RECORD RESPONSE]
88. DON'T KNOW/NOT SURE
99. REFUSED

EE5. What opportunities for improvement were identified? [PROBE FOR AS MUCH DETAIL AS POSSIBLE]

1. [RECORD RESPONSE]
88. DON'T KNOW/NOT SURE
99. REFUSED

EE6. What actions have you taken as a result of the study?

1. [RECORD RESPONSE]
88. DON'T KNOW/NOT SURE
99. REFUSED

[IF EE4 not 1]EE7. Why did you not apply for assistance from &PACIFICORP?

1. [RECORD RESPONSE]
88. DON'T KNOW/NOT SURE
99. REFUSED

EE8a. Did you install any high efficiency equipment at this site between 2009 and 2011?

1. YES
2. NO
88. DON'T KNOW/NOT SURE

99. REFUSED

EE8b. Did you make any improvements to this site between 2009 and 2011 to help conserve energy?
1. YES
2. NO
88. DON'T KNOW/NOT SURE
99. REFUSED

[IF EE8a ≠ 1 and EE8b ≠ 1, SKIP TO **EE15**]

EE9. What did you install? (PROBE FOR AS MUCH DETAIL AS POSSIBLE)
1. [RECORD RESPONSE]
88. DON'T KNOW/NOT SURE
99. REFUSED

EE10. How many did you purchase or install?
1. [RECORD RESPONSE]
88. DON'T KNOW/NOT SURE
99. REFUSED

EE11. What factor or factors motivated you to make these changes? **[DO NOT READ RESPONSES; ALLOW MULTIPLE RESPONSES]**
1. To save money on electric bills.
2. To obtain an incentive.
3. To replace old or poorly working equipment.
4. To replace broken equipment.
5. To acquire the latest technology.
6. To reduce maintenance costs.
7. Because the program was sponsored by &PACIFICORP
8. Previous experience with &PACIFICORP
9. To protect the environment.
10. To save energy
11. Recommendation by contractors/trade allies
12. Recommended by colleague
13. Recommended by family, friend or neighbor
14. To improve operations, production, or quality
15. To improve value of property
16. To improve comfort
17. Other [SPECIFY]: _____
88. DON'T KNOW/NOT SURE
99. REFUSED

EE12. Did you receive assistance from &PACIFICORP or another organization?
1. YES
2. NO → **SKIP TO EE14**
88. DON'T KNOW/NOT SURE → **SKIP TO EE14**
99. REFUSED → **SKIP TO EE14**

EE13. What program or sponsor provided assistance?

3. **&PACIFICORP → SKIP TO EE15**
4. **[RECORD RESPONSE]**

88. DON'T KNOW/NOT SURE
99. REFUSED

EE14. Why did you not apply for an incentive from &PACIFICORP for this equipment?

1. **[RECORD RESPONSE]**

88. DON'T KNOW/NOT SURE
99. REFUSED

EE15. Since 2009, have you implemented any load control strategies at your facility?

1. YES
2. NO → **SKIP TO B1**

88. DON'T KNOW/NOT SURE → **SKIP TO B1**
99. REFUSED → **SKIP TO B1**

EE16. What strategies have you implemented?

1. **[RECORD RESPONSE]**

88. DON'T KNOW/NOT SURE
99. REFUSED

EE17. What factor or factors motivated you to make these changes? **[DO NOT READ RESPONSES; ALLOW MULTIPLE RESPONSES]**

1. To save money on electric bills.
2. To obtain an incentive.
3. To replace old or poorly working equipment.
4. To replace broken equipment.
5. To acquire the latest technology.
6. To reduce maintenance costs.
7. Because the program was sponsored by &PACIFICORP
8. Previous experience with &PACIFICORP
9. To protect the environment.
10. To save energy
11. Recommendation by contractors/trade allies
12. Recommended by colleague
13. Recommended by family, friend or neighbor
14. To improve operations, production, or quality
15. To improve value of property
16. To improve comfort
17. Other [SPECIFY]: _____

88. DON'T KNOW/NOT SURE
99. REFUSED

EE18. Did you receive assistance from &PACIFICORP or another organization?

1. YES
2. NO → **SKIP TO EE20**

88. DON'T KNOW/NOT SURE → **SKIP TO EE20**
99. REFUSED → **SKIP TO EE20**

EE19. What program or sponsor provided assistance?

1. &PACIFICORP → SKIP TO B1
2. [RECORD RESPONSE]
88. DON'T KNOW/NOT SURE
99. REFUSED

EE20. Why did you not apply for an incentive from &PACIFICORP for these load control improvements?

1. [RECORD RESPONSE]
88. DON'T KNOW/NOT SURE
99. REFUSED

[IF V2=2] **EE21**. When constructing this facility, did you install any high efficiency equipment?

1. YES
2. NO → **SKIP TO B1**
88. DON'T KNOW/NOT SURE → **SKIP TO B1**
99. REFUSED → **SKIP TO B1**

EE22. What high efficiency equipment did you install? (PROBE FOR AS MUCH DETAIL AS POSSIBLE)

2. [RECORD RESPONSE]
88. DON'T KNOW/NOT SURE
99. REFUSED

EE23. How many did you purchase or install?

1. [RECORD RESPONSE]
88. DON'T KNOW/NOT SURE
99. REFUSED

EE24. What factor or factors motivated you to make these changes? **[DO NOT READ RESPONSES; ALLOW MULTIPLE RESPONSES]**

1. To save money on electric bills.
2. To obtain an incentive.
3. To replace old or poorly working equipment.
4. To replace broken equipment.
5. To acquire the latest technology.
6. To reduce maintenance costs.
7. Because the program was sponsored by &PACIFICORP
8. Previous experience with &PACIFICORP
9. To protect the environment.
10. To save energy
11. Recommendation by contractors/trade allies
12. Recommended by colleague
13. Recommended by family, friend or neighbor
14. To improve operations, production, or quality
15. To improve value of property
16. To improve comfort

17. Other [SPECIFY]: _____
88. DON'T KNOW/NOT SURE
99. REFUSED

EE25. Did you receive assistance from &PACIFICORP or another organization?

1. YES
2. NO → **SKIP TO EE27**
88. DON'T KNOW/NOT SURE → **SKIP TO EE27**
99. REFUSED → **SKIP TO EE27**

EE26. What program or sponsor provided assistance?

5. &PACIFICORP → SKIP TO B1
6. [RECORD RESPONSE]
88. DON'T KNOW/NOT SURE
99. REFUSED

EE27. Why did you not apply for an incentive from &PACIFICORP for this equipment?

1. [RECORD RESPONSE]
88. DON'T KNOW/NOT SURE
99. REFUSED

Barriers

B1. Do you think there are other changes that you could make to improve electric efficiency at &FIRM?

1. YES
2. NO → **SKIP TO FB1**
88. DON'T KNOW/NOT SURE → **SKIP TO FB1**
99. REFUSED → **SKIP TO FB1**

B2. Could you provide some examples of what changes you think you could make?

1. [RECORD RESPONSE]
88. DON'T KNOW/NOT SURE
99. REFUSED

B3. Are plans in place to make any of those changes?

1. YES
2. NO → **SKIP TO B5**
88. DON'T KNOW/NOT SURE → **SKIP TO B5**
99. REFUSED → **SKIP TO B5**

B4. Are incentives from &PACIFICORP or another organization part of those plans?

1. YES
2. NO
88. DON'T KNOW/NOT SURE
99. REFUSED

B5. What factors could prevent &FIRM from making these changes? **[DO NOT READ RESPONSES; ALLOW MULTIPLE RESPONSES]**

8. HIGH UPFRONT COSTS

9. LACK OF ACCESS TO CAPITAL
10. LONG PAYBACK PERIOD; SLOW RATE OF RETURN
11. LOW PRIORITY/LACK OF INTEREST OF SENIOR MANAGEMENT IN ENERGY EFFICIENCY
12. LACK OF INFORMATION ABOUT SAVINGS AND PERFORMANCE
13. LACK OF RESPONSIBLE/ACCOUNTABLE ENERGY STAFF
14. OTHER (SPECIFY _____)
88. DON'T KNOW/NOT SURE
99. REFUSED

[IF MORE THAN ONE RESPONSE TO B5] B6. Which of these do you think is the most challenging factor?

8. HIGH UPFRONT COSTS
9. LACK OF ACCESS TO CAPITAL
10. LONG PAYBACK PERIOD; SLOW RATE OF RETURN
11. LOW PRIORITY/LACK OF INTEREST OF SENIOR MANAGEMENT IN ENERGY EFFICIENCY
12. LACK OF INFORMATION ABOUT SAVINGS AND PERFORMANCE
13. LACK OF RESPONSIBLE/ACCOUNTABLE ENERGY STAFF
14. OTHER (SPECIFY _____)
88. DON'T KNOW/NOT SURE
99. REFUSED

Firmographics

FB1. Now I have a few final, general questions about your company for comparison purposes only. Could you describe your company's primary activities? (DO NOT READ LIST, CODE AND CONFIRIM WITH RESPONDENT)

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. MINING
16. OIL AND GAS
17. OTHER **[SPECIFY]** _____
88. DON'T KNOW/NOT SURE
99. REFUSED

FB2. Approximately, what percent of your total annual operating costs does your electricity bill represent? (IF NEEDED: An estimate is fine.)

1. [RECORD RESPONSE]
88. DON'T KNOW/NOT SURE
99. REFUSED

FB3. And about how many people does your firm employ at this facility?

1. [RECORD RESPONSE]
88. DON'T KNOW/NOT SURE
99. REFUSED

End

END1. Those are all of the questions that I have for you. Is there anything about your experiences with &PACIFICORP you'd like to mention that we did not talk about today?

1. [RECORD RESPONSE]
88. DON'T KNOW/NOT SURE
99. REFUSED

[THANK RESPONDENT AND TERMINATE SURVEY]

C.4 Energy Engineer Survey Instrument

Note: Potential respondents for the purposes of this interview are energy engineers supporting the RMP and Pacific Power Energy who have completed at least one Energy FinAnswer project between 2009 and 2011. Participant survey responses, tracking data, and suggestions from program staff will be considered before selecting allies to interview.

Objectives

These interviews are designed to meet the following list of objectives.

- How are trade allies becoming aware of the program?
- How well does the trade ally participation agreement meet their needs?
- How are program operations communicated to trade allies? How is training provided? Is this communication and training effective (do they understand the program)?
- How satisfied are trade allies with their role in the program? What would they do to improve it?
- Do trade allies who participate see value to their business? Can they describe the effect on their operations?

Variables

Variable	Description	Type
$_CONTACT	Name of contact	Text
$_FIRM	Name of vendor company	Text
$_PACIFICORP	Pacific Power /Rocky Mountain Power	Text
$_PROJECTS	Completed projects 2009-2011	Number
$_STATE	State(s) where active	Text

Interview Guide

Hello, this is <INTERVIEWER NAME>, from Energy Market Innovations. We are conducting an independent evaluation of $_PACIFICORP's energy efficiency programs. This is not a sales call. May I please speak with $_CONTACT.

I understand that $_FIRM conducts energy engineering in support of $_PACIFICORP's Energy FinAnswer program. Your feedback can be used to improve the program.

A1. Are you the person that works most closely with $_PACIFICORP at your company?

a. Yes

b. No → [ask to speak to person most familiar with the program]

I would like to discuss your experiences and perspectives regarding energy engineering with $_PACIFICORP. This interview will take 15-30 minutes, and as a thank you for taking time to chat with me, I would like to offer you a $50 gas card.

Is this a good time to talk or would you prefer to schedule a more convenient time?

[If no, scheduled callback time:] _____

With your permission, I'd like to record this interview to ensure that I don't miss any important information and for quality assurance. Your responses will be kept confidential.

A2. In one or two sentences, can you please tell me what $_FIRM does?

A3. What is your title/role at $_FIRM?

A3a. How long have you been in this position at your company?

Section 1: Participation

1. How did you first hear about the program? (DO NOT READ, MARK ALL)
    a. Advertising
    b. PacifiCorp Representative
    c. Other Contractor/Vendor
    d. Customer
    e. Other (SPECIFY_____)
2. What motivated you to participate?
3. Our records show that your firm facilitated $_PROJECTS projects from 2009 to 2011 in $_STATE in collaboration with $_PACIFICORP. (Repeat for each state firm is active in.)
    a. How were you involved? (E.g. Did they influence the project or just write reports/do QC/install loggers?)

Section 2: Training, Roles, and Communication

4. What kind of training or information about the program were you provided when you first became involved? [MAY HAVE HAD INTERNAL TRAINING.]
    a. Have you had any follow up or continuing training?
    b. Have you, or someone from $_FIRM attended an alliance workshop?
5. Did you feel like the program was clearly explained? What about your role in the program?

6. How would you describe your communication with the program representatives?

    a. Is there one key contact you communicate with about the program? Who?

    b. What might initiate contact; is there a set frequency of contact or an action that would trigger contact? Does he/she contact you or do you contact him/her? How often? Does this meet your needs?

    c. How would you rate your satisfaction with your contact, on a scale of 1 to 5 with 1 being very dissatisfied and 5 being very satisfied?

    d. Is he/she able to answer your questions or get you to someone who can?

7. How do you prefer to get information about the program? (DO NOT READ, MARK ALL THAT ARE STATED)

    e. Online, check site often

    f. Email

    g. Mail Newsletter

    h. Phone Call

Section 3 : Energy Analysis Process

8. Do you conduct Energy Analyses for the Energy FinAnswer Program?

[If no, skip to Q7] [ENERGY ANALYSES ARE WHEN THEY GO OUT TO THE SITE, IDENTIFY SAVINGS OPPORTUNITIES, AND DETERMINE PROJECT ELIGIBILITY]

9. Please tell me about your experience with the process of energy analysis for Energy FinAnswer projects. First:

    a. What does the process entail on your end? [PROBE FOR PARTICULARS: visit the customer site, activities on site, reviewing baseline consumption, observing practices, communications with line managers]

        i. Probe for Initial Site Visit and Energy Analysis

        ii. [PROBE FOR LEAD GENERATION] Do all of your Energy FinAnswer energy analysis projects begin with contact from PacifiCorp, or do you bring projects to the program?

    b. Does the program allow enough time and resources to do this task well?

    c. How are findings communicated with the customer? With $_PACIFICORP?

    d. How are issues raised by the analysis resolved?

    e. How long does this process take on average?

    f. Do you have any concerns with the way that results are used?

10. What percent of your time spent with the Energy FinAnswer program is performing Energy Analysis? [CONDUCTING PRIMARY ENGINEERING ANALYSIS AND POST INSPECTIONS AS OPPOSED TO REVIEWING OTHERS' WORK]

11. Do you conduct Quality Control Reviews for the Energy FinAnswer program? [If no, skip to NEXT SECTION]

12. What percent of your contracts with the Energy FinAnswer program is performing quality control? [REVIEWING OTHER ENGINEERING WORK AS OPPOSED TO PERFORMING ENGINEERING ANALYSIS AND POST INSPECTIONS]

»

13. Next, I'd like to get your thoughts on how the Quality Control Review works for you.

    a. It is our understanding that quality reviews must be completed in 10 days. Is this enough time?

    b. Do your peers provide you with constructive feedback in their quality reviews of your work?

    c. How do you think this built in quality control system affects the quality of your work?

    d. Has this process changed the way you do business for other non-project related work? If so, how?

Section 4: Measurement and Verification

14. Next, I have several questions asking about the project post-inspection process for the Energy FinAnswer Program.

    a. What does the process entail on your end (e.g., visit the customer site, activities on site, reviewing baseline consumption, observing practices, communications with line managers)?

    b. Does the program allow enough time and resources to do this task well?

    c. How are findings communicated with the customer? With $_PACIFICORP?

    d. How are disagreements resolved?

    e. How long does this process take (generally)?

Section 5: Customer Involvement

15. Do you conduct similar energy engineering analysis for customers not working with the Energy FinAnswer program? [IF NO, go to next question]

    a. How about with customers not working with <u>any</u> utility program?

    b. How does your interaction with customers as part of the Energy FinAnswer program differ from those customers that aren't participating in any program?

c. About how often do you conduct engineering analyses for projects not participating in any program that you think would qualify for the Energy FinAnswer program, based on efficiency?

   i. [PROBE TO GET PERCENT OF PROJECTS IN A YEAR]Thinking about just 2011, about what percent of energy analyses that would qualify for the Energy FinAnswer program were completed without any program at all?

   ii. Of those projects, how similar was the analysis in terms of the installed measures and projected savings to the analysis performed as part of the Energy FinAnswer program?

d. Why did those customers not participate in the Energy FinAnswer program?

16. What questions do customers typically have when you come in to do an analysis? Any concerns?

17. What challenges do you face in addressing customer questions or concerns towards the programs?

Section 6: Business Impact

18. How has participation in this program impacted your business, if at all? [IF RESPONDENT ALREADY ANSWERED THIS IN SECTION 5, DON'T ASK AGAIN.]

    a. [PROBE] Does the program encourage additional engineering analysis, creating more business that is not funded by &PACIFICORP?

    b. [IF YES] Using a scale of one to five, please rate the influence of your participation in the Energy FinAnswer program on this additional engineering analysis,where one is no influence at all and five is a driving force in your sales.

19. Would you continue to offer the same services to customers if the program no longer existed?

    a. [IF YES] What percent of your current work do you think customers would still be interested in receiving if the incentives were not available?

20. How does the Energy FinAnswer program differ from other similar programs that you may be involved with at other utilities?

    a. Is the amount of effort required on your part different?

    b. What about the amount of paperwork?

    c. How is it different for participants?

Section 7: Satisfaction with Program(s)

[NOW, I HAVE JUST A FEW MORE QUESTIONS.]

21. Do you use the $_PACIFICORP vendor website?

    a. [IF YES, follow up] How often do you visit the website?

b. [2nd follow up] What kind of information do you look for on the website?

22. On the whole, are you satisfied with your experience with the Energy FinAnswer program, on a scale of 1 to 5 with 1 being very dissatisfied and 5 being very satisfied?

    a. What would you change to make the initial site visit and energy analysis process work better?

    b. What would you change to make the Quality Control Reviews work better?

    c. What would you change to make the post inspection process work better?

23. Is there anything else you'd like to tell us about your experience?

Section 8: Gas Card Offer/Closing

As a thank you for your participation in this interview, we'd like to offer you a $50 gas gift card. Would you like to accept this offer?

(If yes) Which type of gas station would be most convenient for you?

[NOTE: The following do not offer gift cards we can order: Loaf N' Jug, Kum & Go

The following companies DO offer gas cards: Exxon-Mobil, Sinclair, Conoco, Pilot-Flying J, Shell, Valero (Diamond Shamrock), Phillips 66, Chevron-Texaco, Maverik]

To what address should we mail the gift card?

Thank you!

Appendix D. Process Evaluation Detailed Findings

D.1 Participant Results

Table 4. Primary Industry of Energy FinAnswer Survey Respondents

Primary Industry	Respondents
Arts, Entertainment, and Recreation	2
Manufacturing	1
Dairy/Agricultural	1
Government	1
Total	**5**

Table 5. Participant Satisfaction with the Energy FinAnswer Program Overall

Satisfaction	Count of Respondents	Percentage of Respondents
Very satisfied	3	60.0%
Somewhat satisfied	0	0.0%
Neither satisfied nor dissatisfied	1	20.0%
Somewhat dissatisfied	1	20.0%
Very dissatisfied	0	0.0%
Don't know/ Not sure	0	0.0%
Total	**5**	**100.0%**

Table 6. Factors Influencing Project Decisions

Reason	Don't Know/Not Sure/Refused	Not at All	Somewhat Unimportant	Neutral	Somewhat Important	Extremely Important
Previous Participation in a Pacific Power Program	2	2	0	1	0	0
Contractor Recommendation	0	2	0	1	1	1
Corporate Policy for Energy Reduction	0	2	0	1	0	2
Energy Analysis Information on Energy Savings	1	0	0	2	0	2
Information Provided on Payback	0	0	0	2	1	2
Familiarity with Equipment	1	0	0	0	2	2
Pacific Power Incentive	0	0	0	0	3	2

Table 7. Installations in the Absence of Energy FinAnswer by Measure

Type of Installation	Number of Measures
The exact same measure and quantity at same time	1
A less efficient measure or less quantity within 12 months of actual installation	3
Some measure, but later than 12 months after actual installation	0
No measure at all	3
Total Count of Measures	**7**

D.2 Near-Participant Results

Table 8. Reasons for Interest in Energy FinAnswer

Reason	Primary	Secondary	Total
To save money on electric bills	3	0	3
To replace old or poorly working equipment	1	0	1
To reduce maintenance costs	0	1	1

D.3 Non-Participant Results

Table 9. Size of Non-Participant Firms, by Number of Employees

Number of Employees	Count of Respondents	Percent of Respondents
Less than 3	80	58%
3 to less than 10	35	25%
10 to less than 100	21	15%
100 to less than 1000	2	1%
Greater than 1000	1	1%
Total	**139**	**100%**

Table 10. Primary Activity for Non-Participating Firms, by Customer Class

Primary Activity Characterization	Irrigation	Commercial	Industrial	Total	Percent of Respondents
Dairy/Agricultural	54	6	0	60	35%
Manufacturing	0	3	5	8	5%
Professional, scientific, and technical services	1	9	4	14	8%
Retail	1	8	3	12	7%
Real estate	0	3	1	4	2%
Residence	6	11	2	19	11%
Health Care	0	4	1	5	3%
Other(5 or fewer respondents each)	4	18	6	28	16%
Not sure/No Answer	7	12	1	20	12%
Total	**73**	**74**	**23**	**170**	**100%**

Table 11. Awareness of Pacific Power Incentives and Technical Assistance

Response	Irrigation		Commercial		Industrial		Total	
Aware of Programs	30	41%	31	42%	10	43%	71	42%
Not aware of programs	43	59%	43	58%	13	57%	99	58%
Total	**73**	**100%**	**74**	**100%**	**23**	**100%**	**170**	**100%**

Table 12. Pacific Power Programs and Services Identified

Response	Irrigation	Commercial	Industrial	Total	Percent of Responses
Incentives for Efficient Equipment	8	4	3	15	18%
Technical Assistance	4	2	1	7	9%
Irrigation Load Control	2	0	0	2	2%
Appliance Pick Up/Disposal	0	2	0	2	2%
Renewable Energy Services	0	1	1	2	2%
Energy FinAnswer	0	1	0	1	1%
FinAnswer Express	1	0	0	1	1%
Self-Direction Credit	1	0	0	1	1%
Energy Star	0	1	0	1	1%
Low Income Services	0	0	1	1	1%
Weatherization Services	0	1	0	1	1%
Disability Services	0	1	0	1	1%
Not Sure/Don't Know	19	22	6	47	57%
Total	35	35	12	82	100%
Respondents	30	31	10	71	87%

Table 13. How Participants Heard about Programs and Services

Source of Information	Irrigation	Commercial	Industrial	Total	Percent of Responses
Not Sure/Don't Know	2	0	2	4	6%
Other (2 or fewer respondents each)	10	3	1	14	21%
Printed Materials/Brochure	7	7	1	15	23%
Account Representative or Other Pacific Power Staff	2	5	4	11	17%
Print Advertisement	7	2	0	9	14%
Newsletter	2	3	1	6	9%
TV Advertisement	0	5	0	5	8%
Previous Participation	3	1	1	5	8%
Website	1	3	0	4	6%
Family, friend, or neighbor	2	2	0	4	6%
General Knowledge/Personal Research	1	2	0	3	5%
Not Sure/Don't Know	2	0	2	4	6%
Trade Ally, Vendor, or Contractor	2	0	0	2	3%
Pacific Power presentation/meeting/workshop	2	0	0	2	3%
Through the irrigation district	2	0	0	2	3%
From billing	0	1	1	2	3%
Word of Mouth	2	0	0	2	3%
Radio Advertisement	1	0	0	1	2%
Another business colleague	0	1	0	1	2%
From company Involved in Carbon Footprint	0	1	0	1	2%
From a previous job	1	0	0	1	2%
Not Sure/Don't Know	2	0	2	4	6%
Total Responses	27	30	9	66	100%

Table 14. Preferred Methods to Learn about Pacific Power Programs and Opportunities

Preferred Method	Irrigation	Commercial	Industrial	Total	Percent of Responses
Not Sure/Don't Know	3	5	3	11	7%
Other (2 or fewer respondents each)	3	2	1	6	4%
Email	12	15	6	33	20%
Mail	13	17	2	32	19%
Printed Materials/Brochure	17	11	3	31	19%
Phone	13	6	4	23	14%
Accompanying Bills	9	6	1	16	10%
Website	4	6	0	10	6%
Newsletter	4	4	1	9	5%
Account Representative or Other Pacific Power Staff	0	5	2	7	4%
Print Advertisement	3	1	0	4	2%
Radio Advertisement	0	1	1	2	1%
TV Advertisement	0	1	0	1	1%
Trade Ally, Vendor, or Contractor	1	0	0	1	1%
Workshops	1	0	0	1	1%
In Person	1	0	0	1	1%
Not Sure/Don't Know	3	5	3	11	7%
Total Responses	**75**	**71**	**19**	**165**	**100%**

Table 15. Preferred and Actual Methods of Program Awareness

Method of Awareness	How Aware Non-Participants Found Out (n=80)	How Non-Participants Prefer to Hear (n=182)	difference
Email	0%	18%	18%
Mail	0%	18%	18%
Phone	0%	13%	13%
Accompanying Bills	3%	9%	6%
In Person	0%	1%	1%
Website	5%	5%	0%
Radio Advertisement	1%	1%	0%
Printed Materials/Brochure	19%	17%	-2%
Trade Ally, Vendor, or Contractor	3%	1%	-2%
Workshops	3%	1%	-2%
Newsletter	8%	5%	-3%
TV Advertisement	6%	1%	-6%
Print Advertisement	11%	2%	-9%
Account Rep or Other Pacific Power Staff	14%	4%	-10%

Table 16. Non-participant High Efficiency Equipment Improvements

Response	Irrigation		Commercial		Industrial		Total	
Yes, purchased or installed high efficiency equipment between 2009 and 2011…								
Without assistance from Rocky Mountain Power	11	15%	11	15%	3	13%	25	15%
With assistance from Rocky Mountain Power	3	4%	0	0%	1	4%	4	2%
No, did not purchase or install high efficiency equipment	59	81%	63	85%	19	83%	141	83%
Total Respondents	**73**	**100%**	**74**	**100%**	**23**	**100%**	**170**	**100%**

Table 17. Non-participant Load Control Strategies in Existing Facilities

Response	Irrigation		Commercial		Industrial		Total	
Yes, implemented load control strategies between 2009 and 2011…								
Without assistance from Rocky Mountain Power	2	3%	1	1%	0	0%	3	2%
With assistance from Rocky Mountain Power	0	0%	0	0%	0	0%	0	0%
No, did not implement load control strategies	71	97%	73	99%	23	100%	167	98%
Total Respondents	**73**	**100%**	**74**	**100%**	**23**	**100%**	**170**	**100%**

Table 18. California Non-Participant Motivations for Pursuing Efficiency Improvements

Response	High Efficient Equipment	Load Control	Systematic Evaluation
To save money on electric bills	8	2	3
To replace old or poorly working equipment	12	0	2
To improve operations, production, or quality	3	0	1
To save energy	2	0	1
To obtain an incentive	1	0	1
Other (1 response each)	4	1	1

Table 19. California Non-Participant Motivations for Pursuing Efficiency Improvements

Response	High Efficient Equipment	Load Control	Systematic Evaluation
To save money on electric bills	8	2	3
To replace old or poorly working equipment	12	0	2
To improve operations, production, or quality	3	0	1
To save energy	2	0	1
To obtain an incentive	1	0	1
Other (1 response each)	4	1	1

Table 20. Non-participant Firm Future Energy Efficiency Opportunities

Response	Irrigation		Commercial		Industrial		Total	
Yes, could make future improvements	17	23%	21	28%	8	35%	46	27%
No, could not make future improvements	29	40%	41	55%	10	43%	80	47%
Not sure or Refused	25	34%	11	15%	5	22%	41	24%
Total	**73**	**100%**	**74**	**100%**	**23**	**100%**	**170**	**100%**

Table 21. Potential Electric Efficiency Improvements

Measures	Count of Respondents	Percent of Respondents
Purchase more efficient equipment/appliances/lighting	21	38%
Make upgrades in efficiency of equipment parts	10	18%
Introduce/improve demand management/load control	3	5%
Building Envelope improvements	2	4%
Install distributed generation/small-scale renewable energy	2	4%
Technical Assessment/Energy Analysis by contractors, trade allies, trained professionals	1	2%
Improve system and operation processes	1	2%
Improve physical infrastructure (wiring)	1	2%
Improve/add metering	1	2%
Not sure/No response	13	24%
Total	**55**	**100%**

Table 22. Indication of Plans to Implement Electric Efficiency Projects

Response	Count of Respondents	Percent of Respondents
Yes, plans in place to implement projects for further efficiency improvements	16	35%
No, plans not in place	26	57%
Don't Know/Not Sure	4	9%
Total	**46**	**100%**

Table 23. Barriers Implementing Electric Efficiency Improvements

Response	Count of Responses	Percent of Responses
High Upfront Costs	25	50%
Lack of Access to Capital	6	12%
Low Priority/Lack of Interest of Senior Management/Building Owner	3	6%
Lack of Information about Savings and Performance	3	6%
Government/Legal Permitting/Rules	3	6%
Long Payback Period; Slow Rate of Return	2	4%
Time/Convenience for Schedule	1	2%
Nothing	1	2%
Currently Going Out of Business	1	2%
Don't Know/Not Sure	5	10%
Total Responses	**50**	**100%**

Table 24. Program Outcomes and Findings

Outcome	Finding
Short-term Outcomes	
Customers are aware of the program	No, of 170 non-participants surveyed, only two were aware of the program specifically, only 7 were aware of technical assistance, and only 15 were aware of incentives for efficient equipment.
Customer expresses interest in the program	Yes, participants, near participants, and engineers describe customers expressing interest in the program.
Customer signs and returns LOI	Yes, program tracking data indicate receipt of LOI, and engineers describe this step in the process.
Energy engineers selected for project analysis and quality control	Yes, program administrators and engineers describe this activity. Engineers for analysis and quality control are identified in the program tracking data.
Energy saving measures, costs, and benefits identified	Yes, participants, near participants, and energy engineers describe the energy analysis reports including this information.
Measures installed and commissioned as required	Mostly, only one recommended measure was not installed. Similarly, only one measure for which commissioning was recommended was not commissioned. Engineers describe working with participants to ensure that measures are installed and set properly during commissioning.
Installation of measures verified	Yes, post-installation inspections are occurring according to participants, engineers, and program tracking data.
Customers receive benefits and have reduced first costs	Yes, participants indicate they find the incentive valuable. Program tracking data include cost-recovery dates.
Mid-term Outcomes	
Customers have trusted information	Yes, participants and near participants find the Energy Analysis Report valuable.
Reduce kW and/or kWh at customer facility	Yes, most participants indicate that energy savings are meeting expectations.
Long-term Outcomes	
Achieve peak demand and energy use reduction targets	Not evaluated. Program did not have reduction targets for 2009-2011.
Customers observe energy cost savings	Yes, most customers indicate that energy savings are meeting expectations.