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Evaluation Report for Washington's FinAnswer Express Program (PY 2012 through 2013)

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Executive Summary

This report describes the findings from Navigant's impact and process evaluation of Pacific Power's Washington FinAnswer Express program years 2012 through 2013 (PY 2012-2013), including program- and project-level gross and net realization rates, program cost-effectiveness results, and feedback from program participants concerning satisfaction and areas for improvement.

The program as a whole is operating effectively with an overall energy (kWh) realization rate of 90 percent, and demand (kW) realization rate of 115 percent. The evaluation efforts found minor issues, addressed in the findings and recommendations sections below, however it appears FinAnswer Express's transition to the *wattsmart* Business program will likely resolve most of them.

Program Background

Pacific Power's FinAnswer Express program offered prescriptive incentives to commercial, industrial, and agricultural customers for the implementation of energy efficiency measures, including lighting; motors; heating, ventilation, and air conditioning (HVAC); building envelope; food service equipment; appliances; irrigation; dairy/farm equipment; small compressed air; and other measures. The program provided incentives for both retrofit projects and new construction/major renovation projects. Customers were eligible if served under Pacific Power's commercial, industrial, or irrigation general service rate schedules: 24, 33, 36, 40, 47T, 48T, 53, and 54.[1]

Evaluation Objectives

The impact and process evaluation of Washington's FinAnswer Express program independently assesses reported savings for PY 2012-2013 and recommends any possible changes to the program under its new title, *wattsmart* Business. This evaluation addresses the following objectives:

- Verify the annual and combined 2012 through 2013 gross energy and demand impacts of the Pacific Power's FinAnswer Express program[2]
- Review the effectiveness of program operations, highlighting achievements and identifying opportunities for process improvement
- Characterize participant and near-participant motivations
- Perform cost-effectiveness calculations on evaluated results for each year evaluated and in total

[1] Find Pacific Power rate schedule detail at https://www.pacificpower.net/about/rr/wri.html

[2] Site-level savings as opposed to generation level, which takes into consideration transmission and distribution line loss savings. See Appendix B for all net level results.

Impact Evaluation

The impact evaluation of Pacific Power's FinAnswer Express program performed the following activities:

- Quantifying the impacts of all measures and activities on annual gross energy consumption while accounting for any interactions among technologies
- Establishing post-implementation performance 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 effort include the following:

- Gross program demand and energy savings estimates and realization rates for installed projects
- Energy usage profiles for commercial and industrial technologies obtained through measurement and verification activities

The evaluation team characterized savings as "reported" and "evaluated." Reported savings present project savings estimated at the time of measure installation. Evaluated savings reflect energy savings verified in a facility at the time of this evaluation.

Summary of Impact Findings

The evaluation team conducted a combination of in-depth project file reviews, spreadsheet reviews, weather-normalized utility meter analysis, interviews with facility staff, and on site audits to determine the evaluated savings for each project sampled during the 2012-2013 evaluation period. The verification sample included 34 of the 646 projects that participated in the 2012-2013 program years. The 34 projects represent 18 percent of reported program savings. The evaluation of this sample produced a savings estimate with 11 percent relative precision (margin of error) at the 90 percent confidence level.

The 2012-2013 gross program demand savings realization rate was 115 percent and the gross program energy savings realization rate was 90 percent. Such strong results indicate the installation of EE measures as reported, and typically result from effective supervision by program implementers and program managers.

The 10 percent reduction in kWh savings resulted primarily from discrepancies in claimed versus verified hours of use (HOU) in lighting projects. In order to better understand these lighting HOU discrepancies, Navigant conducted a thorough review of the lighting project population which revealed that projects over 200,000 kWh make up only four percent of incentivized lighting projects, yet account for approximately 35 percent of total lighting savings. By focusing on the accuracy of the claimed savings for these large projects, either through data logging or other cost-effective means that do not interfere with customer participation, PacifiCorp can directly impact their overall program savings. To quantify this further, for every three percent increase to the realization rate of a large lighting project over 200,000 kWh, PacifiCorp will achieve a one percent increase to the program-level realization rate.[3]

Table ES-1 provides the *program-level* reported and evaluated gross kilowatt (kW) and gross kilowatt-hour (kWh) realization rates at the customer meter.

Table ES-1. Gross Program-Level Realization Rates for Washington FinAnswer Express (2012-2013)

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
2012	2,276	2,618	*115%*	11,967,220	10,745,166	*90%*
2013	1,943	2,238	*115%*	11,745,394	10,680,740	*91%*
All	4,219	4,856	*115%*	23,712,614	21,425,906	*90%*

Net to Gross Ratio

The Washington Utilities and Transportation Commission requires conducting cost-effectiveness tests with an applied NTG ratio of 1.0. The evaluation team calculated NTG of 0.82 from the self-reported survey results in the 2012-2013 FinAnswer Express program evaluation. Appendix B provides these results for information purposes.

[3] These increases are due to large projects accounting for one-third of total program savings and are based on the 529 lighting projects in the PY 2012-2013 population, 21 projects above the 200,000 kWh threshold.

Cost-Effectiveness

The evaluation team used a cost-effectiveness model, calibrated and updated with Pacific Power's input parameters, to produce results for five primary cost tests: PacifiCorp's Total Resource Cost test (PTRC), Total Resource Cost test (TRC), Utility Cost Test (UCT), Rate Impact Measure test (RIM), and the Participant Cost Test (PCT), for calculating the program's benefit/cost ratios. Table ES-2 provides the cost-effectiveness results for the five cost tests over the 2012-2013 evaluated program years.[4]

Table ES-2. WA FinAnswer Express Cost-Benefit Results – PY 2012-2013 Combined (1.0 NTG)

Benefit-Cost Test Performed	Evaluated Gross Savings (kWh)	Evaluated Net Savings (kWh)	Evaluated Costs	Evaluated Benefits	B/C Ratio
Total Resource Cost Test (PTRC)	21,425,906	21,425,906	$12,444,057	$19,485,306	1.57
Total Resource Cost Test (TRC)	21,425,906	21,425,906	$12,444,057	$17,713,914	1.42
Utility Cost Test (UCT)	21,425,906	21,425,906	$5,472,541	$17,713,914	3.24
Rate Impact Test (RIM)	21,425,906	21,425,906	$21,531,708	$17,713,914	0.82
Participant Cost Test (PCT)	21,425,906	21,425,906	$9,890,329	$18,977,980	1.92

Process Evaluation

The process evaluation sought to characterize the FinAnswer Express program from the perspective of program staff, participants, and trade allies in order to identify both existing strengths and areas for refinement as the program transitions to become the prescriptive portion of Washington's *wattsmart* Business program.

From January 2012 through December 2013, the evaluation team surveyed 214 participants and 18 trade allies working with the Energy Efficiency Alliance (EEA), and combined results with information from program staff interviews to create a comprehensive view of the FinAnswer Express program from 2012 to 2013.

Important findings from the process evaluation include the following:

- **Opportunities exist for past participants of the program to consider new, energy-efficient projects.** Twenty-nine percent of participants indicated a potential for future energy-efficient projects but did not have any plans in place. Of the participants that already have plans in place, 65 percent anticipated getting assistance from Pacific Power.
- **Participants report expecting and experiencing non-energy benefits stemming from their projects.** Sixty-eight percent of participants anticipated other non-energy benefits from installed EEMs including, better lighting quality, less frequent replacement, and improved safety. The majority (84%) indicated that they have already experienced these non-energy benefits.

[4] Section 3.3 provides cost-benefit inputs and results for each individual year of the evaluation.

- **Trade allies were generally satisfied with the EEA and the program's effect on their business.** The majority of trade allies (61 percent) were satisfied with both the EEA and the FinAnswer Express program. The most influential services provided by Pacific Power to their businesses included the use of the lighting software tool, and having their firm's name on the list of qualifying vendors. Most indicated that EEA communication was valuable and delivered at a good frequency.
- **Program managers and administrators effectively utilized available resources and capacity to implement the program as planned.** Navigant did not find issues with the amount of program staff or resources needed for the FinAnswer Express program. Trade allies also indicated their approval to having a primary program contact to reach out to and receive prompt and knowledgeable assistance.
- **Participants were satisfied with the program and have achieved expected energy savings.** Participants rated their overall satisfaction with the program and 86 percent of respondents were either very, or somewhat satisfied. The majority of respondents indicated that the equipment was meeting energy savings expectations and also providing other non-energy benefits. The most commonly cited non-energy benefit was better lighting quality.

Program Evaluation Recommendations

» **Recommendation 1. Review procedure for determining claimed hours of use for lighting projects with savings above 200,000 kWh.** The primary driver for discrepancies between reported and evaluated energy savings for the FinAnswer Express program is a difference in claimed HOU for lighting measures. Navigant recommends that PacifiCorp analyze the benefits of increasing the HOU accuracy, either through the increased use of data loggers or other means, for large projects over 200,000 kWh, against the associated costs or potential customer pushback of implementing a new procedure.

» **Recommendation 2. When entering lighting project details into the program tracking database, use measure sub-types that allow for greater resolution in the application of effective useful life (EUL) values.** Capturing measure sub-types for lighting projects provides for greater detail when identifying conditions such as effective useful life (EUL) and savings estimates. For example, lighting controls, LEDs, CFLs and linear fluorescent lamps should each receive different EULs. PacifiCorp cannot apply this level of detail without first identifying sub-types within the database. The four lighting groups listed here are a suggested starting point for the applicable sub-types, but the final selection should be determined, at least in part, by the intended future source of the EUL. It is likely that the shift to the *wattsmart* Business program in PY 2014 will include adding measure sub-types, but as of this evaluation in PY 2012-2013, they are not apparent.

» **Recommendation 3. Use greater resolution in the application of effective useful life (EUL) values in the program tracking database.** Applying a single EUL to all lighting measures potentially underrepresents energy savings, cost-effectiveness, and associated resource value for LEDs, as well as overestimates the life expectancy of lighting controls. EULs are currently based on the 2008 version of DEER and heavily weighted toward fluorescent lamps. Lighting measures contribute nearly 90 percent of total program savings and fine-tuning the EUL applied for these projects will offer greater confidence in the final cost benefit ratio for this measure category.[5] PacifiCorp currently tracks projects which include LED lamps at the measure level so applying an LED EUL should not be difficult. However, the database tracks lighting control savings in aggregate with lighting fixtures, and projects that may combine multiple technologies are often entered as "lighting packages." PacifiCorp must list these technologies separately in order to apply varying EULs (see recommendation #2).[6]

[5] See Figure 5 in section 3.3 for the direct impacts of EUL adjustments on PacifiCorp's Total Resource Cost test.
[6] The updated 2014 version of DEER provides guidance on EUL by specific lighting technology, but further secondary research in this area is advisable prior to implementation of this recommendation.

1 Introduction

This section provides a description of Washington's FinAnswer Express program, along with a discussion of the underlying program theory and logic model depicting the activities, outputs, and desired outcomes of the program.[7]

1.1 Program Description

Pacific Power's FinAnswer Express program offered prescriptive incentives to commercial, industrial, and irrigation customers for the implementation of energy efficiency measures (EEMs), including lighting; motors; heating, ventilating, and air conditioning (HVAC); building envelope; food service equipment; appliances; irrigation; dairy/farm equipment; small compressed air; and other measures. Incentives were available for both retrofit projects and new construction/major renovation projects. The program also included a provision for custom incentives for EEMs not listed in the program's prescriptive incentives tables. Customers were eligible if served under Pacific Power's commercial, industrial, or irrigation general service rate schedules: 24, 33, 36, 40, 47T, 48T, 53, and 54.

1.1.1 Program Delivery

Trade Ally Coordinators recruited, trained, and maintained a network of trade ally vendors and contractors who submit a participation agreement to request to become an approved vendor under the FinAnswer Express program.[8] Approved trade allies promoted the program and appeared on the Pacific Power website as a participating trade ally. Some trade allies worked with the program for multiple measures, such as contractors that installed both lighting and HVAC; other allies specialized in just one area, like shops that conducted green motor rewinds. This trade ally network, known as the Energy Efficiency Alliance (EEA), along with Pacific Power project managers working with energy engineering consultants, functioned as the primary channels for program delivery.

1.1.2 Program Eligibility

Program brochures provided specific eligibility criteria and requirements for each type of equipment incentivized under the FinAnswer Express program. Pacific Power paid incentives upon project completion. For retrofit lighting and custom incentive measures, Pacific Power capped incentives so that simple payback was not less than one year.

[7] The descriptions provided in this section apply to the FinAnswer Express program prior to its transition to the *wattsmart* Business program in January of 2014. See the Pacific Power website for updated program descriptions and eligibility requirements under the new *wattsmart* Business program.

[8] Nexant Inc. and its subcontractors, Evergreen Consulting and Green Motors Practices Group, acted as Trade Ally Coordinators for the lighting, HVAC, motors, food service, building envelope and office measures (majority of the 2012-2013 FinAnswer Express projects in Washington.). Cascade Energy acted as Trade Ally Coordinator for irrigation, dairy/farm, and small compressed air projects for the 2012-2013 program years.

Pacific Power provided specific tools such as a lighting calculator to enable the trade allies to accurately estimate savings and potential incentives to aid in customer decision-making. If the estimated incentive exceeded a specified threshold, PacifiCorp flagged the project for pre-inspection. The pre-inspection served as a baseline to ensure quality savings estimates by verifying the number and operation of currently installed equipment.

Non-lighting retrofits and new construction equipment purchased through trade allies or other vendors had the option of using the post-purchase incentive path where the customer makes an efficient purchase that meets the program requirements and applies for an incentive through Pacific Power after purchasing the equipment. After purchase and installation, the customer or trade ally submits project documentation noting completion of the project to the Trade Ally Coordinator. Trade allies also receive assistance from the trade ally coordinator before submitting the application. For example, these allies may need to ensure that equipment qualifies, understand trade-offs between equipment, get help filling out applications, and estimate savings.

Projects exceeding the inspection threshold required a post-inspection that verified the installation and proper operation of incentivized equipment. Pacific Power reviewed and processed all final project documentation before sending the incentive check to the customer.

1.2 Program Changes from 2012 to 2013

The Conservation Biennial Target for this period was established as of January 31, 2012 (Docket No. UE-111880). During the evaluated period from January 2012 to December 2013, there were no major changes to the FinAnswer Express program (Tariff 115). However, minor adjustments made in February 2012 and September 2013 included: simplification of the analysis tools and incentive calculations for common upgrades, revised comprehensive measures, updating and adding qualifying measures, and enhancing the trade ally relationships.

1.3 Program Participation

PY 2012-2013 results included 646 Energy FinAnswer completed projects in Washington: 307 projects in 2012 and 339 in 2013 and reported 23,712 MWh in energy savings over the two-year period.
Table 1 summarizes the program project counts that included the installation of the associated measure category.[9]

Table 1. Washington's FinAnswer Express Measure Category Details for PY 2012-2013

Measure Category	Measure Type Counts[10]	2012-2013 Reported Energy Savings (kWh)
Lighting	530	21,392,141
Irrigation	79	683,409
Compressed Air	18	611,162
HVAC	25	370,321
Other	1	216,580
Building Shell	18	131,598
Food Service	15	128,278
Dairy Farm Equipment	4	69,161
Refrigeration	25	65,062
Motors	17	44,902
All	732	23,712,614

Other = Office PC Power Management Software
Project counts can equal more than the 646 unique projects as some projects installed multiple measure categories.

1.4 Program Theory and Logic Model

Program logic models depict the primary program activities, actions required to implement the program, the outputs expected to result from each activity, and the expected short-, mid-, and long-term outcomes of those activities. This includes marketing, participant recruitment, and training, among others. The outputs depict tangible, tracked, or tallied "products" resulting from each primary activity (i.e., marketing materials, training documents, and databases of recruited participants). Outcomes represent the intended results of successful deployment of the identified activities.

[9] Measure categories here are from the program database and do not adjust for any incorrect classifications.
[10] For lack of a better term, Navigant uses "measure type counts" in this table even though these numbers more strictly align with *the number of line items in the tracking database* by measure category. A single project could have multiple line items in the tracking database for the same measure category, as well as include multiple measure categories.

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."[11] Program logic models provide a framework for an evaluation by highlighting key linkages between program activities and expected outcomes. The process and impact evaluations focus on these linkages, particularly those on the critical path to achieving savings goals. The evaluation identifies properly working linkages in the program logic model, as well as weak or broken linkages which could cause program shortfalls in achieving the intended short-, mid-, or long-term outcome(s).[12] With this foundation, the evaluation team can then make informed choices related to the prioritization and focus of evaluation resources.

The evaluation team reviewed program documentation and spoke with program managers and administrators to verify the underlying theory for the FinAnswer Express program pre- and post-purchase logic models (Figure 1 and Figure 2).[13]

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

[12] Section 4.3, Question 3 provides more specifics on the logic model review.

[13] The FinAnswer Express logic model described in this section correctly depicts the program theory used for the 2012-2013 program years, but will become obsolete as the program transitions to the *wattsmart* Business program. Appendix G provides the new logic model and theory developed for the *wattsmart* program.

Figure 1. FinAnswer Express Program Pre-Purchase Logic Model (2011)

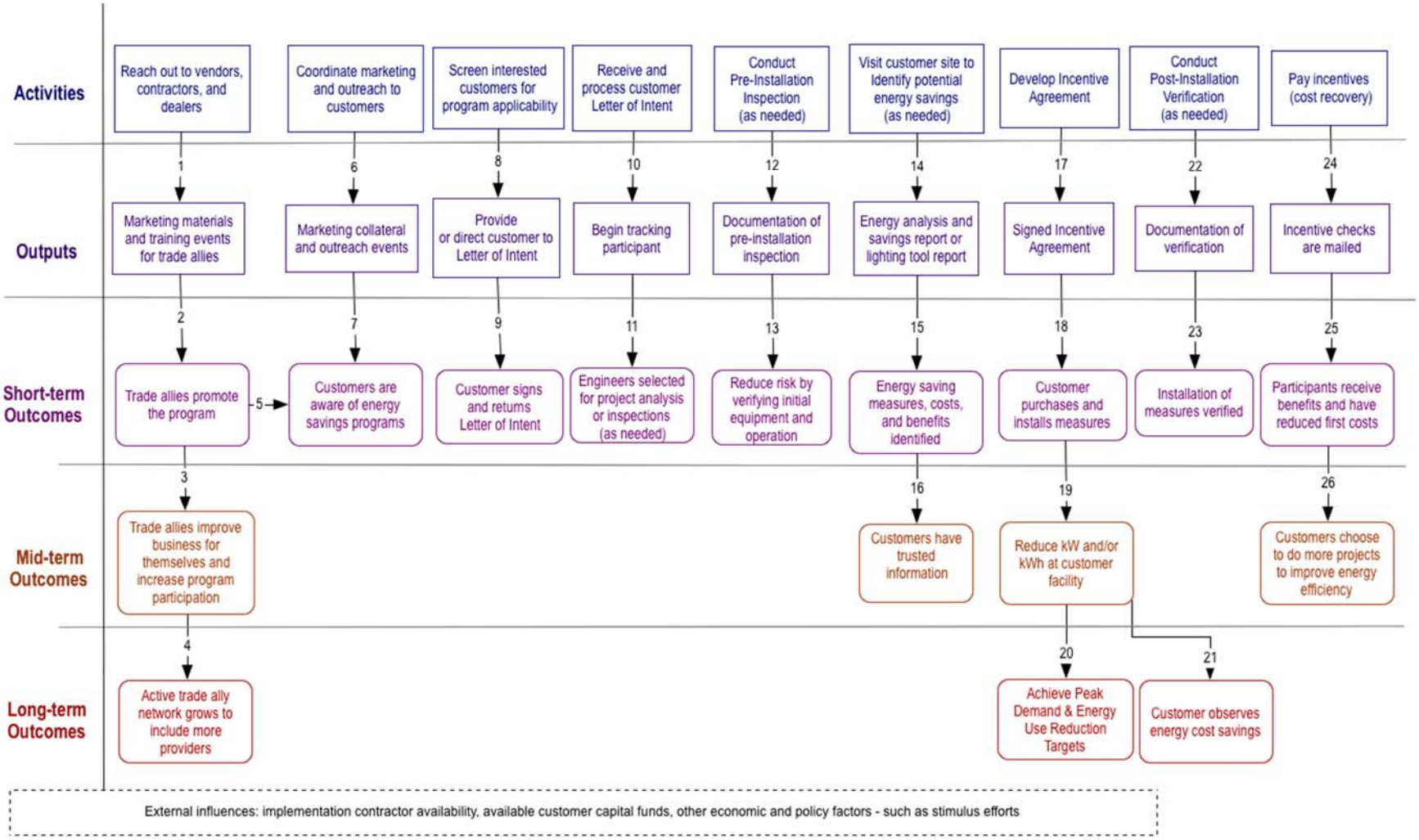
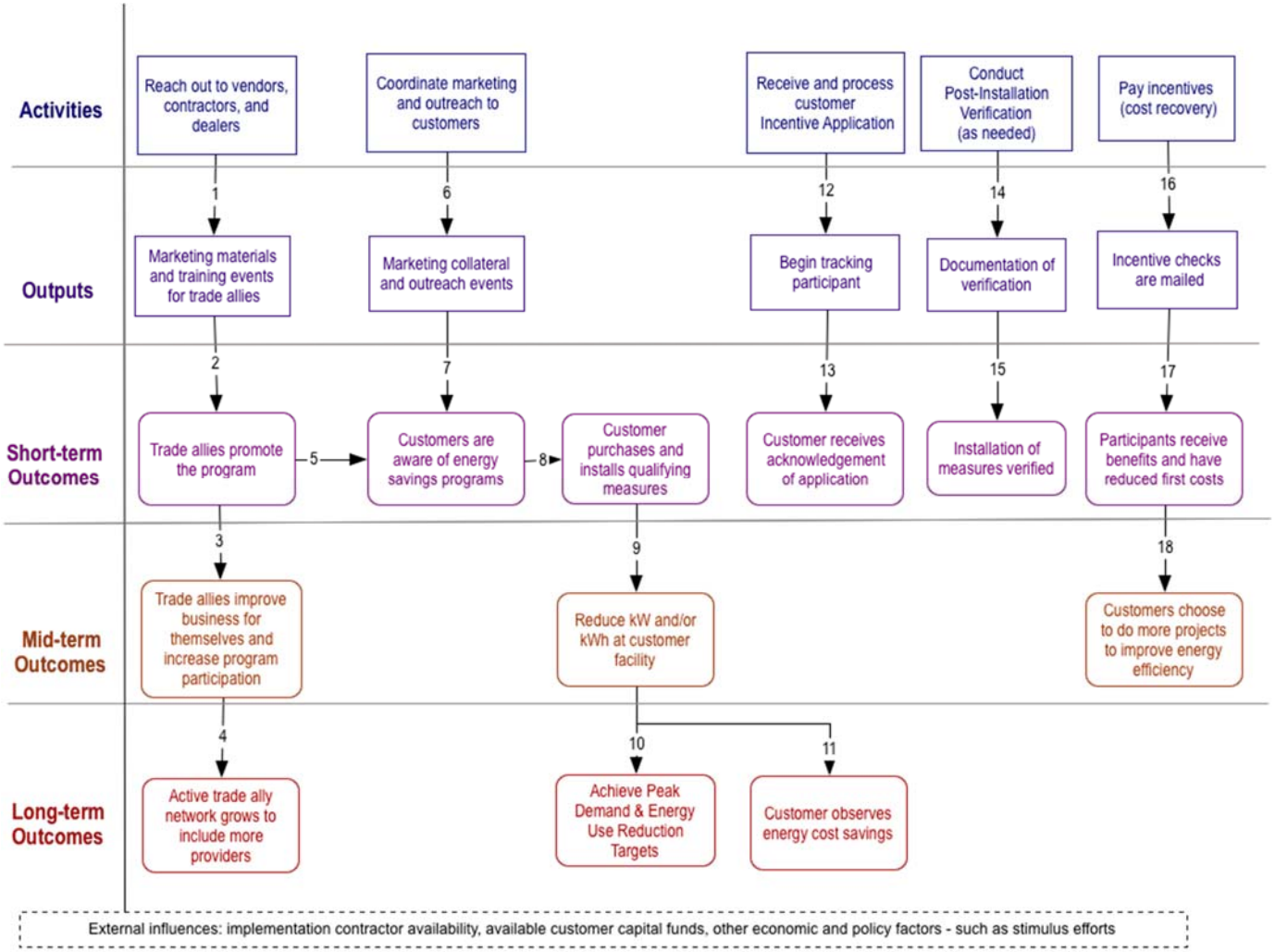


Figure 2. FinAnswer Express Program Post-Purchase Logic Model (2011)



The FinAnswer Express program designed the pre-purchase path to overcome three non-residential customer barriers to implementing energy efficiency projects: high first costs, long payback periods, and lack of trusted information. The program's primary intervention for overcoming these barriers is through the provision of technical assistance and incentives. The following describes the linkages within the program logic, with numbers corresponding to those shown in the pre-purchase path logic model figure (Figure 1).

1. Pacific Power and the Trade Ally Coordinator reach out to trade allies to develop an Energy Efficiency Alliance (EEA) that covers eligible EEMs.
2. Pacific Power provides the EEA with marketing materials, estimation software tools (lighting), and training on the program. In addition, Pacific Power holds annual vendor meetings and workshops to review the FinAnswer Express program and the support available for participating allies.[14] Newsletters provide allies with program information between meetings and workshops.
3. The EEA promotes the program to customers.
4. The program, through increased awareness and participation, and the EEA, through increased business, benefit from the EEA promoting the program.
5. Trade ally success with the program encourages more EEA participation.
6. Pacific Power coordinates marketing efforts with the trade ally coordinator and outreach through account managers.
7. Customers become aware of the program or general energy efficiency assistance through marketing and trade allies.
8. Aware customers express interest through the Pacific Power efficiency program phone number, online inquiry form, email to the energy expert, or through their customer or community manager. Pacific Power directs customer inquiries to the appropriate manager or to the third-party trade ally coordinator, as applicable.
9. Managers and third-party trade ally coordinators direct retrofit lighting and custom project customers to submit a letter of intent (LOI) to begin the program process. New construction lighting projects and non-lighting projects start with the incentive application; see the post-purchase logic model in Figure 2.
10. The trade ally coordinator and the Pacific Power PM receive and review submitted LOIs; they coordinate to ensure project tracking by the appropriate office. The trade ally coordinator manages most projects.
11. If necessary for the project, the trade ally coordinator schedules an inspection of the customer facility before participation.
12. The inspector conducts an inspection and submits an inspection report to the trade ally coordinator.

[14] These events are held at least annually; vendors are not required to attend. The public is welcome at vendor events.

13. The pre-installation inspection reduces the risk of miscalculating energy savings by verifying initial equipment and operating conditions.
14. If necessary, a trade ally or outside engineer performs an energy analysis to identify measures and estimate associated energy savings and investment costs. For retrofit lighting projects, the trade ally performs calculations using a lighting software tool. For custom, PM-directed projects, an engineer may perform an audit of the site.
15. Project files document energy savings.
16. The program provides energy savings estimates to the customer. The customer can rely on this information to make decisions, reducing information barriers.
17. The trade ally coordinator or Pacific Power PM creates an incentive agreement for the customer. The customer signs the incentive agreement.
18. The customer or their contractor purchase or install EEMs. Customers or trade allies submit notification of project completion along with receipts/invoices.
19. EEMs reduce energy consumption (and, in some cases, demand) at the facility.
20. Reduced energy consumption contributes to meeting annual program targets.
21. Customers experience reduced energy costs.
22. If project size necessitates it, an inspector examines the measures to verify proper installation.
23. Verification ensures that expected savings occur.
24. Pacific Power processes incentives after the final incentive calculations and mails the incentive checks.
25. The customer receives the incentive. Incentives reduce customer costs for the project and the payback period.
26. Successful project completion encourages additional energy efficiency action on the part of the customer.

The numbers below relate to those shown in the *post*-purchase path logic model figure (Figure 2) and describe the linkages within the program logic.

1. Pacific Power and the trade ally coordinator reach out to trade allies to develop an EEA that includes allies for all eligible EEMs.
2. Pacific Power provides the EEA with marketing materials, estimation software tools (lighting), and training on the program. In addition, Pacific Power holds annual vendor meetings and workshops to review the FinAnswer Express program and the support available for participating allies. Newsletters provide allies with program information between meetings and workshops.
3. The EEA promotes the program to customers.

4. The EEA promotes the program, increasing program awareness and participation, and increasing EEA business.
5. Success with the program encourages more EEA participation.
6. Pacific Power coordinates marketing efforts with account managers and Nexant.
7. Customers become aware of the program or general energy efficiency assistance through marketing and trade allies. Some customers, especially large customers working with a Pacific Power customer account manager, may come into the program without working with a trade ally and instead receive information about the program from a Pacific Power PM.
8. Customers purchase and install (if required) qualifying EEMs. Qualifying EEMs are those listed on Pacific Power's prescriptive incentive tables.
9. EEMs reduce energy consumption (and, in some cases, demand) at the facility.
10. Reduced energy consumption contributes to meeting annual program targets.
11. Customers experience reduced energy costs.
12. Customers submit a completed incentive application (available on Pacific Power's website) and receipts/invoices. Pacific Power processes the incentive applications.
13. Pacific Power adds the customer's project to a program project tracking database and sends the customer an "application received" notification.
14. If project size necessitates it, an inspector examines the measures to verify proper installation.
15. Verification ensures that expected savings occur.
16. Pacific Power processes incentives after the final incentive calculation and mails incentive checks.
17. The customer receives the incentive. Incentives reduce customer costs for the project.
18. Successful project completion encourages additional energy efficiency action on the part of the customer.

As part of the program evaluation, the evaluation team compared program outcomes in place with the outcomes expected in the logic model. In order to make this comparison, the team identified indicators for each expected outcome, as well as sources of indicator data. In some cases, the team directly observed these indicators from program tracking data or other archives, or through analysis of survey or interview responses.

Table 2 identifies key indicators and data sources for FinAnswer Express program outcomes (short, medium, and long term) shown in the logic models.

Table 2. Indicators and Data Sources for Program Outcomes

Outcome	Indicator	Data Source
Short-Term Outcomes		
Trade allies promote the program.	Trade ally behavior; customer awareness	Trade ally interviews; customer surveys
Customers are aware of the program.	Non-participant awareness	Customer surveys
Customer signs and returns LOI.	LOI in project file; date of LOI tracked	Project files; program tracking data
Engineers selected for inspections and analysis (as needed).	Engineering firms identified	Program tracking data
Reduce risk by verifying initial equipment and operation.	Pre-inspections	Program tracking data; customer surveys
Customer purchases and installs qualifying measures.	Invoices; lighting worksheets; verification; customer reports installation	Program tracking data; project files; customer surveys
Customer receives acknowledgement of application.	Letter in project file; customer reports receipt of acknowledgement	Project files; customer surveys
Installation of measures verified.	Verification in project file	Project files; customer surveys
Customers receive benefits and have reduced first costs.	Customer's receipt of benefits and reduced first costs	Cost-recovery in program tracking data; customer surveys
Mid-Term Outcomes		
Trade allies increase participation and improve business for themselves.	Trade ally business impact Customer participation	Customer surveys; trade ally interviews; program tracking data
Customers have trusted information.	Customers find guidance valuable	Customer surveys
Reduce kW and/or kWh at customer facility.	Customers realize expected savings	Customer surveys
Customers choose to do more projects to increase energy efficiency.	Repeat participation; spillover	Customer surveys; program tracking data
Long-Term Outcomes		
Trade ally network grows to include more active providers.	EEA activity	Program tracking data
Achieve peak demand and energy use reduction targets.	Reported program savings meet savings targets	Program savings targets; third-party administrator contracts; program tracking data
Customers observe energy cost savings.	Customers realize expected savings	Customer surveys

2 Evaluation Methodology

The following section describes the evaluation methodologies used in Washington's 2012-2013 FinAnswer Express program. The evaluation team developed and informed these methods through an independent review of evaluation best practices.[15]

2.1 Impact Evaluation Methodology

This section summarizes the impact evaluation methods used to develop project- and program-level realization rates for the FinAnswer Express program. Findings provide Pacific Power staff with the feedback they need to increase program efficacy and to advance the research and policy requirements of the Washington Utilities and Transportation Commission by providing an independent quantitative review of program achievements.

The impact evaluation of Washington's FinAnswer Express program characterized energy and demand impacts for incented projects in the 2012-2013 program years by:

- Quantifying the impacts of all measures and activities on annual gross energy consumption while accounting for any interactions among technologies
- Establishing post-implementation performance 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 effort include the following:

- Gross program demand and energy savings estimates and realization rates for projects
- Energy usage profiles for C&I technologies metered through on-site measurement and verification (M&V) activities

See section 3 for gross impact results.

[15] See Appendix F for detail on EM&V Best Practices.

The measures contained in the sample consisted of lighting, compressed air, irrigation, and office (network PC power management software), and the team used the International Performance Measurement and Verification Protocols (IPMVP) option A to estimate savings.[16] Table 3 provides a brief explanation of options A, B and C.

Table 3: IPMVP Evaluation Options A, B, and C

IPMVP M&V Option	Measure Performance Characteristics	Data Requirements
Option A: Engineering calculations based on spot or short-term measurements, and/or historical data. Deemed energy savings fall in this Option.	Constant Performance	• Verified installation • Nameplate or stipulated performance parameters • Spot measurements • Run-time hour measurements • Some *estimated* (non-measured) data, including baseline schedule or power
Option B: Engineering calculations using metered data.	Constant or variable performance	• Verified installation • Nameplate or stipulated performance parameters • End-use metered data • All parameters measured, including baseline and post-retrofit
Option C: Analysis of utility meter (or sub-meter) data using techniques from simple comparison to multi-variant regression analysis.	Variable performance	• Verified installation • Utility metered or end-use metered data • Engineering estimate of savings input to SAE model

For lighting projects, the evaluation team applied Option A using pre-retrofit lighting counts (provided in project documentation and verified through customer interview) in combination with visually verified post-retrofit fixture specifications and quantities to determine the system's baseline connected load. The team then converted the lighting counts to total connected load through reference tables sourced from the Regional Technical Forum (RTF) and as necessary, California's 2010 NRR-DR Procedures Manual. These reference tables contain the deemed, fixture-level energy demand for thousands of individual lighting fixture/lamp/ballast combinations. The team confirmed hours of use (HOU) using daily and weekly lighting use profiles custom generated for each site based on fixture on/off cycling data, and in some cases logged post-retrofit circuits for current, collected over a minimum period of four weeks.

The team used Option A for compressed air projects, verifying compressor specifications and quantities, and taking post-retrofit spot measurements of the incented air compressors. Navigant also conducted

[16] For more information regarding IPMVP options and definitions, see http://www.evo-world.org/index.php?option=com_content&view=article&id=272&Itemid=397&lang=en.

short-term monitoring unless specific site concerns prevented doing so, or if doing so would pose safety concerns. The team did not log equipment if reliable energy management equipment was in place and the site was able to provide recent historical data specific to the incentivized compressor. The temporary data logging tracked compressor current over a period of two to four or more weeks in order to characterize the sequence of operations and operating hours for the equipment. Generally, the team left the data loggers in place as long as possible for each site. The team then used engineering calculations to determine energy and demand savings for each compressor on an annual basis.

Navigant evaluated irrigation projects by conducting thorough inspections of installed equipment and operating conditions, and applied deemed values to determine annual energy and demand savings after a thorough desk review and measure count verification process.

The team evaluated the Office – PC power management software measures under Option A, using trend data extracted from the network's central server to characterize the operating hours for each computer terminal controlled by the incentivized power management software. Navigant determined full load demand for each terminal through secondary research, assuming a mix of equipment generations and applying a conservative, average energy demand per terminal across the entire population. Energy savings were then determined by applying the assessed demand to the number of additional off-hours attributable to the software.[17]

2.1.1 Project File Reviews

A thorough review of the FinAnswer Express project files allowed the evaluation team to increase the accuracy of calculated measure savings and demand reductions, thereby ensuring that they were representative of installed conditions. The evaluation team reviewed each project file, characterizing data gaps, looking for consistency issues, and checking for accuracy of the information used to estimate project-level savings. Identifying missing data early in the evaluation cycle ensured PacifiCorp could follow-up on additional requests efficiently.

[17] Measure types not covered by the evaluation methodology did not fall into the sample for this evaluation period.

Figure 3 presents an example of the overview of parameters verified through the project file review process. Note: the values below are fictitious and not actual examples from the Pacific Power database.

Figure 3. Parameters Verified Through Project File Reviews (Example)

FinAnswer Express Project Summary - Lighting

Project Name	*Fictitious Example*
Customer Name	*Acme Corp, Inc.*
Project Number	*FE000_00####*
Energy Savings Claimed (kWh)	*120,243*
Verified Energy Savings (kWh)	*determined through on-site evaluation*
Energy Savings Realization Rate	*determined through on-site evaluation*
Demand Savings Claimed (kW)	*30.0*
Verified Demand Savings (kW)	*determined through on-site evaluation*
Demand Saving Realization Rate	*determined through on-site evaluation*
Total Project Cost	*$78,669*
Verified Total Project Cost	*$78,669*
Reported Incentive	*$18,324*
Verified Incentive	*$18,324*
Energy Realization Rate Notes	***Example, filled in after analysis completed:*** *The kWh realization rate is above 100% because data loggers showed that some areas have 8,760 operating hours rather, than the claimed 5,280 hours of use.*
Demand Realization Rate Notes	***Example, filled in after analysis completed:*** *Higher demand RR is due to our estimated demand diversity factor being 0.85 rather than the claimed 0.78.*
Other Site Notes	*QC Check Complete*

Verified energy and demand savings from the site specific analysis.

2.1.2 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 (CV) within the population.[18]

[18] For Washington's FinAnswer Express program, the evaluation team assumed a standard CV of 0.4 for developing the sample framework. The CV corresponds to the expected standard deviation of the realization rate for the program in this evaluation cycle. Navigant selected a CV of 0.4 based on experience with similar C&I energy efficiency program evaluation results.

Moreover, the evaluation team proportionately stratified the sample by program-reported savings into three subgroups (i.e., strata). The evaluation team selected projects proportionately within each stratum to ensure the following:

1. The evaluation of the largest projects and contributors to program performance
2. The fair representation of medium and smaller projects in the evaluation

The impact evaluation achieved 90/11 confidence and precision across PY 2012-2013 by energy savings (kWh).[19] Table 4 provides an overview of the impact evaluation framework representing 17 percent of the reported FinAnswer Express program savings.

Table 4. Overview of the WA FinAnswer Express Evaluation Sampling Framework

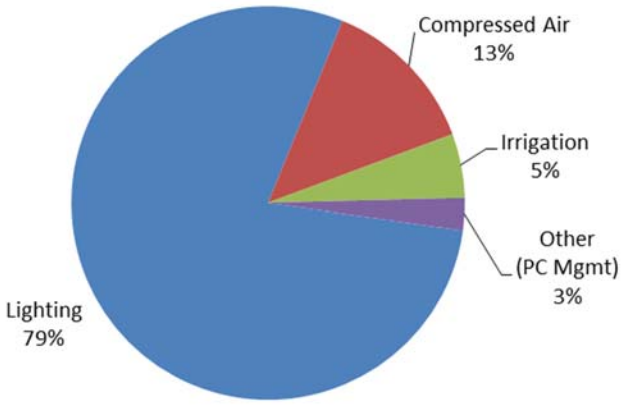
Sample Strata	kWh Threshold for Stratification (lower limit)	Total Number of Projects	Projects in Sample	Program Reported MWh	Gross Sample Reported MWh	Portion of Reported Savings Evaluated[20]
1	200,000	22	11	8,553	2,681	31%
2	60,000	71	10	7,323	1,197	16%
3	0	553	13	7,837	206	3%
Total	-	646	34	23,713	4,084	17%

[19] The evaluation team planned for 90/10 by program and state assuming a coefficient of variation of 0.4. The actual CV for strata 1 is 0.39, strata 2 is 0.44, and strata 3 is 0.48. Strata2 & 3 are slightly more heterogeneous than projected, resulting in slightly less precision than expected.

[20] This percentage represents the portion of the reported program savings that fell within the bounds of the evaluation sample frame. It does not represent the relation between the reported and evaluated savings numbers in the prior two columns.

Figure 4 shows the distribution of measure categories across the final sample frame.

Figure 4. Measure Categories Included in Sample Frame



2.1.3 Gross Energy and Demand Realization Rate Calculation

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

- The appropriateness of the pre-installation technology performance baseline via project file and secondary literature review
- Installation and quantity of claimed measures
- Baseline and measure performance characteristics of the measures installed, and revision of performance variables (i.e., operating hours) as needed
- Load shapes for the EEMs installed through the programs
- Demand savings (kW) and energy savings (kWh) impacts of the efficiency measures installed for sampled projects[21]

[21] The evaluation team combined individual measure-strata realization rates into a weighted average realization rate for the given measure, as well as for the sample as a whole. The team applied the sample-level weighted realization rate to measures in the population not reflected or under-represented in the sample. The team also applied measure-level weighted realization rates to measures with sufficient representation in the sample (i.e., lighting and PC Power management) in order to extrapolate them to the population.

2.1.4 Program Cost-Effectiveness

The cost-effectiveness of utility-funded programs in the state is typically analyzed using tests prescribed by the California Standard Practice Manual.[22] For the purposes of this evaluation, Pacific Power specifically required the following cost-effectiveness tests:

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

The evaluation team worked with Pacific Power to understand the PTRC and construct a tool that calculates the PTRC at measure, program, and portfolio levels. Table 5 presents details of the cost-effectiveness tests accepted by Pacific Power.

Table 5. Details of Cost-Effectiveness Tests[23]

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? Considers rate impacts on all participants, and potential for cross-subsidization	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
PacifiCorp 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

Section 3.3 provides the inputs to the cost-benefit model as well as the results and findings for each of the evaluated program years.

[22] The California Standard Practice Manual is an industry-accepted manual identifying cost and benefit components and cost-effectiveness calculation procedures. 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.

[23] NAPEE, November 2008, "Understanding Cost Effectiveness of Energy Efficiency Programs: Best Practices, Technical Methods, and Emerging Issues for Policy – Makers", http://www.epa.gov/cleanenergy/documents/suca/cost-effectiveness.pdf.

2.2 *Validity and Reliability of Impact M&V Findings*

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

- Sample selection bias
- Physical measurement bias (i.e., meter bias, sensor placement, and non-random selection of equipment or circuits to monitor)
- Engineering analysis error (i.e., baseline assumptions, engineering model bias, and 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.

2.2.1 Reducing Uncertainty from Sample Selection Bias

Evaluators recognize the problem that selection bias creates for program evaluation, even when adhering to impact evaluation sample design protocols, 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 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.

2.2.2 Reducing Uncertainty from Physical Measurement Error

Inevitable error occurs with all physical measurement. For the impact evaluation of the FinAnswer Express 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. The evaluation team took the following steps to minimize the possible introduction of uncertainty resulting from bias/error by this process:

- **Back-up Loggers:** Prior evaluation experience indicates that lighting loggers sometimes fail in the field due to flickering or battery issues. To account for this possibility, the evaluation team deployed backup loggers for each site to ensure meeting the sample size requirements even if a percentage of the loggers failed.
- **Logger Calibration:** 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 proper calibration prior to deployment. Field staff received training to use consistent

measurement intervals whenever possible, and to synchronize the logger deployment activities (i.e., time delay), to ensure proper data comparisons across a uniform time period.

- **Logger Placement:** The field staff used a prescribed protocol for the placement and installation of loggers on circuits (i.e., current transformer placement) and fixtures (i.e., uniform distance from the lamps) to minimize biases arising from the improper placement of loggers.
- **Logging Period:** Usage patterns for retrofit measures may vary from month to month, so sampling for a short duration could introduce a degree of error into the overall results. The evaluation team reduced this type of error by typically deploying loggers for a minimum of four weeks, and supplemented them with available facility records (i.e., Energy Management System [EMS] trends, production logs). The team calibrated the facility records, which spanned multiple months or years, with the collected logger data.
- **Logged Data Quality:** Poor quality data can also be a significant source of error and uncertainty. The evaluation team applied various quality assurance checks to minimize the potential impact of this problem, including the use of consistent spot measurements comparable against both the EMS and logger data, and qualified analysts review all logger files to ensure results represented the investigated technologies.
- **Lighting Logger Review:** The evaluation team reviewed lighting loggers to identify inconsistencies in operating characteristics and/or extended periods of inactivity. The team followed up with field staff and facility managers to ensure that the suspicious findings were in fact reasonable, and removed inaccurate results from the analysis.

2.2.3 Reducing Uncertainty from Engineering Analysis Error

The evaluation team adopted the following protocols to minimize uncertainty from engineering analysis error in this study:

- Peer review of all project analysis findings to ensure the consistent use of methods and assumptions throughout the impact evaluation
- Development of data collection protocols that yielded appropriate inputs into the analysis models and review of all field observations with the evaluation team

2.3 *Process Methodology*

The evaluation team undertook the following activities in order to meet the objectives of this evaluation:

2.3.1 Overview of Steps in the Process Evaluation

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

- **Process Evaluation Research Question Development.** The evaluation team and Pacific Power staff established key evaluation questions through the development of the 2012 through 2013 evaluation plan.
- **Program Documentation Review.** The evaluation team reviewed program documentation, including regulatory filings, brochures, application forms, and websites.
- **Logic Model Verification.** The evaluation team worked with program staff to verify the logic model for the FinAnswer Express program, which describes the intended program design, activities, outputs, and outcomes for the 2012-2013 evaluation.[24]
- **Process Data Collection Activities.** The evaluation team collected process data through interviews with program staff, telephone surveys with participating customers and online surveys with trade allies working with the program.
- **Process Data Analysis and Synthesis.** The evaluation team assessed the effectiveness of the program processes by analyzing in-depth interview data, participant survey data, and trade ally survey data.

2.3.2 Process Evaluation Research Questions

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

1. What are the program goals, concept and design? How does the program logic translate to the program processes?
2. Do program staff and administrators have the resources and capacity to implement the program as planned? If not, what more is needed?
3. Is the program staff delivering the program in accordance with the logic model and process maps?
4. Is the program marketing effective? Specifically, how do participants find out about the programs?
5. What is the program influence on participant actions? Specifically, what do participants identify as most important to their projects (i.e., program information, incentive/credit, payback, engineering, and their own company goals)? What would they have done differently without the program?

[24] The logic model for the FinAnswer Express program becomes obsolete for future evaluations as the program transitions to the *wattsmart* Business program. Appendix G provides the new *wattsmart* Business logic model detail.

6. What barriers are preventing customers from taking actions to reduce energy consumption and demand, and which jeopardize program cost-effectiveness?
7. Are participants achieving planned outcomes? Specifically, are participants feeling satisfied?

Evaluation staff used a mixed-methods approach to explore these questions including program documentation reviews and interviews of trade allies, program staff, and participants. Table 6 shows the seven research questions and associated methods used to answer each. Section 4.3 provides the answers to these questions.

Table 6. Data Sources to Answer Research Questions

	Q1	Q2	Q3	Q4	Q5	Q6	Q7
Program Documentation Review	X	X	X	X			
Program Staff And Administrator Interviews	X	X	X	X			
Participant Interviews				X	X	X	X
Trade Ally Surveys			X	X		X	

2.3.3 Program Documentation Review

The evaluation team reviewed program marketing materials, websites, program manuals, savings measurement tools regulatory filings, annual reports, previous evaluations, and project tracking data. This review was designed to identify how the program is marketed, how trade allies are supported, and how the process for enrollment, administration, and tracking works.

2.3.4 Logic Model Development

The evaluation team verified that the existing program logic model, developed in 2011, continued to represent the current 2012-2013 program theory through interviews with program administrators, evaluation finding reviews, and assessments of whether the program produced the intended activities, outputs, and outcomes. The evaluation team also developed a new logic model for the *wattsmart* Business program (detailed in Appendix G) for use in future evaluations as the FinAnswer Express program transitions to *wattsmart*.

2.3.5 Process Data Collection Activities

Interviews with program staff, participants, and trade allies supported the development of the program overview and logic model, as well as aided in the evaluation conclusions and recommendations for the FinAnswer Express program. The evaluation team reviewed all interview response data for missing or erroneous entries before tabulating the frequency of similar responses within categories. After they analyzed data from each data collection activity individually for findings, the evaluation team identified common process findings across activities.

2.3.5.1 *Program Staff Interviews*

The evaluation team interviewed the program administrator with the following objectives in mind:

- Understand the design and goals of the FinAnswer Express program
- Understand any program changes that have been implemented in Washington going into the 2012-2013 cycle, and changes occurring during this cycle
- Follow up on how recommendations from previous evaluation were implemented (or not)
- Support confirmation or revision of the existing program logic model
- Identify program strengths, weaknesses, and opportunities for improvement from program staff perspective
- Identify other actionable ideas the program staff hopes to gain from the evaluation

2.3.5.2 *Participant Surveys*

The team conducted four semi-annual telephone surveys across the two-year evaluation. Due to a change in program evaluation objectives, these surveys have not been identical. All four waves of surveys included questions about program influence and satisfaction. The first and last surveys also included additional process questions on how customers learned about the program, the equipment installed, its operation, and interaction with trade allies.[25] The evaluation team did not re-sample from the measures completed during previous cycles.

Table 7 provides the timing and sampling frame for participant surveys and interviews. The evaluation team surveyed a total of 214 participants, 93 of which received the surveys with all of the process evaluation questions included.

Table 7. Sample Frame for Participant Surveys in 2012-2013

Time Period	Sample	Unique Sites	Program Projects
First Half 2012 (Projects completed Jan. 1, 2012-June 30, 2012)	43	91	96
Second Half 2012 (Projects completed July 1, 2012-Dec. 31, 2012)	61	167	184
First Half 2013 (Projects completed Jan. 1, 2013-June 30, 2013)	60	148	164
Second Half 2013 (Projects completed July 1, 2013-Dec. 31, 2013)	50	161	174
Total	214	567	618

[25] After the first semi-annual survey, the program evaluation direction was to focus only on net savings and drop the process evaluation. The program direction changed again before the last survey to re-include process evaluation.

Participant interview research objectives included the following:

- Describe how customers come to participate in the program
- Understand overall customer satisfaction with the program, including (where appropriate) marketing, application materials, inspections, customer service, and the incentive or credit
- Understand program influence on customer actions, including free ridership and spillover
- Identify barriers customers are facing that prevent increasing energy efficiency

2.3.5.3 Trade Ally Surveys

The evaluation team defined a trade ally as any firm or vendor who:

- Enrolled in the EEA in 2013 or earlier
- Appeared on the program's website as of June 2014[26]

Based on these criteria, the research team identified a population of 87 trade allies for the Washington FinAnswer Express program.[27]

The evaluation team surveyed the population of trade allies online in August 2014, including a screening question for states in which the respondent was familiar. A total of 18 respondents indicated they were most familiar with the program in Washington, 17 based in Washington, and one based in Utah. Table 8 shows the distribution of the 83 respondents to the survey.

Table 8. Trade Ally Location and Familiarity with FinAnswer Express by State

State by Familiarity	State by Location			
	Utah	Washington	Wyoming	Total
Utah	48	0	9	57
Washington	1	17	0	18
Wyoming	1	0	7	8
Total	50	17	16	83

The overall objectives of the trade ally surveys were to:

- Understand how trade allies come to be involved in the program alliance
- Characterize how trade allies would improve the program for themselves and for customers
- Characterize the value of participation to trade allies' businesses

[26] The team assumed any trade ally listed on the program's website had been involved with the FinAnswer Express program.

[27] The evaluation team only successfully surveyed 83 out of the 87 identified trade allies.

- » Determine the level of program-like activity occurring with knowledge of the program, but without the program support (spillover), which includes assessing how different program sales are from typical sales and how the efficiency of products is changing
- » Characterize communication with trade allies

The team used mostly closed-ended survey questions to facilitate the collection of easily summarized and analyzed quantitative data. The team coded any open-ended questions into categories where possible.

3 Impact Evaluation Findings

This section summarizes the impact evaluation findings for each project included in the 2012-2013 evaluation sample while leveraging the evaluation strategies previously discussed for the FinAnswer Express program.

The evaluation team further characterized savings as "reported" and "evaluated." Reported savings present project savings estimated at the time of measure installation. Evaluated savings present energy savings verified in a facility during the evaluation process.

3.1 Program-Level Gross Savings Results

The 2012-2013 gross program demand savings realization rate was 115 percent and the gross program energy savings realization rate was 90 percent. Table 9 provides the ***program-level*** reported and evaluated gross kilowatt (kW) and gross kilowatt-hour (kWh) realization rates.

Table 9. Gross Program-Level Realization Rates for Washington FinAnswer Express (2012-2013)

Program Year	Reported Program kW Savings	Gross Evaluated Program kW Savings	Gross Program kW Realization Rate	Program Reported kWh	Gross Program Evaluated kWh	Gross Program kWh Realization Rate
2012	2,276	2,618	*115%*	11,967,220	10,745,166	*90%*
2013	1,943	2,238	*115%*	11,745,394	10,680,740	*91%*
All	4,219	4,856	*115%*	23,712,614	21,425,906	*90%*

3.2 On-Site Verification Results

The evaluation team applied final realization rates for program-level demand (kW) and energy (kWh) savings from on-site field verification. The 34 projects sampled and visited included 30 lighting measures, two irrigation measures, four compressed air measures, and a PC power management software controls measure. Although the team calculated realization rates for every project site visited, only the program-level realization rates are statistically valid at the stated, overall evaluation's confidence and precision. For information on how Navigant extrapolated on-site project-level results to the population as a whole, including measure category realization rates and strata-level realization rates, see Appendix D.

3.2.1 Energy Savings Results

Table 10 details the energy savings realization rate for all projects in the evaluation sample for the 2012-2013 program years. The sample yielded an overall realization rate in 2012 of 90 percent and in 2013 of 91 percent.

Lighting project realization rates vary due to differences in operating hours, discrepancies in installed fixture counts, and/or HVAC interactive effects.[28] However, the lighting category as a whole achieved a reasonable 89 percent. By strata, the lighting project realization rates are: Tier 1 82 percent; Tier 2; 88 percent; and Tier 3 94 percent.

Tier 1 lighting projects contribute about 35 percent of the reported program savings and have a measure category realization rate of 82 percent (see Appendix D for more information on the measure-level realization rates). The Customer Self-Reported Ratio (CSRR) for the Tier 1 lighting is also lower (69 percent; N=30) than the average across PacifiCorp's service area of 75 percent (N=125). Given that the self-reported hours of use typically match with the hours used in the *ex-ante* calculations, it appears that reported savings are often based overstated hours of use.

The most common mistakes in reported hours of use are applying overly broad classifications to zoning (i.e. applying the same hours of use to a conference room as the hallway), ignoring seasonality (i.e. reduced summer occupancy in the education sector), and forgetting occupied hours outside of normal business hours (i.e. missing night or weekend hours for janitorial tasks. Another major driver of variance between reported and verified HOU is the deemed hours of use reduction attributed to occupancy sensors; this type of control generally saves more energy than reported.

The five individual compressed air measures achieved slightly higher than 100 percent realization rates due to spot measurement results and on-site data logging. Logging operational patterns of air compressors over several weeks provided the evaluation team with "actual" operating factors that differed from assumptions used in the project files. The irrigation project yielded 100 percent realization rate based on verified measure count, a review of project documentation, and confirmation of measure level deemed savings.

The Network PC Power Management Software measure for the Office project also achieved 100 percent realization rate. Data obtained from the central monitoring station suggests that the actual savings may be in excess of 100 percent; however, due to significant uncertainty regarding aspects of the tracking system and connected load, the team applied deemed savings to this project.[29]

Pacific Power's standard lighting tool does not credit energy and demand savings towards HVAC interactive effects, the influence which may be substantial for any particular project, especially in buildings with electric resistance heating. The evaluation team does include these interactive effects in the evaluated savings results. Appendix E includes the RTF reference tables for HVAC interactive impacts.

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[28] Pacific Power does not credit energy and demand savings towards HVAC interactive effects, which may be substantial. The evaluation team does include these interactive effects in the evaluated savings results, and applies them in accordance with the best practices as described in the lighting calculator used by the Regional Technical Forum. http://rtf.nwcouncil.org/subcommittees/nonreslighting/ (accessed July, 2014)

[29] The evaluation team could not confirm or directly measure wattages for individual components within the network for the PC Power Mgmt. Software, and a portion of the units controlled were renamed part way though the evaluation period.

Table 10. Washington FinAnswer Express Project-Level Energy (kWh) Realization Rates

Project ID	Year	Reported kWh	Evaluated kWh	Realization Rate
FENBL_003026	2013	458,089	600,097	131%
FE000_000202	2013	429,716	511,362	119%
FENBL_002656	2012	396,666	115,033	29%
FENBL_003302	2013	274,433	112,518	41%
FENBL_001383	2012	238,344	243,111	102%
FENBL_004225	2013	232,858	228,201	98%
FENBL_004722	2013	217,657	333,015	153%
FENBL_003777	2013	216,823	160,449	74%
FENBL_001399	2012	216,580	216,580	100%
FENBL_003859	2013	193,363	108,283	56%
FE000_000348	2012	120,243	105,814	88%
FENBL_001742	2012	119,435	117,046	98%
FECBL_000170	2013	111,352	129,208	116%
FENBL_001881	2012	107,061	72,480	68%
FENBL_002282	2012	101,791	78,379	77%
FENBL_003318	2013	82,499	108,899	132%
FENBL_003112	2013	78,617	69,969	89%
FENBL_002607	2012	78,371	81,506	104%
FENBL_001986	2012	72,498	71,048	98%
FECBL_000126	2013	69,127	191,925	278%
FENBL_002675	2012	62,438	65,560	105%
FENBL_002213	2012	42,316	53,318	126%
FENBL_002938	2013	37,195	35,707	96%
FENBL_003977	2013	31,798	35,614	112%
FENBL_002488	2012	31,276	13,136	42%
FENBL_003445	2013	18,219	17,126	94%
FENBL_002327	2012	14,824	14,231	96%
FENBL_002071	2012	12,627	7,450	59%
FENBL_002233	2012	7,682	8,143	106%
FECBL_000106	2013	3,116	3,116	100%
FENBL_003342	2013	2,562	2,485	97%
FENBL_003450	2013	2,533	2,432	96%
FENBL_004420	2013	1,464	1,303	89%
FENBL_002263	2012	786	621	79%

Project-level evaluation yielded significant differences between the reported and verified energy savings estimates for a number of projects completed during the 2012-2013 program years. In fact, 20 projects yielded evaluated energy savings that varied from reported values by more than 10 percent. Table 11 lists these 20 projects and provides further detail on the variations found with each, including:

- **Lighting Hours of Use (HOU) Realization Rate** is the ratio of *verified* HOU over the *reported* HOU. If this ratio is greater than one, the lighting system is operating more than reported and thereby increasing overall energy savings (unless there are under performing controls, but that possibility was not observed in the sampled projects). A ratio less than one can occur under two conditions:
  - If the lights have automated controls, it is likely these controls are reducing overall system run time beyond the deemed/claimed reduction. This results in either an increase in the project's net impact, if the controls were part of the incentivized lighting project, or a reduction of the net impact, if the controls were in place prior to the project.[30]
  - If the lights have manual controls, it is likely the occupant(s) have overestimated the baseline HOU. In this situation the team adjusted the baseline down to reflect the verified HOU, reducing the realization rate accordingly.
- **HVAC Interactive Impact** is a multiplier quantifying the impact of the lighting system's waste heat on a building's HVAC system, aggregated over both the heating and cooling seasons. More efficient lighting systems reduce heat waste and therefore reduce air conditioning load in the summer. However, this reduction in lighting waste heat also increases mechanical heating loads in the winter. Interactive impacts greater than one show a net increase to lighting savings, whereas impacts less than one show a net decrease to savings due to the higher HVAC load. Unfortunately, many other nuances of building construction, orientation, shading, and HVAC system design also influence HVAC interactive impacts, making it impractical to calculate a site specific coefficient for each project. Instead, the team applied deemed values from the Regional Technical Forum (RTF) to each project.

Table 11. WA FinAnswer Express Measure-Level Energy (kWh) Realization Rate Explanations[31]

Project ID	Energy Realization Rate	Lighting HOU Realization Rate	HVAC Interactive Impacts	Measure Type	Notes
FENBL_004722	153%	36%	96%	Lighting	Baseline warehouse hours of use were 24/7; occupancy sensors provided a larger reduction in hours of use than claimed.

[30] It is also possible that a system with controls overstated the baseline operating hours, but the team did not observe this for the Washington FinAnswer Express program PY 2012-2013.

[31] The evaluation team provided PacifiCorp with Site Specific Measurement & Verification Plans (SSMVPs) explaining in greater detail the findings and savings calculations for each site. However, these are proprietary to PacifiCorp and contain customer sensitive information and are not intended for public use.

Project ID	Energy Realization Rate	Lighting HOU Realization Rate	HVAC Interactive Impacts	Measure Type	Notes
FENBL_003112	107%	91%	exterior	Lighting	External lights with photocell control Claimed hours of use were on a 12 hours /day schedule; however 3 of the 31 lights were confirmed on-site as being on 24/7. This increases savings outweighs the ~10% decrease in hours of use applied to the remaining 28 lights. HVAC interactive impacts are not applicable for exterior fixtures.
FENBL_003859	56%	58%	96%	Lighting	Data loggers showed actual hours of use as 40% less than the reported hours of use. Most notably in office and warehouse areas, with two hours less use per day than claimed. This lower usage rate applies to both the baseline and EE Case.
FE000_000202	75%	48%	96%	Lighting	Data loggers showed actual hours of use being higher than reported hours of use. Onsite visit verified five lighting schedules, but site only claimed two. This increased daily use profile applies to both the Baseline and EE Case, thereby causing a net decrease in savings. HVAC impacts are also slightly negative.
FENBL_004420	89%	NA	105%	Lighting	Data loggers could not be deployed at this site, however, verified hours of use are lower than reported due to seasonal adjustments to the building schedule.
FENBL_003026	131%	11%	96%	Lighting	Occupancy sensors in shipping and warehouse areas reduced hours of use down to 2,000 hours from a baseline of 8760 hours. This is a 77% reduction in annual operation.
FENBL_003777	74%	79%	95%	Lighting	Data loggers showed actual hours of use being lower than reported hours of use. This lower usage rate applies to both the baseline and EE Case.
FECBL_000170	59%	not LTG	not LTG	Compressed Air	Verified savings are lower than expected for the air compressor due to higher part loading and lower overall run time. The lower than expected part loading increases savings, but the low total run hours leave a net deficit in verified project savings.
FENBL_003977	112%	60%	96%	Lighting	Data loggers show that the addition of lighting controls have lowered the hours of use more than the deemed default for this space type.
FENBL_003302	41%	48%	exterior	Lighting	Reported savings based on all exterior lighting on 12 hours/day but this was only true for the seven lights on photocells. The remaining 82 lights were on an average of 5.25 hours per day (one hour before sunset to 11pm). The schedule for these lights is consistent with equipment and settings that were in place at the time of the project.
FENBL_003318	132%	17%	100%	Lighting	Data loggers showed that integral controls lowered the hours of use more than the PacifiCorp tool anticipated.
FECBL_000126	245%	not LTG	not LTG	Compressed Air	Air Compressor is spending more hours than originally estimated at lower load factors.
FENBL_001881	68%	66%	100%	Lighting	Data loggers showed actual hours of use being lower than reported hours of use.

Project ID	Energy Realization Rate	Lighting HOU Realization Rate	HVAC Interactive Impacts	Measure Type	Notes
FENBL_002071	59%	28%	103%	Lighting	Data loggers showed actual hours of use being 70% lower than reported baseline hours of use. Very little of the system uses automated controls; therefore, the verified HOU apply to both baseline and EE case.
FENBL_002263	79%	61%	103%	Lighting	Data loggers showed actual hours of use being lower than reported hours of use. A small portion of that the deficit offset by additional savings attributed to HVAC interactions. Additional savings also attributed to the installed system having more fixtures than claimed.
FENBL_002213	126%	NA	96%	Lighting	Hours of use have increased since installation of new measures. The new hours of use apply to both the baseline and efficient measures therefore show an increase in savings.
FENBL_002282	77%	NA	100%	Lighting	Data loggers showed actual hours of use being lower than reported hours of use, but some of the deficit was offset by a larger system demand than claimed (the evaluation team found more fixtures at the site than claimed).
FENBL_002488	42%	NA	130%	Lighting	Claimed HOU were applied across all lights, with no regards to seasonality. The claimed HOU are the normal HOU in the workshop in the summertime. Actual hours of use are lower in the cold room buildings, where all common area lights are turned off 5 months of the year and storage room lights are turned off 11 months of the year.
FENBL_002656	29%	36%	96%	Lighting	Data loggers showed actual hours of use being lower than reported hours of use. Highly seasonal schedules not accounted for in claimed hours of use.
FE000_000348	88%	70%	100%	Lighting	Data loggers showed actual hours of use being lower than reported hours of use.

Note: It is common for individual project realization rates to vary widely from 100 percent due to changes in business plans or time between installation and verification. These fluctuations may or may not have a significant impact on the overall program-level realization rates due to weighting and are shown for informational purposes only.

3.2.2 Demand Savings Results

Table 12 provides project-level demand realization rates for the projects in the impact evaluation sample for PY 2012-2013. The sample yielded an overall realization rate in 2012 of 115 percent and in 2013 of 115 percent.

Lighting projects' demand realization rates vary due to the occasional difference in reported versus verified fixture counts. There are also a few cases where the incorrect demand diversity factor was applied (based on building type). Verified demand can also differ due to HVAC interactive impacts. A limited number of fixtures also have minor differences in reported versus verified wattages.

Compressed air projects' realization rates vary from 100 percent due to differences in compressor operations observed during the evaluation team's on site visits. The evaluation team used temporary

data loggers to capture *in-situ* loading on the compressors and verified that in all cases, the part load as lower than the inputs used in determining the project's claimed savings.

The sole irrigation project in the sample, consisting of two separate measures, achieved a 72 percent demand realization rate due to a discrepancy in demand reduction between the project file and program database. The project file, and deemed savings values, support a demand reduction of 1.44 kW, however the program database reports 2.0 kW in demand reduction, and it is unclear if this is due to rounding or due to data entry error.

The Office (Network PC Power Management Software) measure achieved 100 percent realization rate for demand reduction based on deemed savings.

Table 12. Washington FinAnswer Express Project-Level Demand (kW) Realization Rates

Project ID	Year	Reported kW	Evaluated kW	Realization Rate
FENBL_003026	2013	48.0	49.9	104%
FE000_000202	2013	66.0	63.4	96%
FENBL_002656	2012	50.6	53.6	106%
FENBL_003302	2013	0.0	0.0	NA
FENBL_001383	2012	43.9	56.2	128%
FENBL_004225	2013	0.0	0.0	NA
FENBL_004722	2013	22.0	27.5	125%
FENBL_003777	2013	25.0	24.0	96%
FENBL_001399	2012	14.4	14.4	100%
FENBL_003859	2013	40.0	38.8	97%
FE000_000348	2012	30.0	30.0	100%
FENBL_001742	2012	14.2	14.3	101%
FECBL_000170	2013	0.0	0.0	NA
FENBL_001881	2012	20.3	20.3	100%
FENBL_002282	2012	24.0	20.9	87%
FENBL_003318	2013	7.0	7.6	108%
FENBL_003112	2013	0.0	0.0	100%
FENBL_002607	2012	7.0	9.6	137%
FENBL_001986	2012	12.9	16.5	128%
FECBL_000126	2013	0.0	0.0	NA
FENBL_002675	2012	9.3	9.4	101%
FENBL_002213	2012	9.5	8.7	92%
FENBL_002938	2013	8.0	9.3	116%
FENBL_003977	2013	6.0	5.8	96%
FENBL_002488	2012	8.2	9.8	120%
FENBL_003445	2013	6.0	6.2	103%
FENBL_002327	2012	4.9	5.3	110%
FENBL_002071	2012	3.4	3.7	107%
FENBL_002233	2012	0.0	0.0	NA

Project ID	Year	Reported kW	Evaluated kW	Realization Rate
FECBL_000106	2013	2.0	1.4	72%
FENBL_003342	2013	0.0	0.0	NA
FENBL_003450	2013	0.0	0.0	100%
FENBL_004420	2013	0.0	0.0	NA
FENBL_002263	2012	0.2	0.2	130%

3.3 Cost-Effectiveness Results

The evaluation team initialized and validated the cost-effectiveness model used for this evaluation using prior inputs and outputs from previous evaluation cycles, to ensure similar inputs yielded similar outputs for the current cycle. 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. Table 13 provides an overview of cost-effectiveness input values used by the evaluation team in the cost-effectiveness analysis.

Table 13. Cost-Effectiveness Evaluation Input Values

Input Description	2012	2013	2011-2013
Discount Rate	7.17%	6.88%	-
Inflation Rate	1.80%	1.90%	-
Commercial Line Loss	9.53%	9.53%	9.53%
Industrial Line Loss	8.16%	8.16%	8.16%
Measure Life[32]	Varies	Varies	Varies
Commercial Retail Rate	$0.0768	$0.0772	-
Industrial Retail Rate	$0.0649	$0.0653	-
Gross Customer Costs	$5,413,092	$4,477,237	$9,890,329
Program Costs	$2,651,077	$2,821,463	$5,472,541
Program Delivery	$1,312,087	$1,241,641	$2,553,728
Incentives	$1,338,991	$1,579,822	$2,918,813

The discount rates, inflation rates, line loss factors, and retail rates are based on the 2011 IRP for 2012 and the 2013 IRP for 2013. Measure specific load shapes and the System Load Shape Decrement were used for all program years.
Program Delivery includes: engineering, program implementation, marketing, and utility administration costs.

Table 14 through Table 16 illustrate the costs, benefits, and benefit/cost ratio for the cost-effectiveness tests used in this evaluation using the NTG ratio of 1.0.

[32] For a complete measure life table see Appendix C.

Table 14. WA FinAnswer Express Cost-Benefit Results – 2012 (1.0 NTG)

Benefit-Cost Test Performed	Evaluated Gross Savings (kWh)	Evaluated Net Savings (kWh)	Evaluated Costs	Evaluated Benefits	B/C Ratio
PacifiCorp Total Resource Cost Test (PTRC)	10,745,166	10,745,166	$6,725,178	$11,523,148	1.71
Total Resource Cost Test (TRC)	10,745,166	10,745,166	$6,725,178	$10,475,590	1.56
Utility Cost Test (UCT)	10,745,166	10,745,166	$2,651,077	$10,475,590	3.95
Rate Impact Test (RIM)	10,745,166	10,745,166	$10,854,267	$10,475,590	0.97
Participant Cost Test (PCT)	10,745,166	10,745,166	$5,413,092	$9,542,180	1.76

Table 15. WA FinAnswer Express Cost-Benefit Results – 2013 (1.0 NTG)

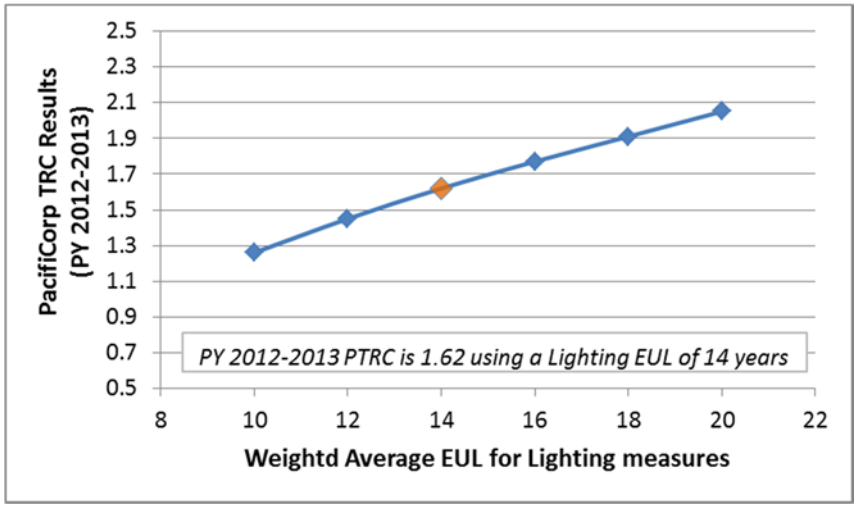
Benefit-Cost Test Performed	Evaluated Gross Savings (kWh)	Evaluated Net Savings (kWh)	Evaluated Costs	Evaluated Benefits	B/C Ratio
PacifiCorp Total Resource Cost Test (PTRC)	10,680,740	10,680,740	$5,718,879	$7,962,157	1.39
Total Resource Cost Test (TRC)	10,680,740	10,680,740	$5,718,879	$7,238,325	1.27
Utility Cost Test (UCT)	10,680,740	10,680,740	$2,821,463	$7,238,325	2.57
Rate Impact Test (RIM)	10,680,740	10,680,740	$10,677,441	$7,238,325	0.68
Participant Cost Test (PCT)	10,680,740	10,680,740	$4,477,237	$9,435,800	2.11

Table 16. WA FinAnswer Express Cost-Benefit Results – PY 2012-2013 Combined (1.0 NTG)

Benefit-Cost Test Performed	Evaluated Gross Savings (kWh)	Evaluated Net Savings (kWh)	Evaluated Costs	Evaluated Benefits	B/C Ratio
PacifiCorp Total Resource Cost Test (PTRC)	21,425,906	21,425,906	$12,444,057	$19,485,306	1.57
Total Resource Cost Test (TRC)	21,425,906	21,425,906	$12,444,057	$17,713,914	1.42
Utility Cost Test (UCT)	21,425,906	21,425,906	$5,472,541	$17,713,914	3.24
Rate Impact Test (RIM)	21,425,906	21,425,906	$21,531,708	$17,713,914	0.82
Participant Cost Test (PCT)	21,425,906	21,425,906	$9,890,329	$18,977,980	1.92

Navigant recommends using a greater level of granularity for lighting EULs in the program tracking database in order to provide more accurate cost-benefit results (Recommendation #3). The current EUL for lighting projects uses a value from the 2008 version of DEER, weighted heavily by fluorescent lighting. LED lamps, lighting controls, and other measures installed by the FinAnswer Express program require differing EULs. Figure XX shows the effects varying the lighting EULs has on the PTRC test specifically. If the weighted average EUL varies by two years from the current value, then the PTRC is shifted by approximately 10 percent. However, the PTRC does not dip below 1.0 so long as the EUL remains above 6.4 years.

Figure 5. Hypothetical Cost-Benefit Results for PTRC Test with Varied Lighting EULs



4 Process Evaluation Findings

This section describes the findings from the FinAnswer Express process evaluation data collection activities including trade ally, participant, and program staff interviews.

4.1 Participant Findings

The evaluation team surveyed 214 participants out of the 567 unique participants over the four surveys.[33] Based on the survey fielding methodology, this sample is representative of the population. The respondents completed a total of 225 measures. Of these, 186 were lighting measures and 39 were non-lighting measures.

Table 17 provides a distribution of participating industry types and shows that no single industry represents a majority of the survey participant population.

Table 17. Primary Industry of FinAnswer Express Survey Respondents

Primary Industry	Participant Count	Percent
Dairy/Agricultural	34	16%
Retail	32	15%
Repair and Maintenance Services	20	9%
Don't Know/Not sure	19	9%
Manufacturing	19	9%
Warehouses or Wholesaler	12	6%
Educational Services	10	5%
Public Administration/Governmental Services	10	5%
Health Care	9	4%
Real Estate/ Property Management	9	4%
Non-Profits and Religious Organizations	8	4%
Finance and Insurance	5	2%
Food Services	5	2%
Professional, Scientific, and Technical Services	5	2%
Construction	4	2%
Food Processing	4	2%
Oil and Gas	4	2%
Accommodation	2	1%
Arts, Entertainment, and Recreation	2	1%
Refrigerated Warehouse	1	<1%
Total	214	100%

[33] The first and fourth survey included process questions. The second and third surveys only included basic project questions and overall satisfaction. Therefore, the number of respondents varies greatly by question.

The evaluation team asked respondents to identify the portion of operating expenses represented by electricity costs in order to understand the value of electric efficiency to participants. Responses ranged from one to 48 percent, with the median portion of operating expenses at 19 percent and the average at 20 percent. Only 62 of the 214 (29 percent) respondents were able to estimate the percentage of total annual operating costs attributable to electricity.

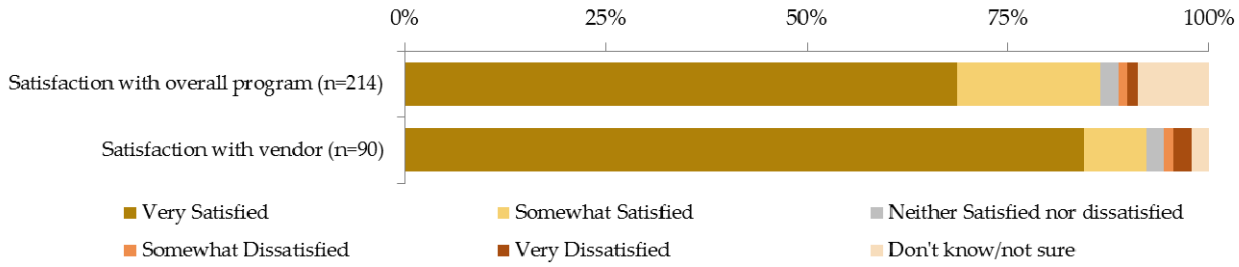
4.1.1 Program Satisfaction

The majority of respondents indicated being very satisfied with multiple aspects of the program. Surveys polled satisfaction with the pre-installation report, installed measures, post-installation inspection, and vendor assistance, as well as for initial equipment status, energy savings benefits, non-energy benefits, and overall project satisfaction.

Overall, 86 percent of respondents (185 of 214) were satisfied with the program: 69 percent were very satisfied and 18 percent were somewhat satisfied. The remaining 14 percent were split up as two percent (5 of 214) neither satisfied nor dissatisfied, one percent (2 of 214) dissatisfied, one percent (3 of 214) very dissatisfied, and nine percent (19 of 214) not sure. The 10 respondents who did not indicate satisfaction were asked what could be different about the program to improve their perception. Their responses indicate disappointment with the size of the incentive (four respondents), number of people involved (two respondents), time to get the incentive (one respondent), and changes in rates (one respondent). Two respondents did not say what went wrong, one saying "nothing" and the other saying "not so much."

Similarly, 92 percent of respondents who had a vendor listed in the program tracking data (83 of 90) were satisfied with their vendor: 84 percent were very satisfied and 8 percent were somewhat satisfied.[34] Of the remaining seven respondents, two were neither satisfied nor dissatisfied, one was dissatisfied, two were very dissatisfied, and two were not sure. Both overall and vendor satisfaction are shown in Figure 6.

Figure 6. Overall and Vendor Satisfaction



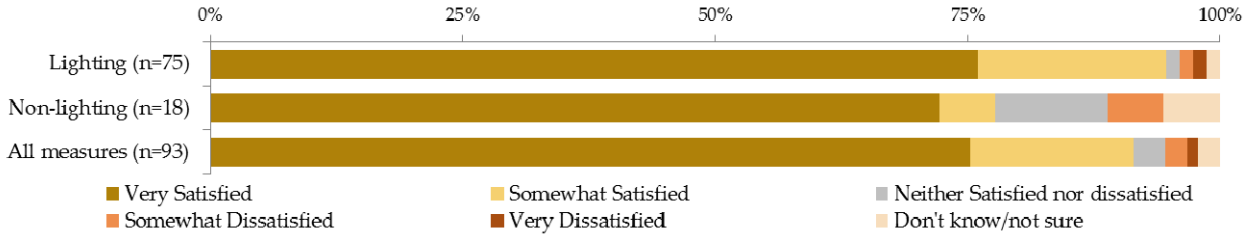
The FinAnswer Express program provides some participants with a pre-installation report that describes the energy analysis of the project. Pre-purchase path participants were asked about their perspective on the report, and the majority of respondents (82 percent) thought the pre-installation report was valuable,

[34] Of the remaining three projects (93 respondents received a survey with this question), one was a project manager path project and two did not recall working with a vendor.

while few respondents (12 percent) did not recall receiving a report. The single respondent who did not find the report valuable was asked why they felt that way; this respondent was concerned with cost, saying, "It was too expensive to make a lot of the retrofits." The response indicates frustration with budget constraints rather than dissatisfaction with the energy analysis. Also, some participants have post-purchase inspections due to the scope of their project or quality measures by the program; these participants are identified in program tracking data. Of those with final inspections (27 of 93), the vast majority (22 of 27) were satisfied (21 were very satisfied). Four were not sure, and one was neutral. The neutral respondent wasn't sure what could be improved about the inspection to cause them to be satisfied.

Measure-specific questions covered measure satisfaction, the condition of the replaced equipment, and expected and received benefits. Most respondents (91 percent overall) were satisfied or very satisfied with their measure performance. Lighting measures (95 percent) had higher satisfaction rates than non-lighting measures (78 percent). Figure 7 illustrates the reported satisfaction with both lighting and non-lighting measures. Five of the six respondents who were not satisfied with their measure were disappointed with the quality of the measure – either it had already failed (burned out for lights), or it did not perform the functions they desired. One respondent reported frustration with electric rates rather than any particulars about the measure; this was their same complaint with the program overall even though rates are outside of the scope of the program.

Figure 7. Measure Performance Satisfaction by Measure Type (n=93)



A small portion, two percent, of all measures (five percent for lighting and 15 percent for non-lighting) were for new construction projects. Participants who installed measures that were not for new construction were asked about the condition of the equipment replaced by the measure. Most lighting measures replaced existing equipment that was working with no problems (66 percent), indicating a more conscious shift toward energy efficiency (early replacement) than if the equipment was already having problems (22 percent). Thirty-one percent of non-lighting measures replaced existing equipment that had problems and perhaps needed replacement anyway, while 26 percent replaced non-lighting projects that were working fine. This is in keeping with the program design, which encourages participants to install more efficient options to the minimum code baseline. Table 18 provides the distribution of responses.

Table 18. Operating Condition of Replaced Equipment by Measure Type

Operating Condition	Lighting (n=186)	Non-lighting (n=39)	Overall (n=225)
Existing equipment had failed	1%	10%	2%
Existing equipment working but with problems	22%	31%	23%
Existing equipment working with no problems	66%	26%	59%
Totally new installation	5%	15%	2%
Other	2%	0%	2%
Don't know/Not Sure	5%	18%	7%

Participants responded to questions around energy savings expectations and only about half (55 percent) of those who installed lighting measures said that the energy savings met their expectations. Around two-thirds (67 percent) of non-lighting measure participants indicated that the energy savings met their expectations. About one third of respondents (31 percent overall) were not sure if the equipment was meeting expectations and 12 percent said the equipment was not meeting expectations. Although energy savings did not come up in reasons for dissatisfaction with measures, the program and EEA staff may be able to work with trade allies to ensure that expectations for energy savings are not overstated.

Participants also reported anticipating benefits beyond energy savings related to each measure. For lighting measures 69 percent of respondents anticipated these other benefits, and for non-lighting measures, 61 percent of respondents anticipated other benefits. When asked which benefits respondents anticipated specifically, the most common answer was better lighting quality, mentioned by 50 of the 63 respondents (Table 19 provides the other benefits for both lighting and non-lighting measures.[35]

Table 19. Anticipated Non-Energy Benefits from Program Participants (n=63)

Non-Energy Benefits Anticipated	Participant Count	Percentage
Better lighting quality	50	67%
Less frequent replacement	6	8%
Improved safety	5	7%
Reduced maintenance cost/effort	3	4%
Improved water pressure/water savings	2	3%
Other (single response)	9	12%
Total	75	100%

The team further probed these participants to find out if they had actually seen any of the anticipated non-energy benefits occur; 84 percent had. The overwhelming majority (87 percent) of respondents who installed lighting measures said they *had* experienced these benefits and the same held true for 73 percent of non-lighting participants. A further 6 percent overall (4 percent lighting and 18 percent non-lighting) said the measures had somewhat met their expectations.

[35] More than one response was allowed; the 63 respondents identified gave a total of 75 responses. Respondents were allowed to speak freely. Their responses were coded into pre-defined categories. Other responses that were not coded into categories included: "motion sensors," "increased control," and "cost savings."

4.1.2 Program Awareness and Motivation

The evaluation team asked participants how they heard or became aware of the FinAnswer Express program. By far, the top response was "trade allies, vendors, and contractors" (47 percent).[36] Another 16 percent learned through Pacific Power programs (9 percent) or staff (7 percent). Word of mouth from business colleagues and friends was also important. Only 4 percent of respondents heard about the program through indirect marketing channels, including the Pacific Power newsletter, radio, online, TV, and print advertisements. Table 20 shows all sources of awareness for program participants.

Table 20. How Participants Became Aware of the FinAnswer Express Program

Source of Awareness	Respondent Count	Percentage
Trade Ally, Vendor, or Contractor	46	47%
Previous Participation in Pacific Power Programs	9	9%
Another Business Colleague	9	9%
Family, Friend, or Neighbor	9	9%
Account Representative or other Pacific Power Staff	7	7%
Another Energy Efficiency Program	7	7%
Pacific Power Website	2	2%
Pacific Power Newsletter	1	1%
Pacific Power Radio Advertisement	1	1%
Pacific Power Online Advertisement	1	1%
Pacific Power TV Advertisement	1	1%
Conference, Workshop or Event (sensors)	1	1%
Other	1	1%
Don't Know/Not Sure	3	3%
Total	98	100%

More than one response was allowed; 93 respondents gave 98 sources. Most "other" responses were recoded, such as "electrician" was considered "trade ally, vendor, or contractor". One remaining "other" response did not provide a specification.

[36] Participant awareness questions were only asked in the first and last participant survey (93 respondents).

4.1.3 Program Influence

The evaluation team found many influential factors motivating program participants. The top two most influential reasons for participating in the FinAnswer Express program were saving money on electric bills (26 percent) and the ability to obtain an incentive (23 percent). One interesting finding is that while an equal count of respondents (30) mentioned the program incentive as saving money to be influential in their decision, fewer thought the incentive was most important in their decision (21 compared to 24). This suggests that customers consider the incentive as an added benefit.

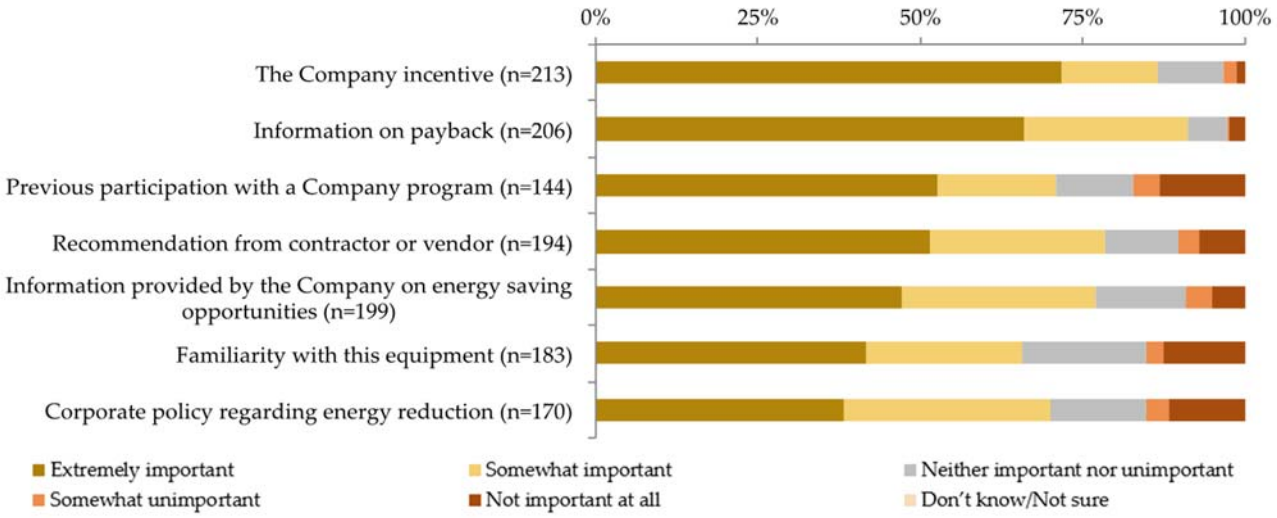
Table 21. Reasons for Participating in the Program (n=93)

Reason for Participation	Mentions	Most Important	Percent Most Important
To save money on electric bills	30	24	26%
To obtain an incentive	30	21	23%
To replace old or poorly working equipment	20	13	14%
To save money on maintenance costs	16	8	9%
To acquire the latest technology	7	6	6%
To save energy (no costs mentioned)	14	6	6%
To improve operations, production, or quality	6	5	5%
To replace broken or failed equipment	3	2	2%
Previous experience with Pacific Power	1	1	1%
To comply with a standard or policy requirement	1	1	1%
Recommended by colleague	1	1	1%
To improve value of property	1	1	1%
To improve comfort	1	1	1%
Other	5	3	3%
Total	137	93	100%

More than one response allowed.

Respondents ranked the importance of certain factors in deciding which equipment to install for each project specified. Figure 8 highlights these findings. The most important factors included the company incentive (72 percent) and information about payback (66 percent). This implies that the assistance provided by the program (both financial and informational) encouraged the installation of more efficient equipment. Figure 8 does not display responses that were unknown or not applicable.

Figure 8. Importance of Factors for Participants to Decide to Install Equipment



4.1.4 Further Energy Efficiency Opportunities and Barriers

Participant surveys provided insight into the barriers that prevented participants from taking action and about future plans for energy efficiency projects. Respondents shared their current plans, potential future plans, and whether current plans included assistance from Pacific Power. Respondents also listed specific examples for energy-efficient plans and selected factors that may prevent them from pursuing these plans.

Most respondents (55 percent) indicated there were *no other changes they could make to improve energy efficiency at their organization*. Nearly one-third (29 percent) indicated some potential, but they did not have plans in place. Of the 34 respondents that indicated having current plans for energy efficiency projects, 22 (64 percent) respondents had plans that included Pacific Power's assistance. This information suggests that participants are happy with the program, but it may not enable all participants to identify new projects. It should be noted that this program is not designed to identify all energy efficient options but does intend for participants to continue to improve. Table 22 combines multiple responses concerning participants' current and future energy-efficient plans.

Table 22. Potential for Further Energy Efficiency

Potential for Additional Energy Efficiency	Participant Counts	Percentage
No potential for energy efficiency	118	55%
Potential for energy efficiency, but no plan in place	62	29%
Energy efficiency plans with Pacific Power	22	10%
Energy efficiency plans without Pacific Power	12	6%
Total	214	100%

Respondents who indicated at least some potential for implementing further energy-efficient projects (96) reported barriers that prevented implementation of those plans. The most influential barriers included lack of access to capital (33 percent) and high upfront costs (27 percent). Thirteen percent saw no barriers to impede them. Other barriers included: location, lack of equipment to meet their needs, and lack of time. Table 23 lists the barriers reported by respondents.

Table 23. Barriers to Participants' Future Energy Efficiency Plans

Barriers to Energy Efficiency	Mentions	Most Important	Percent Most Important
Lack of access to capital	33	32	33%
High upfront cost	26	26	27%
None	12	12	13%
Other (single response)	12	10	10%
Low priority/lack of interest among senior management	4	4	4%
Long payback periods	4	4	4%
Lack of assigned energy staff	2	2	2%
Lack of information about savings and performance	2	2	2%
Not sure	4	4	4%
Total	99	96	100%

More than one response allowed. Three respondents identified more than one barrier.

4.2 Trade Ally Findings

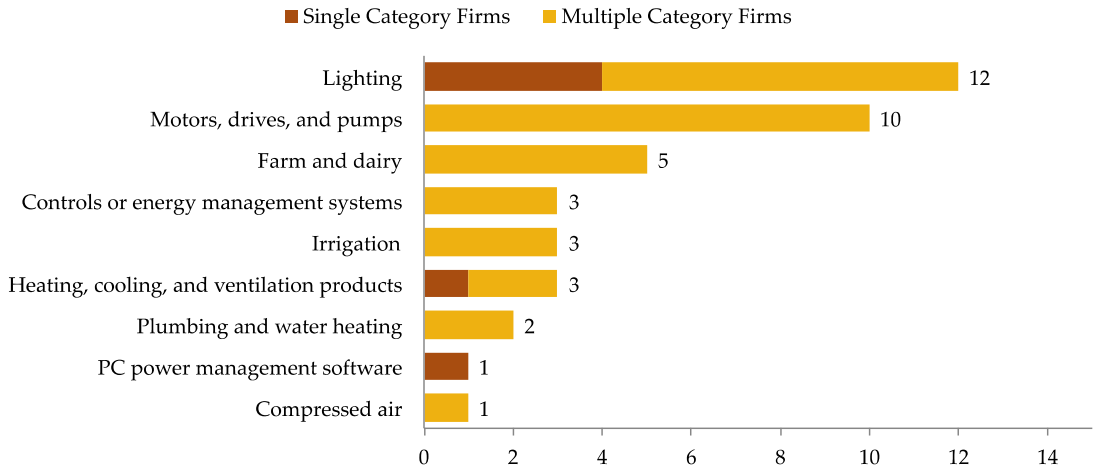
This section focuses on the 18 trade ally respondents indicating familiarity with the program in Washington.[37] It presents the trade ally perspective on program awareness and motivations, program communications, program project experience, spillover, and program suggestions.

[37] As Table 8 in section 2.3.5 above indicates, 17 trade ally participants familiar with Washington programs reside in Washington, and one resides in Utah.

4.2.1 Trade Ally Respondent Information

The majority of trade allies surveyed (12 out of 18) work across multiple measure categories. Four work exclusively with lighting products, one exclusively with HVAC, and another exclusively with PC management and software products. Figure 9 shows the distribution of trade allies by the category of equipment.

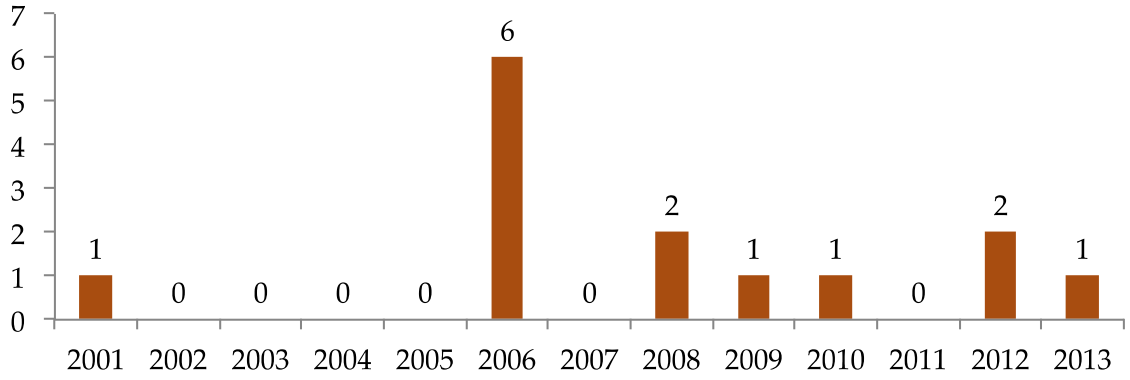
Figure 9. Number of Trade Allies with Energy-Efficient Products by Category (n = 18)



4.2.2 EEA Program Awareness and Motivation

Survey data shows that trade allies have a strong interest in EEA programs and the desire to attend EEA trainings and workshops. Figure 10 displays the year in which respondents joined the EEA. Four respondents did not know when they joined.

Figure 10. Number of Trade Allies by the Year in Which They Joined the EEA (n = 14)



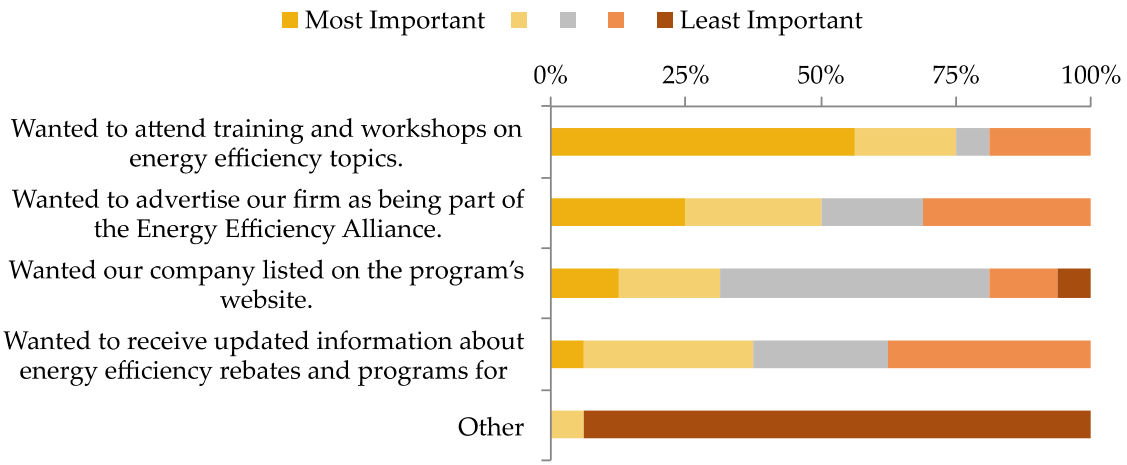
The majority of trade allies (67 percent) became aware of the EEA through their utility or EEA representative. Respondents also heard about the EEA through previous employers (22 percent). Table 24 highlights these results.

Table 24. How Trade Allies Heard About EEA

Method of Awareness	Frequency	Percentage
Utility or Energy Efficiency Alliance Representative	12	67%
Previous Employer	4	22%
Other Contractor/Vendor	1	6%
Internet Search	1	6%
Customer	0	0%
Total	18	100%

Respondents also described their motivation for participating in the EEA. They ranked these motivations in order from most important to least important as shown in Figure 11. The most important motivation was the desire to attend training and workshops.

Figure 11. Trade Ally Motivation for Participating in the EEA, Ranked by Importance (n = 16)



4.2.3 EEA Program Communications

The evaluation team asked trade allies a set of questions to evaluate the value of current communications with the EEA and to determine how communications can improve. The majority (71 percent) felt that the communications received from the EEA were either valuable or extremely valuable. Figure 12 shows the value of communications.

Figure 12. Trade Ally Rating of the Value of Communication with the EEA (n = 17)

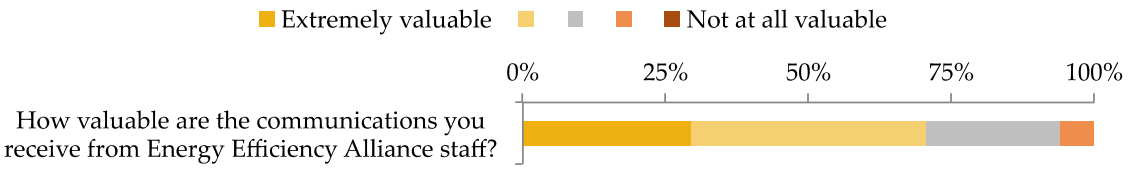


Table 25 shows the preferred modes of communication with the EEA. Email was the preferred mode of communication at 72 percent. All trade allies preferred some form of communication to no communication at all.

Table 25. Trade Ally Preferred Modes of Communication with the EEA

Mode of Communication	Frequency	Percentage
Email	13	72%
Telephone correspondence	2	11%
In-person correspondence	2	11%
Printed mail	1	6%
Prefer not to receive communication	0	0%
Total	18	100%

Trade allies also assessed the frequency of current communications. The vast majority of trade allies believe the current frequency of communications is just right (73 percent). Four believe it is not quite frequent enough (27 percent). Of these, one is not sure how often they communicate now, one each recall project only, quarterly, and annual communications. Figure 13 shows the assessment of communication frequency.

Figure 13. Trade Ally Assessment of the Current Frequency of Communication with the EEA (n = 15)

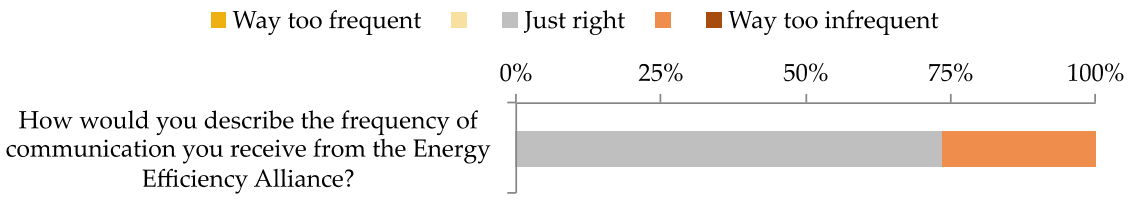


Table 26 shows the trade allies preferences for communications. The majority of trade allies prefer monthly communications (61 percent) and others prefer quarterly communications (33 percent). All of those who selected quarterly communications (six) recalled current communication frequency at quarterly or less.

Table 26. Trade Ally Preferred Frequency of Communications with the EEA

Preferred Frequency of Communication	Frequency	Percentage
Weekly	1	6%
Monthly	11	61%
Quarterly	6	33%
Annually	0	0%
Total	18	100%

Trade allies identified if they had received and read the EEA newsletter. The majority of trade allies (61 percent) recalled receiving and reading the newsletter, while few (11 percent) reported receiving, but not reading the newsletter. Table 27 summarizes the newsletter actions.

Table 27. Trade Ally Actions with the EEA Newsletter

Newsletter Actions	Frequency	Percentage
Received and read newsletter	11	61%
Received and did not read newsletter	2	11%
Did not receive newsletter	3	17%
Not sure	2	11%
Total	18	100%

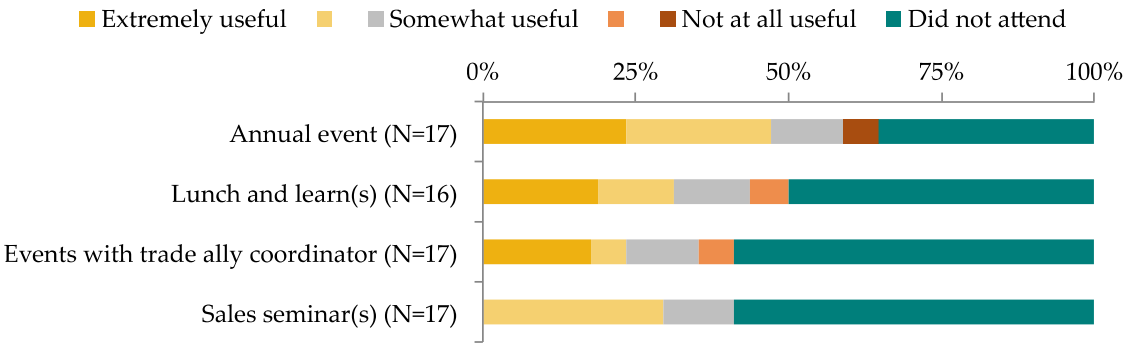
Trade allies also provided suggestions for improving the quality of the EEA newsletter:

- Advertise or give more information about products that can be used for rebates
- Notify trade allies of changes to incentive programs and criteria
- Spotlights of projects and information on other trade allies' projects

Trade allies were also asked to rate the usefulness of training and events that they attended from 2012 to 2013. The annual event was the most widely attended event, and lunch and learns were the least attended events.

Figure 14 compares the usefulness and attendance rate for each event type. Response rates vary as responses were not required. Since most trade allies indicated that they joined to learn more about energy efficiency topics and rebates, it is surprising that only about half attend events.

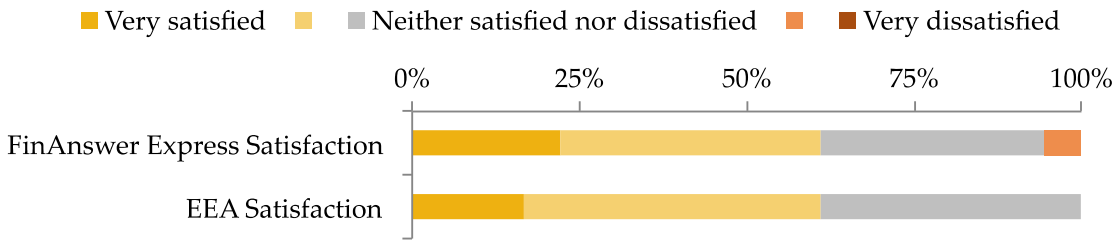
Figure 14. Usefulness Rating and Attendance Rate of Trade Ally Trainings and Events



4.2.4 Program Project Experience

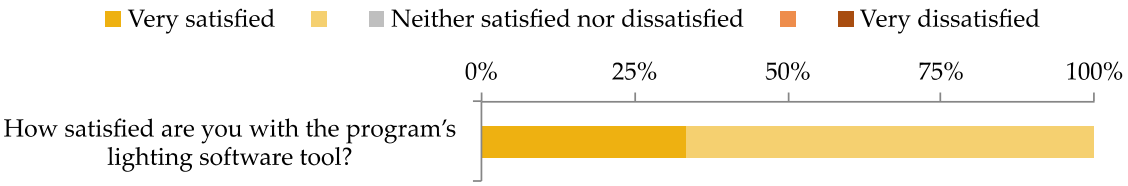
Trade allies expressed their satisfaction with the FinAnswer Express program as either very satisfied (23 percent) or satisfied (38 percent) and with the EEA overall as very satisfied (20 percent) or satisfied (41 percent). Figure 15 compares the trade ally satisfaction ratings. Dissatisfied and neutral respondents complained that the program process was too complicated and time consuming. They suggest making the program easier (three); increasing incentives (two), making the alliance more hands on or closer to the vendors (one), providing more information (one), and including more products; in two cases, the respondent was not sure what would make the program or the alliance better.[38]

Figure 15. Trade Ally Satisfaction Rating of the FinAnswer Express Program and the EEA (n = 18)



Out of the 12 trade allies that work with lighting projects, 6 (50 percent) trade allies said that they used the lighting software tool. All of the trade allies that used the tool were satisfied with it. Figure 16 shows the satisfaction results.

Figure 16. Trade Ally Satisfaction Rating of the Lighting Software Tool (n = 6)



[38] One respondent who was dissatisfied with the program (two out of five on the scale) and neutral on the EEA (three out of five on the scale) responded "I don't know" to both follow up questions.

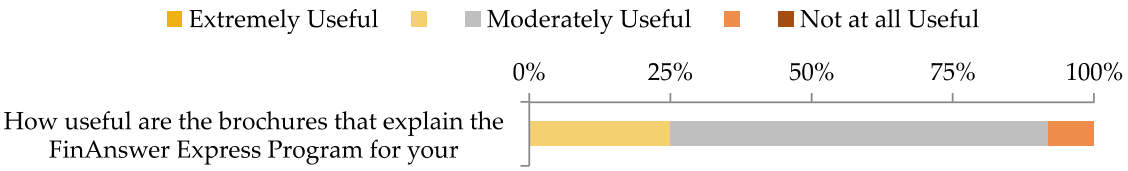
Trade allies rated the usefulness of the FinAnswer Express brochures. Most trade allies (92 percent) thought the brochures were moderately or extremely useful. Figure 17 shows the brochure ratings. Trade allies dissatisfied with the brochures indicated that they:

» Needed comparisons to other rebate programs

» Needed example projects to help customers understand the program

» Did not cover their product categories

Figure 17. Trade Ally Usefulness Rating of FinAnswer Express Brochures (n = 12)



The evaluation team asked trade allies if they had advertised for the FinAnswer Express program, and how they advertised. Table 28 shows that less than one third advertised the program at all.[39]

Three out of five trade allies that advertise said that they advertise rebates and two out of five said that they advertise energy efficient equipment to customers. Trade allies advertise through flyers, word of mouth, and online.

Table 28. Trade Allies that Advertise for the FinAnswer Express Program

	Frequency	Percentage
Advertised for FE	5	28%
Did not advertise	11	61%
Don't know	2	11%
Total	18	100%

More trade allies reported that they do paperwork for their customers (56 percent) than advertise for the FinAnswer Express program (28 percent), as shown in Table 29. Out of the trade allies that complete paperwork, three out of 10 (30 percent) complete the rebate form for their customers and no trade allies process the rebate form.

[39] Trade allies were asked, "Did you advertise the FinAnswer Express program in...? "with options for the media used for advertising. Then, they were asked about the content of advertising: the rebate, the efficient equipment, or something else.

Table 29. Trade Allies that Complete Paperwork for Their Customers

	Frequency	Percentage
Completed paperwork	10	56%
Did not complete paperwork	8	44%
Don't know	0	0%
Total	18	100%

Table 30 displays the barriers that limited trade allies from completing more projects with the EEA. The most significant barrier pertained to internal resource constraints. Trade allies also mentioned the incentives were too low for customers as another barrier.

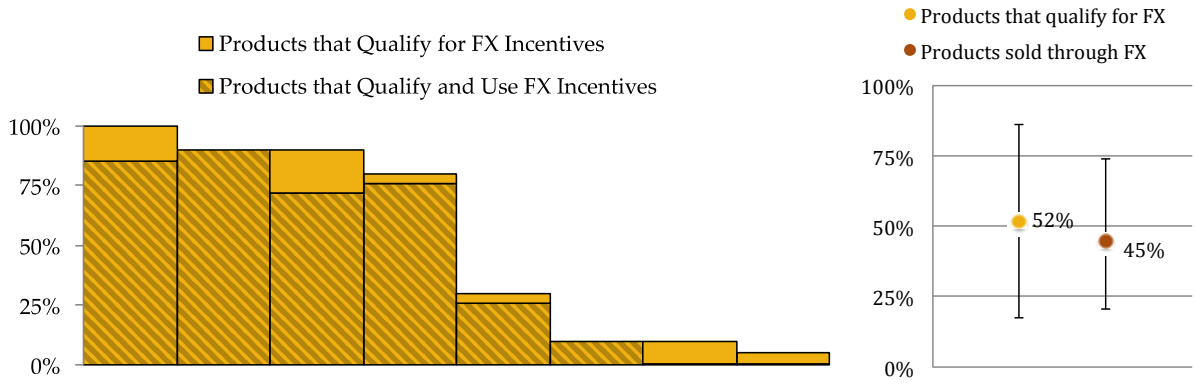
Table 30. Barriers that Limit Trade Allies from Completing Projects with the EEA (n = 18)

Barrier	Frequency	Percentage
Our own internal resource constraints (i.e., staffing)	7	39%
Equipment does not qualify for an incentive	5	28%
Customer(s) not interested in energy-efficient equipment	5	28%
Too much hassle for the customer to participate in the program	2	11%
Too much hassle for our firm to participate in the program	0	0%
Other	1	6%

4.2.5 Efficient Sales Outside of the Program

The average portion of efficient sales outside of the program for Washington trade allies is nine percent. Trade allies first reported the percentage of their total products or projects that qualify for the program. They then reported what percentage of those products or projects were sold or installed using program incentives. On average for each trade ally, 52 percent of the products sold by trade allies qualified for incentives, and 45 percent were sold using incentives. The percent difference between these numbers is the portion of efficient sales outside of the program, or the potential spillover. Figure 18 shows the percentage of total products that qualified and were sold through the program. Results are displayed as a histogram that shows all responses and as a 95 percent confidence interval for the average percentage of products across all respondents. Of the eight respondents, four indicated that more than 70 percent of their products qualified for and were sold with program incentives.[40] The spillover is represented in the histogram by the area that is not cross-hatched.

Figure 18. Percentage of Total Products that Qualify for the FinAnswer Express (FE) Program and that Are Sold Using Program Incentives (n = 8)



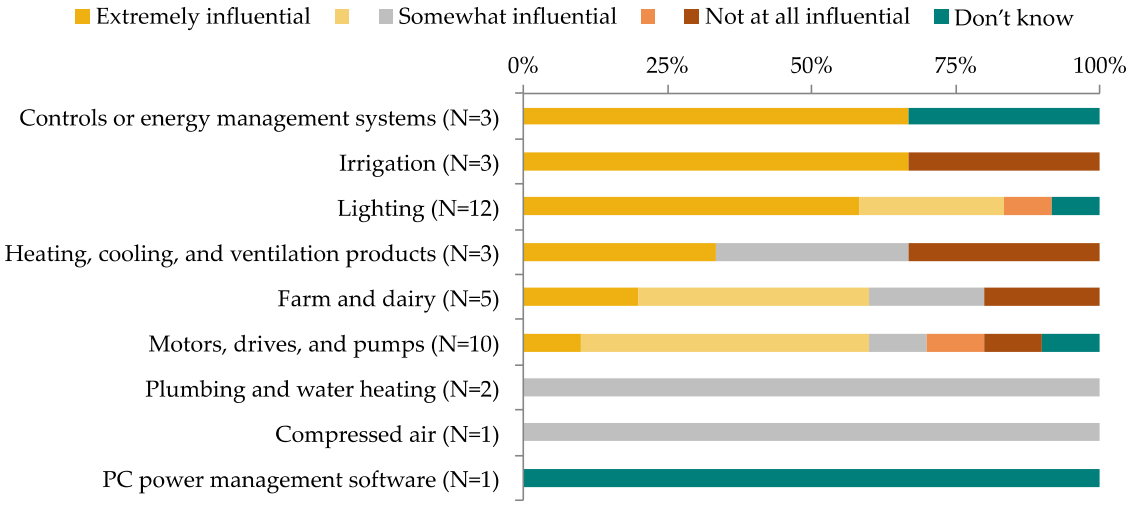
Most respondents who completed these questions indicated some sales without the program, but two respondents indicated that all of their qualifying sales are utilizing the program. The second portion of Figure 18 shows a very significant amount of variability in the percentage of products that qualified and were sold through the FinAnswer Express program. This is expected given the wide range of company industries (e.g., lighting, HVAC), company functions (e.g., distributors, contractors), and company sizes that comprise the trade ally sample. Due to this large variability and to a small sample size, the results of the spillover effect are not statistically significant.

[40] Ten trade allies did not respond to these spillover questions. The evaluation team determined that trade allies may not have accurate information on these topics and therefore expected fewer responses.

4.2.6 Value to Business

Trade allies reported that the program had a significant effect on their businesses in terms of their ability to stock and sell energy-efficient products. These findings imply that the spillover defined in the previous section may be due to the program. The team asked trade allies how influential the program has been in motivating their firm to stock program-eligible equipment. Trade allies answered this question for each of the product categories that they work in. Figure 20 shows the influence ratings along with the number of trade allies that responded for each product category. The categories where the program is the most influential include controls or EMSs, irrigation, and lighting.

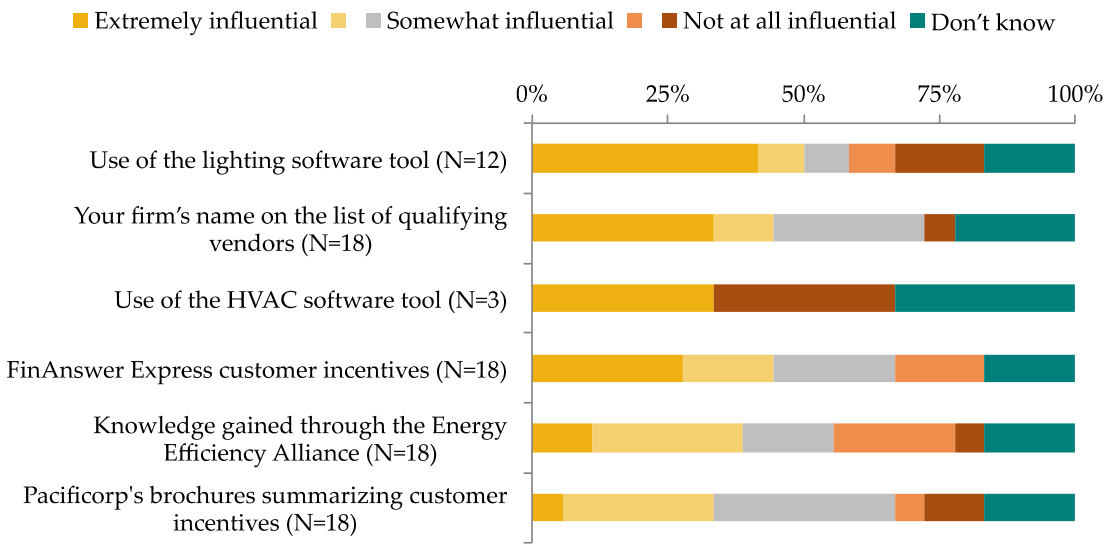
Figure 19. Trade Ally Influence Rating for Stocking Program-Eligible Equipment by Product Category



The EEA provides a trade ally coordinator contact as well as other services to assist the allies. Nearly all respondents found the trade ally coordinator to be valuable to their participation in the program. The two who did not find the coordinator valuable were neutral with the program overall; both of these allies look to the trade ally coordinator for customer support. Trade allies depend on the trade ally coordinator mostly for project support (six of 18), incentive paperwork (four of 18), incentive training (three of 18), and customer support (three of 19). The coordinators are also sought after to provide technology training (one), and to help sell projects/products (one). The communications section (above) deals with other perceptions that trade allies have about this contact because they mostly communicate with the same person.

Figure 20 reports the influence of other program services (besides the trade ally coordinator) in helping firms to successfully sell energy-efficient products and projects to customers. The lighting software tool, the HVAC software tool, and having their firm's name on the qualifying vendors list were the most influential services. Response rates vary as responses were not required for these questions.

Figure 20. Trade Ally Influence Rating of Program Services in Helping Sell Energy-Efficient Products



The evaluation team also asked trade allies whether the program had significantly changed their business and sales. The majority of trade allies reported that the program did change their business (56 percent), but fewer reported that it changed their sales (28 percent). Table 31 displays these results.

Table 31. Reported Businesses and Sales Changes Due to the FinAnswer Express Program

Program Impact on Business	Frequency	Percentage
Business changed	10	56%
Business did not change	7	39%
Don't know	1	6%
Total	18	100%

Program Impact on Sales	Frequency	Percentage
Sales changed	5	28%
Sales did not change	8	44%
Don't know	5	28%
Total	18	100%

Trade allies who recalled completing more projects or selling more products that qualified for the FinAnswer Express program were more likely to report that the program had changed their business or sales. Trade allies that said the program did change their business mentioned that it:

- Added projects and strengthened sales
- Encouraged energy-efficient and higher quality products
- Helped keep their firm more aware of energy efficiency

4.2.7 Trade Ally Suggestions for Program Improvement

Multiple questions polled the trade allies on ideas for FinAnswer Express improvements. Improvement questions asked for topics for future trainings and events, additional services offered through the program, and general program improvement.

Trade allies suggested the following as topics for future trainings and events:

- New Incentives (e.g., LEDs, Controls, HVAC, Motors, and Irrigation)
- Tool Training
- Changes in Incentives
- Industry Forecasts

Trade allies suggested the following as additional services offered through the FinAnswer Express program:

- More educational seminars
- Referrals to customers
- Information on dairy farm projects

Trade allies suggested the following as general improvements to the FinAnswer Express program:

- Keep trade allies educated and informed
- Simplify tools
- Work as a partner to trade allies
- Create online features

4.3 Overall Process Findings

The evaluation team sought to answer seven process evaluation research questions. This section lists the questions and summarized answers.

1. **What are the program goals, concept and design?**

   The FinAnswer Express program in Washington sought to improve energy efficiency of existing equipment at commercial and industrial sites. The concept behind FinAnswer Express was to offer prescriptive and custom incentives to commercial and industrial customers that implemented energy efficiency projects. PacifiCorp designed the program in a way to make the process easy and simple for customers to apply for rebates for energy efficiency projects by offering customers a comprehensive set of deemed measures. PacifiCorp also provided a provision for customers to apply for incentives for measures not listed on the program's prescriptive incentive tables. In addition to offering incentives for measures, program administrators continued to coordinate a trade ally network to engage trade allies in energy efficiency and the Pacific Power energy efficiency programs.

2. **Do program staff and administrators have the resources and capacity to implement the program as planned, and if not, what is needed?**

   Yes. Program managers and administrators indicated they had the resources and capacity to implement the program as planned. Trade allies indicated that they had a primary program contact to which they could reach out and receive prompt and knowledgeable assistance; however some trade allies asked for more one-on-one interactions from program administrators.

3. **Is the program being delivered in accordance with the logic model?**

   All activities and expected outputs and outcomes occurred based on program logic for both the pre and post purchase paths. The program activities to reach out to the trade allies and customers, and also reach customers through trade allies, are working; membership in the EEA is increasing, and customers learned about the program mostly through these allies. Trade allies would prefer better marketing materials to improve their outcomes, but they generally do note improvements in their business due to the program. Project applications and incentives are being processed; customers are getting their incentives. Project inspections are generally recalled, and favorably, by customers whose projects have them. The one mid-term outcome of the program theory that is occurring, but to a limited extent, is that program participation is

intended to influence customers to pursue more projects in the future. According to participant survey results, a minority (17 percent) of FinAnswer Express participant respondents reported they had plans to pursue energy efficiency in the future. In addition, about one third of customers do not know if they are achieving the expected energy savings, a key aspect of the logic; however, energy savings are anticipated as long-term outcomes.

4. **Is the program marketing effective? Specifically, how do participants find out about the programs?**

   Participants most commonly reported to learn about the program through word of mouth. Specifically, 47 percent of respondents heard about the program from trade allies, vendors and contractors, and 18 percent heard about the program from business colleagues (nine percent) or friends and family (nine percent) Other common sources of awareness were through prior participation in a Pacific Power program (nine percent) and Pacific Power staff (seven percent). Interestingly, only four respondents reported to learn about the FinAnswer Express program through indirect marketing channels including the Pacific Power newsletter, radio advertisement, or television advertisement.

5. **What is the program influence on participant actions? Specifically, what do participants identify as most important to their projects (i.e. program information, incentive/credit, payback, engineering, their own company goals, etc.)?**

   The evaluation team found many influential factors that motivated participant respondents to participate in the program. Program participants were most influenced to participate in the FinAnswer Express program by saving money on electric bills (26 percent) and the ability to obtain an incentive (23 percent). Additionally, more than half of participants also reported the following factors as extremely important in deciding to install energy efficiency equipment: the Pacific Power incentive, information on payback, previous participation in a Pacific Power program, and a recommendation from a contractor or vendor. Combined, these findings show that the program is reaching the key levers on providing customers with the information and financial benefits to drive energy efficient purchases.

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

   Participant respondents reported costs to be a major barrier to conducting more energy efficiency projects. Specifically, 33 percent of participant respondents reported lack of access to capital and 27 percent of respondents reported high upfront costs as a barrier. Additional barriers cited included: long payback, low priority, and lack of information. Some participants (13 percent) said that there were no barriers impeding future energy efficiency improvements. Another additional barrier may be that participants are unaware of additional opportunities because over half (55 percent) of participant respondents were not aware of any additional changes they could make to improve energy efficiency at their organization.

7. Are participants achieving planned outcomes? Specifically, are participants feeling satisfied?

Yes, participants are achieving planned outcomes; however, only 16 percent of respondents had future energy efficiency plans in place. The majority of these customers planned to work with Pacific Power to install energy-efficient equipment: ten percent of respondents planned to work with Pacific Power on future projects and six percent of the respondents stated they planned to install energy efficient equipment without incentives. The majority of participants expressed satisfaction with all aspects of the program including: the pre-installation report, installed measures, post-installation inspection, vendor assistance, equipment status, savings benefits, non-energy benefits, and the overall project. Nearly all (86 percent) of respondents were satisfied with the program: 69 percent were very satisfied. Respondents were more satisfied with the performance of non-lighting measures (95 percent) than lighting measures (78 percent).

5 Program Evaluation Recommendations

5.1 PY 2012-2013 Recommendations

The evaluation team suggests the following recommendations to continue to enhance the efficiency and effectiveness of the FinAnswer Express function as it transitions to the *wattsmart* Business program for future evaluation cycles:

- **Recommendation 1. Review procedure for determining claimed hours of use for lighting projects with savings above 200,000 kWh.** The primary driver for discrepancies between reported and evaluated energy savings for the FinAnswer Express program is a difference in claimed HOU for lighting measures. Navigant recommends that PacifiCorp analyze the benefits of increasing the HOU accuracy, either through the increased use of data loggers or other means, for large projects over 200,000 kWh, against the associated costs or potential customer pushback of implementing a new procedure.

- **Recommendation 2. When entering lighting project details into the program tracking database, use measure sub-types that allow for greater resolution in the application of effective useful life (EUL) values.** Capturing measure sub-types for lighting projects provides for greater detail when identifying conditions such as effective useful life (EUL) and savings estimates. For example, lighting controls, LEDs, CFLs and linear fluorescent lamps should each receive different EULs. PacifiCorp cannot apply this level of detail without first identifying sub-types within the database. The four lighting groups listed here are a suggested starting point for the applicable sub-types, but the final selection should be determined, at least in part, by the intended future source of the EUL. It is likely that the shift to the *wattsmart* Business program in PY 2014 will include adding measure sub-types, but as of this evaluation in PY 2012-2013, they are not apparent.

- **Recommendation 3. Use greater resolution in the application of effective useful life (EUL) values in the program tracking database.** Applying a single EUL to all lighting measures potentially underrepresents energy savings, cost-effectiveness, and associated resource value for LEDs, as well as overestimates the life expectancy of lighting controls. EULs are currently based on the 2008 version of DEER and heavily weighted toward fluorescent lamps. Lighting measures contribute nearly 90 percent of total program savings and fine-tuning the EUL applied for these projects will offer greater confidence in the final cost benefit ratio for this measure category.[41] PacifiCorp currently tracks projects which include LED lamps at the measure level so applying an LED EUL should not be difficult. However, the database tracks lighting control savings in aggregate with lighting fixtures, and projects that may combine multiple technologies are often entered as "lighting packages." PacifiCorp must list these technologies separately in order to apply varying EULs (see recommendation #2).[42]

[41] See Figure 5 in section 3.3 for the direct impacts of EUL adjustments on PacifiCorp's Total Resource Cost test.
[42] The updated 2014 version of DEER provides guidance on EUL by specific lighting technology, but further secondary research in this area is advisable prior to implementation of this recommendation.

5.2 PY 2009-2011 Recommendation Review

The evaluation team reviewed the recommendations made in the prior 2009-2011 program evaluation to track any progress made by Pacific Power. The following lists the prior recommendations and the results of this review.

» **Modify reported operating hours in project files to specify lighting hours, effects of seasonality, and specific holidays. This will help clarify the analysis process and result in better estimates of actual savings.** The current FinAnswer Express application is one of the better designed applications that the evaluation team has observed. It collects essential information in a simple and concise manner. In Washington, the evaluation team observed that approximately 26 percent of the sites sampled had seasonal variation in operating hours; this is indicative of the nature of the customers in PacifiCorp's Washington service territory. These customers include food and fruit processing, which have heavy seasonal variation in operating hours. The following modifications would clarify the analysis process and create less variation in realization rates, and better overall savings estimates in future program cycles:

- When listing the hours of operation, Pacific Power should reflect changes in operating hours due to seasonality. For example, a fruit production company might run on one schedule for most of the year, except for 4 months during peak season when all lights are on. This seasonality adjustment allows for a more accurate characterization of annual operating hours. This is particularly important for fruit and food processing sites that are prevalent in Washington.
  Review Results *– The lighting analysis tool tracks seasonal schedules and only one sampled project required hours of use adjustment due to seasonal corrections.*
- Operation schedules should reflect lighting schedules for specific parts of the building, by lighting group. The hours of operation should specifically reflect the hours that lights are on in a certain schedule group since business hours don't always reflect lighting hours. For example, if the front office is occupied 9 hours a day M-F, Pacific Power should ask the customer whether the lights are also on for 9 hours a day. Sometimes asking that clarification question will result in drastically different annual operating hours for an area.
  Review Results *– The lighting analysis tool allows for the application of multiple schedules, however program implementers still occasionally lump zones with wide variance in daily use profiles into a single schedule group.*
- Instead of asking whether the business is open for major holidays as a yes/no question and the number of total holidays in a year, Pacific Power should consider asking customers the specific days that lights are not operational. For example, a warehouse could have five annual holidays. However, the lights may still be on the same working schedule during those five days. In addition, if some of those five days fall during the peak operating season, overall savings estimates could be altered, especially in cases of warehouses and fruit processing plants in Washington.
  Review Results *– The lighting analysis tool tracks holiday schedules.*

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Appendix A Glossary[43]

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: 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. 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 website: <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. Sometimes referred to as "business-as-usual" conditions. 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).

[43] 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 "after the fact").

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 "before the event").

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-To-Gross Analysis

The Washington Utilities and Transportation Commission requires conducting cost-effectiveness tests with an applied NTG ratio of 1.0. The evaluation team used the required NTG of 1.0 for 2012-2013 FinAnswer Express program evaluation, but also calculated a NTG of 0.82 to use for comparison purposes.

Table 32 provides the process evaluation findings of free-ridership and spillover used to calculate the NTG ratio of 0.82

Table 32: Savings-Weighted Program Influence for PY2012-2013

Part of Year	Free Ridership Score	Like Spillover Score	Unlike Spillover Score	Net Savings Ratio
First Half 2012 (completed Jan 1, 2012-June 30, 2012)	0.15	0.01	None	0.86
Second Half 2012 (completed July 1, 2012-December 31, 2012)	0.15	0.01	Yes, Not Quantifiable	0.86
First Half 2013 (completed Jan 1, 2013-June 30, 2013)	0.28	0.01	Yes, Not Quantifiable	0.72
Second Half 2013 (completed July 1, 2013-December 31, 2013)	0.18	0.00	Yes, Not Quantifiable	0.82
Savings Weighted Total	0.19	0.01	--	0.82

Table 33 provides evaluated program-level demand and energy savings with the NTG ratio of 0.82 applied.

Table 33. Program-Level Net Realization Rates for Washington FinAnswer Express (2012-2013)

Program Year	Reported Demand Savings (kW)	Net Evaluated Demand Savings (kW)	Net Evaluated Demand Realization Rate	Reported Energy Savings (kWh)	Net Evaluated Energy Savings (kWh)	Net Evaluated Energy Realization Rate
2012	2,276	2,147	*94%*	11,967,220	8,811,035	*74%*
2013	1,943	1,835	*94%*	11,745,394	8,758,206	*75%*
All	4,219	3,982	*94%*	23,712,614	17,569,242	*74%*

The following tables show the cost-benefit results for each year, as well as combined years, for applied NTG ratios of both 1.0 and 0.82 for comparison purposes only.

Table 34. WA FinAnswer Express Cost-Benefit Results – 2012 (1.0 NTG)

Benefit-Cost Test Performed	Evaluated Gross Savings (kWh)	Evaluated Net Savings (kWh)	Evaluated Costs	Evaluated Benefits	B/C Ratio
PacifiCorp Total Resource Cost Test (PTRC)	10,745,166	10,745,166	$6,725,178	$11,523,148	1.71
Total Resource Cost Test (TRC)	10,745,166	10,745,166	$6,725,178	$10,475,590	1.56
Utility Cost Test (UCT)	10,745,166	10,745,166	$2,651,077	$10,475,590	3.95
Rate Impact Test (RIM)	10,745,166	10,745,166	$10,854,267	$10,475,590	0.97
Participant Cost Test (PCT)	10,745,166	10,745,166	$5,413,092	$9,542,180	1.76

Table 35. WA FinAnswer Express Cost-Benefit Results – 2013 (1.0 NTG)

Benefit-Cost Test Performed	Evaluated Gross Savings (kWh)	Evaluated Net Savings (kWh)	Evaluated Costs	Evaluated Benefits	B/C Ratio
PacifiCorp Total Resource Cost Test (PTRC)	10,680,740	10,680,740	$5,718,879	$7,962,157	1.39
Total Resource Cost Test (TRC)	10,680,740	10,680,740	$5,718,879	$7,238,325	1.27
Utility Cost Test (UCT)	10,680,740	10,680,740	$2,821,463	$7,238,325	2.57
Rate Impact Test (RIM)	10,680,740	10,680,740	$10,677,441	$7,238,325	0.68
Participant Cost Test (PCT)	10,680,740	10,680,740	$4,477,237	$9,435,800	2.11

Table 36. WA FinAnswer Express Cost-Benefit Results – PY 2012-2013 Combined (1.0 NTG)

Benefit-Cost Test Performed	Evaluated Gross Savings (kWh)	Evaluated Net Savings (kWh)	Evaluated Costs	Evaluated Benefits	B/C Ratio
PacifiCorp Total Resource Cost Test (PTRC)	21,425,906	21,425,906	$12,444,057	$19,485,306	1.57
Total Resource Cost Test (TRC)	21,425,906	21,425,906	$12,444,057	$17,713,914	1.42
Utility Cost Test (UCT)	21,425,906	21,425,906	$5,472,541	$17,713,914	3.24
Rate Impact Test (RIM)	21,425,906	21,425,906	$21,531,708	$17,713,914	0.82
Participant Cost Test (PCT)	21,425,906	21,425,906	$9,890,329	$18,977,980	1.92

Table 37. WA FinAnswer Express Cost-Benefit Results – 2012 (0.82 NTG)

Benefit-Cost Test Performed	Evaluated Gross Savings (kWh)	Evaluated Net Savings (kWh)	Evaluated Costs	Evaluated Benefits	B/C Ratio
PacifiCorp Total Resource Cost Test (PTRC)	10,745,166	8,902,847	$5,750,822	$9,582,384	1.67
Total Resource Cost Test (TRC)	10,745,166	8,902,847	$5,750,822	$8,711,258	1.51
Utility Cost Test (UCT)	10,745,166	8,902,847	$2,651,077	$8,711,258	3.29
Rate Impact Test (RIM)	10,745,166	8,902,847	$9,473,844	$8,711,258	0.92
Participant Cost Test (PCT)	10,745,166	8,902,847	$5,413,092	$9,542,180	1.76

Table 38. WA FinAnswer Express Cost-Benefit Results – 2013 (0.82 NTG)

Benefit-Cost Test Performed	Evaluated Gross Savings (kWh)	Evaluated Net Savings (kWh)	Evaluated Costs	Evaluated Benefits	B/C Ratio
PacifiCorp Total Resource Cost Test (PTRC)	10,680,740	8,666,397	$4,912,976	$6,504,370	1.32
Total Resource Cost Test (TRC)	10,680,740	8,666,397	$4,912,976	$5,913,064	1.20
Utility Cost Test (UCT)	10,680,740	8,666,397	$2,821,463	$5,913,064	2.10
Rate Impact Test (RIM)	10,680,740	8,666,397	$9,248,447	$5,913,064	0.64
Participant Cost Test (PCT)	10,680,740	8,666,397	$4,477,237	$9,435,800	2.11

Table 39. WA FinAnswer Express Cost-Benefit Results – PY 2012-2013 Combined (0.82 NTG)

Benefit-Cost Test Performed	Evaluated Gross Savings (kWh)	Evaluated Net Savings (kWh)	Evaluated Costs	Evaluated Benefits	B/C Ratio
PacifiCorp Total Resource Cost Test (PTRC)	21,425,906	17,569,245	$10,663,798	$16,086,754	1.51
Total Resource Cost Test (TRC)	21,425,906	17,569,245	$10,663,798	$14,624,322	1.37
Utility Cost Test (UCT)	21,425,906	17,569,245	$5,472,541	$14,624,322	2.67
Rate Impact Test (RIM)	21,425,906	17,569,245	$18,722,291	$14,624,322	0.78
Participant Cost Test (PCT)	21,425,906	17,569,245	$9,890,329	$18,977,980	1.92

Appendix C Cost-Effectiveness Measure Lifetimes

Table 40 provides the individual measure lifetimes used for Washington FinAnswer Express's cost-effectiveness tool for the evaluated PY 2012-2013.

Table 40. WA FinAnswer Express Cost-Benefit Inputs – Measure Lifetimes

Measure Lifetimes	2012	2013
Appliance	9	NA
Building Shell	20	20
Food Service	12	12
HVAC	15	15
Lighting	14	14
Motors	15	15
Office	5	NA
Compressed Air	9	9
Dairy Farm Equipment	10	10
Irrigation	5	5
Refrigeration	NA	14

Appendix D Sample to Population Extrapolation Methodology

Navigant calculated program level evaluated savings by first determining a realization rate for each strata based on project-level savings, regardless of the type of measures installed. Using the evaluation sample, the team then determined a realization rate for each combination of measure category and sample strata. If a given combination of measure category and project strata appears in the evaluation sample, the realization rate for that specific combination is based on verified results for all sampled measures matching that combination. If a given measure-strata combination is not present in the sample frame, the realization is estimated using the general strata level realization rate, which represents a blend of all measure types in similarly sized projects.

Once each measure-strata combination has the most applicable and accurate realization rate available, the three strata level realization rates for each measure are weighted based on kWh savings. This measure level, weighted realization rate is the final realization rate calculated for each measure category. These measure level realization rates are then mapped to the population of all measures installed through the program. In this way, the performance of each individual measure category is proportionally represented in the program results regardless of the frequency with which it appeared in the evaluation sample, while maintaining the overall statistical validity of the stratified random sample as a whole. Table 41 shows these realization rates by measure category, as well as the distribution of reported energy savings for the current PY 2011-2013 evaluation.

Table 41. Measure-Level Realization Rates for Washington FinAnswer Express (PY 2012-2013)

Measure Category	2012-2013 Reported Energy Savings (kWh)	Sample as % of Total Population for that Measure	2012-2013 Realization Rate
Lighting	21,392,141	17%	89%
Compressed Air	611,162	30%	118%
Agriculture	683,409	0.5%	99%
Office	216,580	100%	100%

Navigant did not sample at the measure category-level at a 90/10 confidence and precision and provide these results for informational purposes only.

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Figure 21 provides the detail breakdown by measure category and strata used to arrive at the blended, weighted realization rates.

Figure 21. Measure Category / Strata Level Realization Rate Detail

	Claimed Savings in Population				Claimed kWh (sample)			Verified kWh (sample)			Realization Rate (sample)			RR Normalizing Factor (Population)			Weighted Realization Rate
Sample Results	Tier 1	Tier 2	Tier 3	Total	Tier 1	Tier 2	Tier 3	Tier 1	Tier 2	Tier 3	Tier 1	Tier 2	Tier 3	Tier 1	Tier 2	Tier 3	end goal
Lighting - CI	8,335,957	6,499,509	6,556,675	21,392,141	2,464,586	1,016,316	203,282	2,018,563	892,651	191,566	82%	88%	94%	0.3897	0.3038	0.3065	87%
Irrigation - Ag	0	62,843	620,566	683,409	0	0	3,116	0	0	3,116	100%	94%	100%	0.0000	0.0920	0.9080	99%
Compressed Air - CI	0	404,336	206,826	611,162	0	180,479	0	0	235,655	0	100%	131%	94%	0.0000	0.6616	0.3384	118%
HVAC - CI	0	244,856	125,465	370,321	0	0	0	0	0	0	100%	94%	94%	0.0000	0.6612	0.3388	94%
Office	216,580	0	0	216,580	216,580	0	0	216,580	0	0	100%	100%	100%	1.0000	0.0000	0.0000	100%
Building Shell - CI	0	72,000	59,598	131,598	0	0	0	0	0	0	100%	94%	94%	0.0000	0.5471	0.4529	94%
Food Service	0	39,270	89,008	128,278	0	0	0	0	0	0	100%	94%	94%	0.0000	0.3061	0.6939	94%
Dairy Farm Equipment	0	0	69,161	69,161	0	0	0	0	0	0	100%	100%	94%	0.0000	0.0000	1.0000	94%
Refrigeration - CI	0	0	65,062	65,062	0	0	0	0	0	0	100%	100%	94%	0.0000	0.0000	1.0000	94%
Motors - CI	0	0	44,902	44,902	0	0	0	0	0	0	100%	100%	94%	0.0000	0.0000	1.0000	94%
Sub-Total	8,552,537	7,322,814	7,837,263	23,712,614	2,681,166	1,196,795	206,398	2,235,143	1,128,306	194,682							
Other	0	0	0	0	0	0	0	0	0	0	100%	100%	100%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
TOTAL	8,552,537	7,322,814	7,837,263	23,712,614	2,681,166	1,196,795	206,398	2,235,143	1,128,306	194,682	83%	94%	94%	0.3606746	0.3088151	0.3305103	**90.36%**

Appendix E RTF Reference Tables

The following tables provide the HVAC interactive impacts used by Navigant to calculate lighting savings for the evaluation of PY 2012-2013 FinAnswer Express program.

Table 42. HVAC Interactive Factors (A)

Building Type	Electric Resistance w/ Cooling	Electric Resistance w/o Cooling	Heat Pump w/ Cooling
Automotive Repair	87%	87%	102%
College or University	68%	68%	96%
Exterior 24 Hour Operation	100%	100%	100%
Hospital	29%	29%	65%
Industrial Plant with One Shift	61%	61%	81%
Industrial Plant with Three Shifts	61%	61%	81%
Industrial Plant with Two Shifts	61%	61%	81%
Library	87%	87%	102%
Lodging	69%	69%	90%
Manufacturing	61%	61%	81%
Office <20,000 sf	69%	69%	96%
Office >100,000 sf	91%	91%	102%
Office 20,000 to 100,000 sf	92%	92%	102%
Other Health, Nursing, Medical Clinic	92%	92%	102%
Parking Garage	100%	100%	100%
Restaurant	43%	43%	73%
Retail 5,000 to 50,000 sf	68%	68%	93%
Retail Anchor Store >50,000 sf Multistory	71%	71%	97%
Retail Big Box >50,000 sf One-Story	82%	82%	103%
Retail Boutique <5,000 sf	76%	76%	98%
Retail Mini Mart	69%	69%	95%
Retail Supermarket	85%	85%	97%
School K-12	57%	57%	86%
Street & Area Lighting (Photo Sensor Controlled)	100%	100%	100%
Warehouse	61%	61%	81%
Worship	87%	87%	102%
Other	87%	87%	102%

Source: NW Regional Technical Forum - Standard Protocol Calculator - http://rtf.nwcouncil.org/subcommittees/nonreslighting/

Table 43. HVAC Interactive Factors (B)

Building Type	Heat Pump w/o Cooling	Gas, Oil, or Biomass w/ Cooling	Gas, Oil, or Biomass w/o Cooling
Automotive Repair	102%	103%	103%
College or University	96%	111%	111%
Exterior 24 Hour Operation	100%	100%	100%
Hospital	65%	94%	94%
Industrial Plant with One Shift	81%	96%	96%
Industrial Plant with Three Shifts	81%	96%	96%
Industrial Plant with Two Shifts	81%	96%	96%
Library	102%	103%	103%
Lodging	90%	105%	105%
Manufacturing	81%	96%	96%
Office <20,000 sf	96%	112%	112%
Office >100,000 sf	102%	107%	107%
Office 20,000 to 100,000 sf	102%	108%	108%
Other Health, Nursing, Medical Clinic	102%	108%	108%
Parking Garage	100%	100%	100%
Restaurant	73%	96%	96%
Retail 5,000 to 50,000 sf	93%	103%	103%
Retail Anchor Store >50,000 sf Multistory	97%	110%	110%
Retail Big Box >50,000 sf One-Story	103%	112%	112%
Retail Boutique <5,000 sf	98%	104%	104%
Retail Mini Mart	95%	105%	105%
Retail Supermarket	97%	105%	105%
School K-12	86%	100%	100%
Street & Area Lighting (Photo Sensor Controlled)	100%	100%	100%
Warehouse	81%	96%	96%
Worship	102%	103%	103%
Other	102%	103%	103%

Source: NW Regional Technical Forum - Standard Protocol Calculator - http://rtf.nwcouncil.org/subcommittees/nonreslighting/

Table 44. HVAC Interactive Factors (C)

Building Type	Cooling w/o Heat	Refrigerated Space	None/Exterior
Automotive Repair	100%	130%	100%
College or University	100%	130%	100%
Exterior 24 Hour Operation	100%	100%	100%
Hospital	100%	130%	100%
Industrial Plant with One Shift	100%	130%	100%
Industrial Plant with Three Shifts	100%	130%	100%
Industrial Plant with Two Shifts	100%	130%	100%
Library	100%	130%	100%
Lodging	100%	130%	100%
Manufacturing	100%	130%	100%
Office <20,000 sf	100%	130%	100%
Office >100,000 sf	100%	130%	100%
Office 20,000 to 100,000 sf	100%	130%	100%
Other Health, Nursing, Medical Clinic	100%	130%	100%
Parking Garage	100%	100%	100%
Restaurant	100%	130%	100%
Retail 5,000 to 50,000 sf	100%	130%	100%
Retail Anchor Store >50,000 sf Multistory	100%	130%	100%
Retail Big Box >50,000 sf One-Story	100%	130%	100%
Retail Boutique <5,000 sf	100%	130%	100%
Retail Mini Mart	100%	130%	100%
Retail Supermarket	100%	130%	100%
School K-12	100%	130%	100%
Street & Area Lighting (Photo Sensor Controlled)	100%	100%	100%
Warehouse	100%	130%	100%
Worship	100%	130%	100%
Other	100%	130%	100%

Source: NW Regional Technical Forum - Standard Protocol Calculator - http://rtf.nwcouncil.org/subcommittees/nonreslighting/

Appendix F EM&V Best Practices

The term "best practices" refers to practices that, when compared against other practices, produce superior results. In the context of this study, the evaluation team defined best practices to be those methods, procedures, and protocols that maximized the accuracy and statistical validity of impact evaluation findings. The specific best practices considered in this study were compiled through a review of secondary literature, a comparison of similar programs and evaluation outcomes, and prior evaluation experience. Table 45 details the specific evaluation, measurement, and verification (EM&V) studies reviewed for this effort.

Table 45. EM&V Best Practice Studies Reviewed

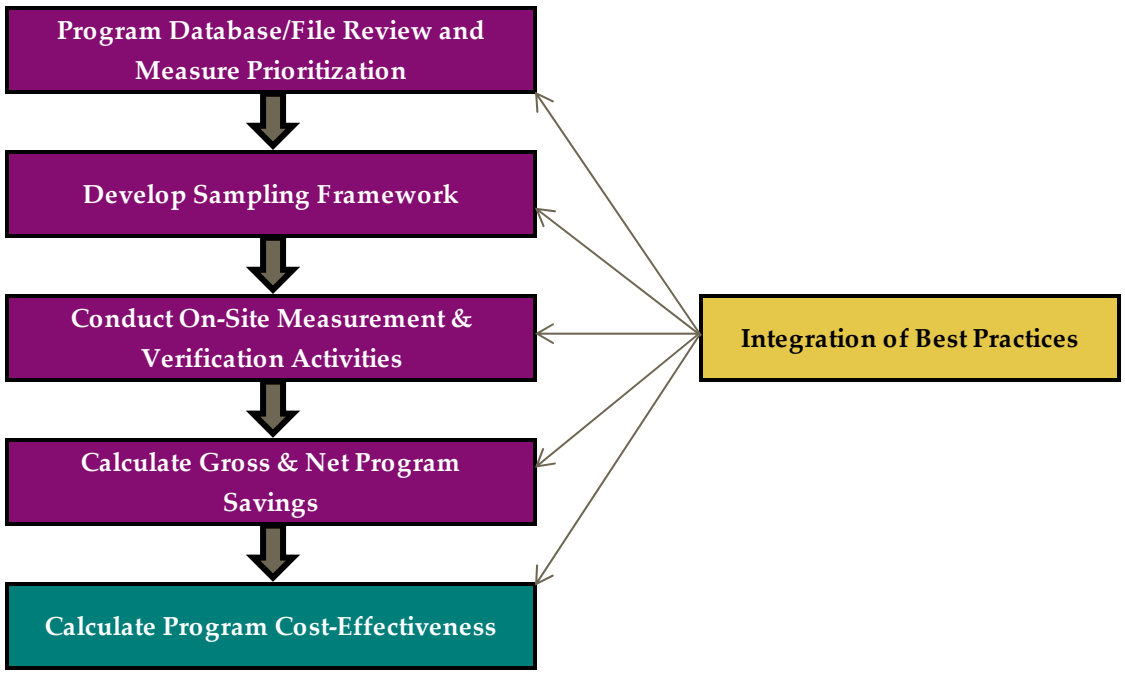
Organization	Study Name	Publication Year
National Renewable Energy Laboratory (NREL) Department of Energy (DOE)	The Uniform Methods Project: Methods for Determining Energy Efficiency Savings for Specific Measures	2013
The Brattle Group	Measurement and Verification Principles for Behavior-Based Efficiency Programs	2011
Berkeley National Laboratory	Review of Evaluation, Measurement, and Verification Approaches Used to Estimate the Load Impacts and Effectiveness of Energy Efficiency Programs	2010
State of California, Public Utilities Commission	Best Practices Benchmarking for Energy Efficiency Programs	2009
Enbridge Gas Distribution	DSM Best Practices for Natural Gas Utilities: the Canadian Experience	2008
Consortium for Energy Efficiency	Energy Efficiency Program Evaluation: A Guide to the Guides	2008
Minnesota Office of Energy Security	Measurement and Verification Protocols for Large Custom CIP Projects - Version 1.0	2008
Northern California Power Agency	E, M &V Best Practices: Lessons Learned from California Municipal Utilities	2008
National Action Plan for Energy Efficiency Leadership Group	Model Energy Efficiency Program Impact Evaluation Guide: A Resource of the National Action Plan for Energy Efficiency	2007
State of California, Public Utilities Commission	California Energy Efficiency Evaluation Protocols: Technical, Methodological, and Reporting Requirements for Evaluation Professionals	2006
American Council for an Energy-Efficient Economy	America's Best: Profiles of America's Leading Energy Efficiency Programs	2003

Each report presented valuable insight into best practices within the field of EM&V. However, the evaluation team documented, characterized, and prioritized those best practices with the following properties:

- » Cross-cutting best practices with a high level of representation across each of the studies reviewed
- » Best practices consistent with past evaluation experience and interviews with program managers in other jurisdictions
- » Best practices demonstrating the most applicability towards Pacific Power's C&I Programs

The subsequent M&V methods developed for the Impact and Process Evaluation of Washington's 2012-2013 C&I Programs reflect the outcome of this independent review. Figure 22 provides an illustration of how the Best Practices Review informed the overall evaluation methods chosen for this effort.

Figure 22. Overview of Impact Evaluation Strategy



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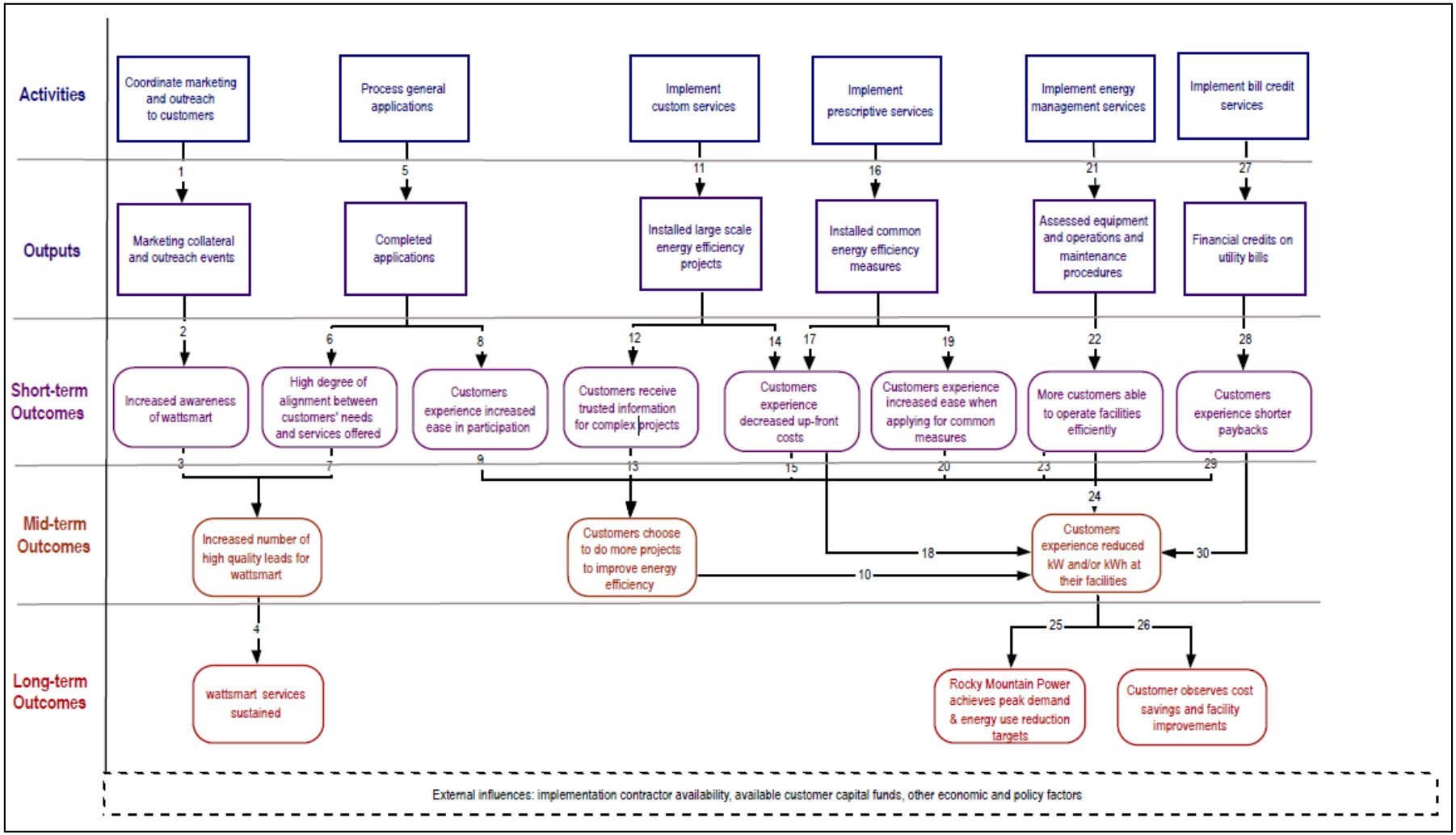
Appendix G *wattsmart* Business Program Logic Model

The *wattsmart* program is an umbrella program encompassing all of Pacific Power's energy efficiency services. The *wattsmart* program provides customers with a suite of programs based on the former Pacific Power energy efficiency programs:

- Energy FinAnswer – offers incentives for large-scale energy efficiency projects
- FinAnswer Express – offers incentives for small-scale energy efficiency projects, including prescriptive measures
- Energy Management Services (formally called Recommissioning) – offers incentives for optimizing equipment and operating and maintenance procedures
- Bill Credit Services – offers financial credits on utility bills for energy efficiency projects

The logic model presented in Figure 23, therefore, depicts the logic for each activity carried out by implementers as part of the *wattsmart* program. As shown, implementers perform marketing and outreach, processes applications, and implement the four energy efficiency services (Energy FinAnswer, FinAnswer Express, Energy Management Services, and Bill Credit Services).
The overall purpose of developing the *wattsmart* program is to offer customers with a streamlined application process for energy efficiency services. By offering one energy efficiency program, customers do not need to choose a specific energy efficiency program. Instead, customers submit one application and program staff can direct customers to the most applicable service. By providing a suite of services catered to unique customer needs, *wattsmart* intends the program to generate higher quality leads and encourage customers to carry out more energy efficiency projects. Ultimately, implementers expect the program to generate enough energy savings and demand reductions for Pacific Power to meet its energy use reduction targets. The list following Figure 23 describes the detailed program theory by referencing the numbered links in the figure.

Figure 23. *wattsmart* Business Program Logic Model (2013)



Each number in the following list corresponds to a linkage in the logic model diagram and provides further details for the *wattsmart* program theory.

1. Rocky Mountain Power staff coordinates marketing and outreach to customers through marketing collateral and outreach events.
2. Marketing and outreach functions increase customer awareness of *wattsmart*.
3. Increasing customer awareness of *wattsmart* increases the number of high quality leads, defined as eligible customers that can directly benefit from program services than would have occurred without any marketing or outreach.
4. Program sustainability over time improves with increased customer awareness of *wattsmart*.
5. Program staff processes general applications to ensure completeness and direct customers to the best *wattsmart* service.
6. Processing general applications ensures that customers' needs align with program services.
7. Aligning customers' needs with program services means that more customers can or are willing to participate in *wattsmart*, resulting in greater leads for program services.
8. Allowing customers to submit general applications for the entire *wattsmart* program is intended to ease the customers' experiences with the application process, making it simpler and more direct.
9. By making the application process simple, customers will be more likely to conduct more energy efficiency projects.
10. When customers conduct more energy efficiency projects, they continue to experience reduced demand and/or energy savings at their facilities.
11. Customers may use the custom offerings portion of the *wattsmart* Business program to install large-scale, site-specific energy efficiency projects.
12. The custom portion of *wattsmart* provides customers with trusted information on complex energy efficiency project that they would not receive otherwise.
13. Providing trusted information to customers on complex projects allows them to follow through with more energy efficiency projects than they would have otherwise.
14. Participation in the custom portion of *wattsmart* provides customers financial incentives which help decrease upfront costs for energy efficiency projects.
15. By decreasing upfront costs, participants are able to conduct even more energy efficiency projects.
16. Customers may use the prescriptive offerings portion of *wattsmart* to install common energy efficiency measures such as lighting and/or HVAC equipment.
17. The prescriptive service provides incentives for common energy efficiency measures, thereby decreasing customers' upfront costs for efficiency improvements.

18. By helping to cover some of the upfront costs, customers are able to install energy efficiency equipment and hence reduce their energy costs or demand at their facilities.
19. The purpose of offering an "express" program is to provide customers with a simple means to receive financial incentives for common measures.
20. When customers feel that the incentive process is easy, they are more likely to conduct more energy efficiency projects through *wattsmart*.
21. Program staff provides a variety of energy management services to assess customers' operations and maintenance (O&M) procedures and equipment.
22. The overall purpose of providing energy management services is to help more customers operate their facilities efficiently.
23. By participating in this program, program staff identifies energy efficiency opportunities, which allow customers to install more energy efficiency projects in the future.
24. When customers operate their facilities efficiently, they generate demand reductions and energy savings.
25. When individual customers can generate demand reductions and energy savings, Rocky Mountain Power can achieve peak demand and energy use targets.
26. When customers are able to save energy, they also receive added benefits of energy cost savings and facility improvements.
27. Providing bill credit services allows customers to receive financial credits on their utility bills for energy efficiency projects.
28. Bill credits are intends to provide customers with shorter paybacks for energy efficiency projects.
29. Receiving bill credits allow customers to install more energy efficiency projects.
30. When install more energy efficient projects, they generate energy savings and reduced demand.

NAVIGANT

Appendix H FinAnswer Express Participant Survey

Variables

Variable Name	Description	Type
&CONTACT	Respondent name	Text
&FIRM	Company name	Text
&PROGRAM	"FinAnswer Express" "Energy FinAnswer" "Self-Direction Credit"	Text
&PROG_CODE	1="FinAnswer Express" 2="Energy FinAnswer" 3="Self-Direction Credit"	Numeric
&SITE	Address	Text
&YEAR	Year of project completion	YYYY
&PACIFICORP	"Rocky Mountain Power" or "Pacific Power"	Text
&PREDATE	Date of first inspection	Date MMYYYY
&POSTDATE	Date of post inspection	Date MMYYYY
&INSTALLED_MEASURES	List of installed measures	Text
&MEASURE_1	Name of Measure 1	Text
&MEASURE_2	Name of Measure 2	Text
& MULT_MEASURES	Flag for more than one measure	BINARY
&INCENTIVE	Amount paid for participation	Numeric
&PM	Flag for PM delivered project 1 = PM deliver project	BINARY
&NC	Flag for New construction project 1 = new construction project	BINARY

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."]**

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

[IF VERIFICATION NEEDED, 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 IS3**
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→ **TERMINATE**
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. Which of these efficiency improvements were installed? [READ AND SELECT ALL THAT APPLY]

1. &MEASURE_1
2. &MEASURE_2
3. &INSTALLED_MEASURES
4. None of these

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

[IF **IS2a** <> 4, SKIP TO **IS3**]
IS2e. What is the correct address where the equipment was installed?

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

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

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

Project Recall

PR1. Today, I'm going to focus on the project I mentioned with the &INSTALLED_MEASURES. To your knowledge, did you work with &PACIFICORP on other projects before this one?

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

PR2. And, to your knowledge, did you work with &PACIFICORP on other projects since this one?

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

Awareness & Participation

AP1. How did you first become aware of &PROGRAM? **[DO NOT READ; CHECK ALL THAT APPLY]**

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. Another Energy Efficiency Program (CONFIRM NOT A PACIFICORP PROGRAM)
16. Other [SPECIFY]
88. DON'T KNOW/NOT SURE
99. REFUSE

AP2. Why did your firm decide to participate in the program? **[DO NOT READ; CHECK ALL THAT APPLY]**

1. To save money on electric bills.
2. To save money on maintenance costs
3. To obtain an incentive.
4. To replace old or poorly working equipment.
5. To replace broken or failed equipment.
6. To acquire the latest technology.
7. Because the program was sponsored by &PACIFICORP
8. Previous experience with &PACIFICORP
9. To protect the environment/be "green"
10. To save energy (no costs mentioned)
11. To comply with a standard or policy requirement
12. Recommendation by contractors/vendors
13. Recommended by colleague
14. Recommended by family, friend or neighbor
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 the decision to participate in the program? **[ALLOW ONLY ONE RESPONSE..]**

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

9. To protect the environment/be "green"
10. To save energy (no costs mentioned)
11. To comply with a standard or policy requirement
12. Recommendation by contractors/vendors
13. Recommended by colleague
14. Recommended by family, friend or neighbor
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

Website Section

WW1. Have you ever visited the &PACIFICORP *wattsmart* energy efficiency website?

1. YES
2. NO → **SKIP to EE1**

88. DON'T KNOW/NOT SURE → **SKIP to EE1**

99. REFUSED → **SKIP to EE1**

WW2. How many times have you visited the &PACIFICORP *wattsmart* energy efficiency website in the last year?

1. ONCE
2. SELDOM (LESS THAN ONCE PER MONTH; 2 to10 TIMES)
3. ABOUT ONCE PER MONTH (10 to 13 TIMES)
4. FREQUENTLY (MORE THAN ONCE PER MONTH; MORE THAN 13 TIMES)

88. DON'T KNOW/NOT SURE

99. REFUSED

WW3. Why did you visit the &PACIFICORP *wattsmart* energy efficiency website?

1. **[RECORD RESPONSE]**

88. DON'T KNOW/NOT SURE

99. REFUSED

WW4. Were you able to find the information you needed on the *wattsmart* website?

1. YES
2. NO

88. DON'T KNOW/NOT SURE

99. REFUSED

Pre-Installation Section

[IF &PROG_CODE=2 OR &PREDATE not NULL, ask EE1; ELSE, skip to EE3]

EE1. When you first became involved with the &PROGRAM program, representative from &PACIFICORP came out to your facility to inspect existing equipment. 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 NOR 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. What could the representative have done differently that would have made you more satisfied?

1. **[RECORD RESPONSE]**

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

EE3. Using a scale of 1 to 5 where 1 indicates 'very dissatisfied' and 5 indicates 'very satisfied', how satisfied were you with the vendor you worked with on this project? [A vendor may be a retailer, engineer, or distributer]

1. VERY DISSATISFIED
2. SOMEWHAT DISSATISFIED
3. NEITHER SATISFIED NOR DISSATISFIED
4. SOMEWHAT SATISFIED → **SKIP TO EE5**
5. VERY SATISFIED → **SKIP TO EE5**
6. **DID NOT WORK WITH A VENDOR → SKIP TO EE5**
7. **DO NOT RECALL→ SKIP TO EE5**

88. DON'T KNOW/NOT SURE → **SKIP TO EE5**
99. REFUSED → **SKIP TO EE5**

EE4. What could they have done differently that would have made you more satisfied?

1. **[RECORD RESPONSE]**

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

[IF &PROG_CODE=2 OR &PM=1, ASK EE5; ELSE, skip to IM1]

EE5. As part of the program, you received a report from the energy analysis that included recommendations of equipment retrofits and other energy efficiency improvements. Did you find this report valuable?

1. YES → **SKIP TO IM1**
2. NO

3. DON'T RECALL RECEIVING A REPORT → **SKIP TO IM1**
88. DON'T KNOW/NOT SURE → **SKIP TO IM1**
99. REFUSED → **SKIP TO IM1**

EE6. Why not?

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

Installed Measures

[IF &NC=1, SKIP to FR1]

READ: I'm going to ask a few questions about the equipment that you installed.

[SET &MEASURE_# = &MEASURE_1]

IM1. Did the &MEASURE_# 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 someone who would know the specifics of the equipment installation?

1. [COLLECT: IM_CONTACT_NAME, IM_CONTACT_PHONE, and IM_CONTACT_EMAIL] → **SKIP TO IC1**

IM2. What was the operating condition of the equipment that the &MEASURE_# 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

IM4a. Did you anticipate any other benefits beyond energy savings from the $MEASURE_#?

1. YES
2. NO → **SKIP TO IM5**

88. DON'T KNOW/NOT SURE → **SKIP TO IM5**
99. REFUSED → **SKIP TO IM5**

IM4b. What other benefits did you anticipate? **[CHECK ALL THAT APPLY; DO NOT READ]**

1. Better lighting quality (lighting specific)
2. Quicker on/off (lighting specific)
3. Increased control (lighting specific)
4. Less frequent replacement (lighting specific)
5. Decreased heat output (lighting specific)
6. Increased water pressure (sprinkler specific)
7. Other [**SPECIFY**]
88. DON'T KNOW/NOT SURE
99. REFUSED

IM4c. Since the project was completed, have you seen those benefits?

1. YES
2. NO
3. ONLY SOMEWHAT **[SPECIFY]**
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_#?

1. VERY DISSATISFIED
2. SOMEWHAT DISSATISFIED
3. NEITHER SATISFIED NOR 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. What would have made you more satisfied with the performance of this equipment?

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

[IF MULT_MEASURES=1 SET &MEASURE_#=&MEASURE_2 GO BACK TO IM1; ELSE GO TO NEXT SECTION]

Post-Installation

[IF &PROG_CODE =2 OR &PROG_CODE=3 OR &POSTDATE not NULL, ask P11; else, skip to FR1]

PI1. After your project was installed, [IF &POSTDATE >0, "around &POSTDATE"], a program representative came out to your facility to verify 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 inspection?

1. VERY DISSATISFIED
2. SOMEWHAT DISSATISFIED

3. NEITHER SATISFIED NOR 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**

PI2. What could the engineer have done differently that would have made you more satisfied with the inspection?

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

Free Ridership

FR1. With the &PROGRAM program, &FIRM received [IF &PM=1 or &PROG_CODE=2 add "technical assistance identifying energy saving opportunities and"] financial incentives of &INCENTIVE for installing &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 was each of the following factors in deciding which equipment to install. If a factor is not applicable to you, please say so. **[NOTE: Respondents can also state that a particular factor is Not Applicable, please code N/A as 6.]**

A. RECOMMENDATION FROM CONTRACTOR OR VENDOR
B. INFORMATION PROVIDED BY &PACIFICORP ON ENERGY SAVING OPPORTUNITIES
C. INFORMATION ON PAYBACK
D. THE &PACIFICORP INCENTIVE [if &PROG_CODE = 3, replace "Incentive" with "credit"]
E. FAMILIARITY WITH THIS EQUIPMENT
F. PREVIOUS PARTICIPATION WITH A &PACIFICORP PROGRAM
G. CORPORATE POLICY REGARDING ENERGY REDUCTION

[IF &MULT_MEASURES=1, say "I'll be asking the next questions first about &MEASURE_1 and again for &MEASURE_2]

[SET &MEASURE_# = &MEASURE_1]

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

FR2A. Without the program, meaning without either the technical assistance or the financial incentive, would you have still completed the exact same &MEASURE _# project?

1. YES
2. NO → **SKIP TO FR3**
88. DON'T KNOW/NOT SURE → **SKIP TO FR3**

99. REFUSED → **SKIP TO FR3**

FR2B. Without the program, meaning without either the technical assistance or the financial incentive, would you have still installed the &MEASURE _# at the same time?

1. YES → **SKIP TO FR7**
2. NO → **SKIP TO FR4**

88. DON'T KNOW/NOT SURE → **SKIP TO FR4**
99. REFUSED → **SKIP TO FR4**

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

1. YES
2. NO → **SKIP TO FR7**

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

FR4. Would you have installed this equipment within 12 months of when you did with the program?

1. YES
2. NO → **SKIP TO FR7**

88. DON'T KNOW/NOT SURE → **SKIP TO FR7**
99. REFUSED → **SKIP TO FR7**

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?

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

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

FR6. Would you have installed more, less, or the same amount of &MEASURE _#?

1. MORE→ **Compared to the installed amount, how much more? [RECORD in FR61]**
2. LESS→ **Compared to the installed amount, how much less? [RECORD in FR62]**
3. SAME

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

FR7. In your own words, can you please describe what impact the program had on your decision to complete these energy efficiency improvements for &MEASURE _#??

1. [RECORD RESPONSE]

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

[IF MULT_MEASURES=1 SET &MEASURE_#=&MEASURE_2 GO BACK TO FR2A; ELSE GO TO NEXT SECTION]

Spillover

SP1. Now I'd like to ask about energy efficiency improvements other than those you installed through the program. Since participating in this program, have you purchased or installed any additional energy efficiency improvements for your organization?

1. YES
2. NO → **SKIP TO B1**

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

[IF &MULT_MEASURES=1, say "I'll be asking the next questions first about &MEASURE_1 and again for &MEASURE_2]

[SET &MEASURE_# = &MEASURE_1]

SP2. Did you purchase or install any energy efficiency improvements that are the same as &MEASURE_#?

1. YES --> SP3
2. NO --> **[IF MULT_MEASURES=1 SET &MEASURE_#=&MEASURE_2 GO BACK TO SP2; ELSE GO TO SP9]**
3. 88. DON'T KNOW/NOT SURE → **SKIP TO SP9**
4. 99. REFUSED → **SKIP TO SP9**

SP3. How many did you purchase or install?

1. [RECORD RESPONSE]

88. DON'T KNOW/NOT SURE
99. REFUSED →

SP4. Relative to the energy efficiency of the equipment installed through the program, how would you characterize the efficiency of this equipment?

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

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

SP5. Did you receive an incentive from &PACIFICORP or another organization for this equipment?

1. YES
2. NO → **SKIP TO SP7**

88. DON'T KNOW/NOT SURE → **SKIP TO SP7**
99. REFUSED → **SKIP TO SP7**

SP6. What program or sponsor provided an incentive?

1. **&PACIFICORP**
2. **[RECORD RESPONSE]**

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

SP7. 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 &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 SP6 <> 1]
SP8. Why did you not apply for an incentive from &PACIFICORP for this equipment?

1. **[RECORD RESPONSE]**

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

[IF MULT_MEASURES=1 SET &MEASURE_#=&MEASURE_2 GO BACK TO SP2; ELSE GO TO SP9]

SP9. Did you purchase or install any other equipment? **[DO NOT READ; CHECK ALL THAT APPLY. SPECIFY DETAILED INFORMATION ABOUT EQUIPMENT TYPE] [IF NEEDED:]** What type of equipment is that?

1. Lighting [SPECIFY]: _____
2. HVAC (heating and cooling) [SPECIFY]: _____
3. Variable drive [SPECIFY]: _____
4. Efficient motor [SPECIFY]: _____
5. Refrigeration [SPECIFY]: _____
6. Building envelope [SPECIFY]: _____
7. Compressed air [SPECIFY]: _____
8. Chiller [SPECIFY]: _____
9. Pump [SPECIFY]: _____
10. Irrigation (gaskets, drains, sprinklers) [SPECIFY]: _____
11. Automatic Milker Takeoffs [SPECIFY]: _____
12. Other [SPECIFY]: _____

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

Barriers

B1. Now I'd like to ask about other potential energy efficiency improvements. 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. Is assistance from &PACIFICORP 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; CHECK ALL THAT APPLY]**

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/CORPORATE MANAGEMENT IN ENERGY EFFICIENCY
5. LACK OF INFORMATION ABOUT SAVINGS AND PERFORMANCE
6. LACK OF ASSIGNED ENERGY STAFF
7. OTHER [SPECIFY]
8. NONE
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? **[IF B5 = 7 and > 2 "other" reasons, enter most important reason in option 8 at B6]**

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/CORPORATE MANAGEMENT IN ENERGY EFFICIENCY
5. LACK OF INFORMATION ABOUT SAVINGS AND PERFORMANCE
6. LACK OF RESPONSIBLE/ACCOUNTABLE ENERGY STAFF
7. DISPLAY OTHER FROM B6
8. OTHER (SPECIFY MOST IMPORTANT OTHER REASON IN B6, IF > 2 REASONS):

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 DISSATSIFIED
2. SOMEWHAT DISSATISFIED
3. NEITHER SATISFIED NOR DISSATISFIED
4. SOMEWHAT SATISFIED → **SKIP TO FB1**
5. VERY SATISFIED → **SKIP TO FB1**

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

IC1A. What could the program have done that would have made you more satisfied with the program overall?

1. **[RECORD RESPONSE]**

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. ACCOMMODATION
2. ARTS, ENTERTAINMENT, AND RECREATION
3. CONSTRUCTION
4. DAIRY / AGRICULTURAL
5. EDUCATIONAL SERVICES
6. FINANCE AND INSURANCE
7. FOOD SERVICES
8. FOOD PROCESSING
9. HEALTH CARE
10. MANUFACTURING

11. MINING
12. NON-PROFITS AND RELIGIOUS ORGANIZATIONS
13. PROFESSIONAL, SCIENTIFIC, AND TECHNICAL SERVICES
14. PUBLIC ADMINISTRATION / GOVERNMENTAL SERVICES
15. OIL AND GAS
16. RETAIL
17. REFRIGERATED WAREHOUSE
18. REAL ESTATE / PROPERTY MANAGEMENT
19. REPAIR AND MAINTENANCE SERVICES
20. TRANSPORTATION
21. WAREHOUSES OR WHOLESALER
22. OTHER **[SPECIFY]:** _____
23. NOT COMPANY, RESIDENCE
88. DON'T KNOW/NOT SURE
99. REFUSED

FB2. Approximately what percentage of your total annual operating costs does your electricity bill at this site represent?

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

FB3. About how many people does your firm employ at this site?

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

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]

Appendix I FinAnswer Express Trade Ally Survey Guide

Introduction

The Energy Efficiency Alliance (EEA) is a collaboration between Rocky Mountain Power or Pacific Power and local contractors, distributors, manufacturers, and other vendors to promote sales and incentives for the installation of energy-efficient equipment in several states. As part of the evaluation of the 2012-2013 FinAnswer Express Program (run through the EEA) in Utah, Wyoming, and Washington, EMI Consulting will be conducting 115 online surveys with trade allies in order to achieve the following objectives:

- To understand how trade allies come to be involved in the program alliance
- To characterize how trade allies would improve the program for themselves and for customers
- To characterize the value of participation to trade allies' business
- To determine the level of program-like activity occurring without program support (spillover), including assessing how different program sales are from typical sales and how the efficiency of products may be changing
- To characterize how trade allies prefer to receive communication from the EEA and how this communication may be improved

For the purposes of this research, a trade ally was defined as any firm/vendor who enrolled in the Energy Efficiency Alliance in 2013 or earlier and is listed on the program's website as of June 2014. The evaluation team assumed that any trade ally listed on this website had been involved with the FinAnswer Express program. The evaluation team further determined that in order to achieve the objectives described above, the most appropriate sample design was a proportional stratification with separate strata for each state and activity level (i.e., where a TA was deemed active if the firm has completed at least one project through the EEA, otherwise it was considered inactive). This allows for estimates of key interval measures separately for each state and also to identify possible differences between active and inactive allies. Table 46 shows the populations of TAs for each state and the target completes for each of these strata.

Table 46. Population and Sample Targets by State and Activity Level

State	Population			Target Completes		
	N	% Active	% Inactive	Active	Inactive	Total
UT	242	45%	55%	25	31	**56**
WY	133	42%	58%	15	21	**36**
WA	87	54%	46%	12	11	**23**
TOTAL	**462**	-	-	**52**	**63**	**115**

Sample Variables

Variable	Definition
$_PACIFICORP	Pacific Power/Rocky Mountain Power
$_ENROLL_DATE	Date vendor enlisted with EEA
$_ACTIVE	Whether TA is listed as active or inactive on website
$_SLC_AREA	Trade Ally based in or near Salt Lake City (Yes/No)

Fielding Instructions

The trade ally survey will be fielded online using Qualtrics. To conduct the survey, EMI Consulting will send the population of registered Utah, Wyoming, and Washington trade allies an email with a link to the survey. If needed, EMI Consulting will follow-up after one week with a reminder email to complete the survey and again in another week if needed. EMI Consulting will close the availability to participate as quotas are met. To solicit participation among trade allies, EMI Consulting will distribute $25 ($50 for WA) Amazon gift cards to any trade ally that successfully completes the survey.

Online Survey

Introduction

{NOTE: THE ROCKY MOUNTAIN POWER OR PACIFIC POWER LOGOS WILL BE INCLUDED ON THIS PAGE AS APPROPRIATE FOR EACH STATE}

A1. Thank you for taking the time to complete this survey about your experiences with the Energy Efficiency Alliance. Your feedback will be used to improve <$_PACIFICORP> services to Energy Efficiency Alliance vendors. The survey should take roughly 15 minutes. For completing the survey, we will provide you with a $25 ($50 for WA) Amazon gift card. Your responses are completely confidential and the results of this survey will only be shared with PacifiCorp in aggregate.

A2. How familiar are you with your company's involvement with the Energy Efficiency Alliance?

0. Not at all familiar
1. Somewhat familiar **[SKIP TO A4]**
2. Very familiar **[SKIP TO A4]**

A3A. The Energy Efficiency Alliance is a <$_PACIFICORP> program that offers energy efficiency training to partnering vendors and support to vendors working on energy efficiency projects through <$_PACIFICORP>'s energy efficiency programs. Are you familiar with your company's involvement with the Energy Efficiency Alliance?

1. Yes **[SKIP TO A4]**
2. No
-8. Don't know

A3B. Thank you for your interest in completing this survey; however, we are looking for feedback from people familiar with the Energy Efficiency Alliance. If you know someone else at your company who is familiar with the program, please enter their email address in the box below.

Thank you for your time! **[TERMINATE]**

We'd first like to get a little background information.

A4. What types of energy efficiency products do you work with? (Select all that apply)

1. Lighting
2. Heating, cooling, and ventilation products
3. Appliances (e.g., stoves, refrigerators, washer/dryers)
4. Office equipment
5. Building envelope (e.g., windows, insulation)
6. Plumbing and water heating
7. Compressed air
8. Motors, drives, and pumps
9. Controls or energy management systems
10. Food service
11. Farm and dairy
12. Irrigation
96. Other (Please Specify)
-98. Don't know

A5. In which state are you most familiar with your firm's work with the Energy Efficiency Alliance?

1. Utah
2. Washington
3. Wyoming

A6. In which additional state or states do you work with the Energy Efficiency Alliance? (Select all that apply)

1. Utah [SHOW IF NOT SELECTED IN PREVIOUS QUESTION]
2. Washington [SHOW IF NOT SELECTED IN PREVIOUS QUESTION]
3. Wyoming [SHOW IF NOT SELECTED IN PREVIOUS QUESTION]
4. I don't work with the Energy Efficiency Alliance in any other states

A7. Please answer the remaining questions in this survey based on your firm's experience in [RESPONSE TO A6] only.

Program Awareness

We'd like to ask you about your experiences with the Energy Efficiency Alliance.

B1. Our records show that your firm joined the Energy Efficiency Alliance in <$_ENROLL_DATE>. Is that correct?

1. Yes **[SKIP TO B3]**
2. No, our firm joined the Energy Efficiency Alliance in a different year - Please specify: [Specific Year] **[SKIP TO B3]**
3. Our firm joined the Energy Efficiency Alliance but I do not know when we joined. **[SKIP TO B3]**
4. No, our firm has not joined the Energy Efficiency Alliance

-8. I do not know if we joined the Energy Efficiency Alliance

B2. Thank you for your interest in completing this survey, but we are looking for feedback from vendors participating in the Energy Efficiency Alliance. If you know someone else at your company who is familiar with the program, please enter their email address below. Thank you for your time! **[TERMINATE]**

B3. How did you first hear about the Energy Efficiency Alliance? [ALLOW ONLY ONE CHOICE; ROTATE]

1. Advertising [Please SPECIFY SOURCE: _____]
2. Utility or Energy Efficiency Alliance Representative
3. Other Contractor/Vendor
4. Customer
5. Other [Please Specify]

-8. Don't know

B4. What motivated your company to participate in the Energy Efficiency Alliance? Please rank each of the following items in order from most important to least important.

[RANDOMIZE RESPONSES; RANK ORDER]

1. We wanted our company listed on the program's website.
2. We wanted to advertise our firm as being part of the Energy Efficiency Alliance.
3. We wanted to receive updated information about energy efficiency rebates and programs for our customers.
4. We wanted to attend training and workshops on energy efficiency topics.
5. Other [Please Specify]

Spillover

E1. We'd now like to ask you a few questions about your firm's work. Does your firm measure its sales primarily in terms of products or projects?

1. Products
2. Projects [SKIP TO E2b]

E2a. Approximately, how many products does your firm sell in a given year in [**RESPONSE TO A6**]?

1. [**SPECIFY**]

8. Don't know

E2a2. Approximately, how many products did your firm sell through the FinAnswer Express program in the period 2012-2013 in [**RESPONSE TO A6**]?

1. [**SPECIFY**]
8. Don't know

[ASK IF E1=2]
E2b. Approximately, how many projects does your firm complete in a given year in [**RESPONSE TO A6**]?

1. [**SPECIFY**]
8. Don't know

[ASK IF E1=2]
E2b2. Approximately, how many projects did your firm complete through the FinAnswer Express program in the period 2012-2013 in [**RESPONSE TO A6**]?

1. [**SPECIFY**]
8. Don't know

E3. To the best of your knowledge, what percentage of your firm's products/projects qualify for energy efficiency incentives through FinAnswer Express in [**Response to A6]**?

1. **[SPECIFY %]**
-8. Don't know

E4. [**IF E3 = 0, SKIP TO E5]** Of the products/projects that are eligible, what percentage are sold or installed using incentives from the FinAnswer Express Program in [**Response to A6]**?

1. **[SPECIFY %]**
-7. Our firm does not work on these products
-8. Don't know

E5. If the FinAnswer Express Program did not exist, please estimate what percentage of your firm's products/projects would be energy efficient in [**Response to A6]**?

1. **[SPECIFY %]**
-7. Our firm does not work on these products
-8. Don't know

E6. How influential has the FinAnswer Express Program been in motivating your firm to stock program-eligible equipment at in [Response to A6], on a scale of 1 to 5, with 1 being not at all influential and 5 being extremely influential? [CREATE MATRIX BASED ON RESPONSES FROM A6; RANDOMIZE ORDER OF MATRIX ENTRIES; RANDOMIZE ORDER OF RESPONSES]

1. Not at all influential
2. Slightly influential
3. Somewhat influential
4. Very influential
5. Extremely influential

-8. Don't know

Program Communications

C1. We'd now like to ask you some questions about your firm's interactions with the Energy Efficiency Alliance. How valuable are the communications you receive from Energy Efficiency Alliance staff, on a scale of 1-5 with 1 being not at all valuable and 5 being extremely valuable?

[SLIDER BAR]

1. Not at all valuable
2. Slightly valuable
3. Somewhat valuable
4. Moderately valuable
5. Extremely valuable

-7. Not applicable

C2. What type of communication from the Energy Efficiency Alliance do you find most useful?

1. Email
2. Printed mail
3. Telephone correspondence
4. In-person correspondence
5. Prefer not to receive communication
6. Other [Please Specify]

-8. Don't know

C3. What additional information, if any, would be valuable to your firm?

1. **[RECORD RESPONSE]**
2. None

-8. Don't know

C4. How would you describe the frequency of communication you receive from the Energy Efficiency Alliance, on a scale of 1 to 5 with 1 being way too infrequent and 5 being way too frequent?

[SLIDER BAR]

1. Way too infrequent
2. Not quite frequent enough
3. Just right
4. A little too frequent
5. Way too frequent

-8. Don't know

C5. How frequently would you prefer to receive communications from the Energy Efficiency Alliance?

1. Weekly
2. Monthly
3. Quarterly
4. Annually
5. Other [Please Specify]

-8. Don't know

C6. Please rate the usefulness of any training/events you attended in 2012-2013, on a scale of 1-5 with 1 being not at all useful and 5 being extremely useful.

1. **[CREATE MATRIX OF EVENTS THAT OCCURRED IN 2012/2013; WITH USEFULNESS ON TOP. PROVIDE OPTION OF "DID NOT ATTEND," "COLLEAGUE ATTENDED EVENT," "DON'T REMEMBER"; RANDOMIZE ORDER OF EVENTS IN MATRIX IF POSSIBLE]**

Program Participation

D2A. [**Skip to D3 if A4 ≠ 1**] Have you used the Energy Efficiency Alliance's lighting software tool?

1. Yes
2. No [**Skip to D3**]

-8. Don't know [**Skip to D3**]

D2B. [**Skip to D3 if A4 ≠ 1**] How satisfied are you with the program's lighting software tool, on a scale of 1 to 5, with 1 being very dissatisfied and 5 being very satisfied?

1. Very dissatisfied
2. Mostly dissatisfied
3. Neither satisfied nor dissatisfied
4. Mostly satisfied [**Skip to D3**]
5. Very satisfied [**Skip to D3**]

-8. Don't know [**Skip to D3**]

D2C. Why were you dissatisfied with the lighting software tool?

1. **[RECORD RESPONSE]**

-8. Don't know

D3. How useful are the brochures that explain the FinAnswer Express Program for your customers?

1. Not at all useful
2. Slightly useful
3. Moderately useful
4. Very useful_ [**Skip to D5A**]
5. Extremely useful [**Skip to D5A**]

-7. Did not receive any brochures [**Skip to D5A**]

-8. Don't know [**Skip to D5A**]

D4. What could be changed to improve the usefulness of the program brochures for your customers?

1. **[RECORD RESPONSE]**
-8. Don't know

D5A. Does your firm advertise the FinAnswer Express program to customer(s) in [Response to A6]?
1. Yes
2. No
-8. Don't know

D5B. **[DISPLAY IF D5A = 1]** In what ways does your firm advertise the FinAnswer Express program? [ROTATE]
1. We advertise rebates to customers
2. We advertise energy efficient equipment to customers
3. Other [Please **SPECIFY**]
-8. Don't know

D6A. Does your firm complete FinAnswer Express paperwork for your customer(s) in [**Response to A6]**?
1. Yes
2. No [**Skip to D7A**]

-8. Don't know [**Skip to D7A**]

D6B. **[DISPLAY IF D6A = 1]** In what ways does your firm complete FinAnswer Expresspaperwork for your customers?
1. We complete the rebate form for the customer
2. We processing rebate form for the customer
3. Other (Please Specify)
-8. Don't know

D7A. Overall, how satisfied are you with the FinAnswer Express Program, on a scale of 1 to 5 with 1 being very dissatisfied and 5 being very satisfied?
1. Very dissatisfied
2. Moderately dissatisfied
3. Neither satisfied nor dissatisfied
4. Moderately satisfied **[SKIP TO D8]**
5. Very satisfied **[SKIP TO D8]**
-8. Don't know **[SKIP TO D8]**

D7B. **[SHOW IF D7A = 1, 2, or 3]** Why were you not more satisfied with your experiences with the FinAnswer Express Program?
1. **[RECORD RESPONSE]**
-8. Don't know

D8. What, if anything, prevented your firm from completing more activity through the FinAnswer Express Program in 2012-2013 in [**Response to A6]**? [ROTATE]

1. Too much hassle for the customer to participate in the program
2. Too much hassle for our firm to participate in the program
3. Equipment does not qualify for an incentive
4. Customer(s) not interested in energy efficient equipment
5. Our own internal resource constraints (i.e. staffing)
6. Other [Please Specify]

-8. Don't know

D9A. Overall, how satisfied are you with the Energy Efficiency Alliance, on a scale of 1 to 5 with 1 being very dissatisfied and 5 being very satisfied?

1. Very dissatisfied _
2. Moderately dissatisfied
3. Neither satisfied nor dissatisfied
4. Moderately satisfied [**Skip to F1**]
5. Very satisfied [**Skip to F1**]

-8. Don't know [**Skip to F1**]

D9B. Why were you not more satisfied with your experiences with the Energy Efficiency Alliance?

1. **[RECORD RESPONSE]**

-8. Don't know

Value to Business

F1. How influential are the following at helping you successfully sell energy efficiency products/projects to your customers in [**Response to A6]**, on a scale of 1 to 5, with 1 being not at all influential and 5 being extremely influential. [CREATE MATRIX OF SERVICES AND INFLUENCE SCALE]

1. FinAnswer Express customer incentives
2. Knowledge gained through the Energy Efficiency Alliance
3. [$_PACIFICORP] brochures summarizing customer incentives
3. Use of the Online Lighting Tool
4. Your firm's name on the list of qualifying vendors

F2. Has participation in the Energy Efficiency Alliance changed how your firm conducts its business in any way?

1. Yes
2. No [**Skip to F4**]

-8. Don't know [**Skip to F4**]

F3. How has the Energy Efficiency Alliance changed how your firm conducts its business?

1. **[RECORD RESPONSE]**

-8. Don't know

F4. Has participation in the Energy Efficiency Alliance influenced your firm's sales in any other way?

1. **[RECORD RESPONSE]**
-8. Don't know

Program Improvement

G1. Almost done! We'd now like to ask you about ways in which the program could be improved. What topics would you like the Energy Efficiency Alliance to discuss at future trainings or events?

1. **[RECORD RESPONSE]**
-8. Don't know

G2. What additional services can the Energy Efficiency Alliance offer to help you better understand energy efficiency opportunities for your customers and/or energy efficiency incentives through [$_PACIFICORP]?

1. **[RECORD RESPONSE]**
-8. Don't know

G3. What can [$_PACIFICORP] do to improve the program for you and your customers?

1. **[RECORD RESPONSE]**
-8. Don't know

Recruitment for Web Usability Study

H1. **[ASK IF $_SLC_AREA= Y]** [$_PACIFICORP] also plans to assess the usability of its website for participating trade allies. For an additional $100 incentive, would you consider participating in this study?

1. Yes
2. No **[SKIP TO I1]**
-8. Don't know at this time **[SKIP TO I1]**
-9. Refused **[SKIP TO I1]**

H2. **[ASK IF H1 = 1]** The study would take place in-person, at your office and last approximately 30 to 45 minutes. Studies will occur during the week of August 4th. Please provide your phone number so that we may contact you regarding this study:

1. **[SPECIFY PHONE]**
2. Prefer email **[CONFIRM EMAIL]**
-9. Refused

Gift Card Offer/ Closing

I1. Please provide any additional feedback you would like to provide about the Energy Efficiency Alliance or the [$_PACIFICORP] incentive programs.

1. **[RECORD RESPONSE]**
-9. Refused

I2. As a thank you for participating in this survey, we'd like to offer you a $25 Amazon gift card **[FOR WA: "$50 Amazon gift card"]**. Would you like to accept this offer?

1. Yes
2. No [**SKIP TO I4]**
-9. Refused [**SKIP TO I4]**

I3. Please list the email address where you would like us to send the Amazon gift card.

1. [**RECORD RESPONSE]**
-9. Refused

I4. Those are all the questions we have at this time. Thank you for your time. Your feedback is extremely valuable and will be used to improve the Energy Efficiency Alliance's programs. If you have any other comments, please enter them in the field below.

1. **[TEXT FIELD]**

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