

## Evaluation Report Response

**Program:** Commercial Rebates & Small Business Lighting (SBL) Programs, Schedules E255, E262 & G262

**Program Managers:**

**Michael Lane:** Small Business Lighting (E255) and Lighting Rebates (E262)

**Joe Schmutzler:** HVAC Rebates & Premium HVAC Service (E/G 262);

**Tianna Byrtus:** Commercial Kitchen Rebates and Direct Install (excluding Small Biz Direct Install) (E/G 262)

**Sarah Harris:** Lighting Point-of-Sale Incentives (E 262)

**Study Report Name:** Commercial Rebates and Small Business Lighting (SBL) Programs Evaluation

**Report Date:** June 3, 2014

**Evaluation Analyst:** Jim Perich-Anderson

**Evaluation Firm:** Navigant Consulting, Inc.

**Date of ERR:** 6/17/14

### **Overview of Study & Action Plans to Address Findings & Recommendations**

PSE contracted with Navigant Consulting, Inc. to provide independent 3<sup>rd</sup> party evaluation services for three of its program schedules: E255 E262 & G262 for the program years 2011 - 2012. The evaluation addressed three major program elements: Impact, Process and Best Practices. Navigant sought input from numerous sources both within PSE and external to PSE in order to provide input and recommendations from all aspects of program delivery.

**Impact Summary:** PSE program managers, engineers and supervisors worked with Navigant field staff to address questions and provide program background information to enable Navigant to appropriately evaluate individual program results and establish program realization rates. The study provided “as-reported” realization rates to indicate PSE’s accuracy in applying deemed unit energy savings values and tracking efficiency measures. The study also provided “as-evaluated” realization rates to evaluate actual savings being delivered by the measures, which accounts for the impacts of attrition, inaccuracies in field reporting, etc. Overall, the Impact Evaluation found “PSE staff is appropriately tracking and reporting projects as reflected by the near-100-percent as-reported realization rates across both programs”. The as-evaluated realization rate for Small Business Lighting was 100.5%. Commercial Rebates As-Evaluated realization rates were 91.6% for electric and 25.1% for natural gas.

Lower realization rates for Commercial Rebates were primarily due to faucet aerator savings analysis approach, misreporting of water heating fuel source, and measure attrition. Prior to the evaluation, PSE had established reduced unit energy savings values for use in 2014-2015 program cycle and requested Navigant Consulting review the revised approach. The impacts of misreported water heating fuel source and measure attrition were more significant than anticipated, given these measures are implemented via a direct install program in which the installing contractor verifies the water heating fuel source when on site and ensures that the new flow rates meet the customer's needs. The evaluation brought to light the need to enhance training of the direct install contractor and to establish in-service rates for aerators to account for attrition. Prior to completing the evaluation, PSE requested further field work by Navigant Consulting to gain further understanding of drivers behind the faucet aerator savings realization rates and to provide recommendations for appropriate actions to improve accuracy of savings claims moving forward.

Additionally, Navigant Consulting provided feedback on opportunities for improving documentation of deemed unit energy savings (UES) values. PSE had already begun making improvements to Commercial Rebate measure development procedures which address these opportunities.

**Key Actions:** PSE will continue to employ strategies and procedures to ensure we maintain robust as-reported realization rates and will take actions as outlined in this ERR to improve as-evaluated realization rates. Additionally, PSE has improved processes to provide clear, easily accessible standardized documentation to enhance future evaluation efforts.

**Process Summary:** Navigant spent a significant amount of time meeting with individuals within PSE and with customers and trade allies in order to gain a thorough understanding of PSE processes. Interviews were conducted with a broad spectrum of employees, customers and trade allies who interface with the Small Business Lighting and Commercial Rebates Programs. Key findings were that "customer and trade ally satisfaction with the program is high and the program positively affects participant perception of PSE". The report also pointed out several opportunities for improvement in PSE's communication and program delivery processes.

**Key Actions:** PSE has taken action to provide more frequent trade ally communications via the Contractor Alliance Network (CAN) and has provided tools that allow for more streamlined and standardized information input for the Business Lighting Program.

PSE will continue to investigate strategies that increase program awareness, improve customer and trade ally communications and improve program processes.

**Best Practices Summary:** Navigant sought input from multiple information sources internal and external to PSE to provide action-oriented insights designed to enhance PSE's programs and inform PSE of best practices utilized by other utilities.

**Key Actions:** PSE has reviewed the Navigant Best Practice Recommendations and placed each recommendation into one of three categories: Implementing, Under Consideration, and Not Pursuing. The majority of recommendations are already being implemented, at least in part, where applicable to PSE's programs. All recommendations are discussed in this ERR, with information provided about PSE's implementation or consideration of recommendations, as well as reasons given for not pursuing recommendations that do not align with current PSE strategies.

## **Impact Evaluation Recommendations**

### *Impact Evaluation Conclusions and Recommendations (Pg. 31-33)*

#### **2.4.3 Premium HVAC Service**

The Premium HVAC Service sub-program uses a matrix of inputs to estimate energy savings per ton of cooling for eligible units. Although several supplementary files were available for the evaluation, the basis for the estimated energy savings was unavailable.<sup>9</sup> Navigant verified serviced units and inputs to PSE's energy savings matrix, but the team was unable to review the engineering calculations used to estimate the energy savings. As the best possible evaluation option, Navigant reviewed other sources with similar HVAC service measures. *Navigant concluded PSE's energy savings estimated are reasonable, though a duplicate or original business case analysis is recommended for future implementation and evaluation.*

**PSE Response:** PSE has updated the Premium HVAC Service business case and has placed a copy of the new business case complete with all supporting documentation in the Measure:Metrics directory. The business case folder is organized such that the business case itself, engineering models, cost effectiveness calculations and other miscellaneous data sources used to develop the business case are clearly identified and accessible to individuals requiring the information.

#### **2.5.1 Program Data Requirements**

- » *In the Small Business Lighting Program, PSE can require contractors to submit the rationale behind annual operating hours calculations.* Currently contractors provide a single annual value for each applicable measure. Such numbers are more difficult to verify than detailed operating profiles. For example, the contractors can document operating profiles for an average week, holidays, and weekends.

**PSE Response:** As of January 1 2014, the SBL program is no longer accepting applications and the program was replaced by the new Business Lighting Program. For projects with measures

other than deemed savings and rebate values, individuals completing the workbook are required to enter operating hours by line item in order to accurately estimate energy consumption and savings.

Additionally, PSE's internal Quality Control (QC) process requires lighting hours rationale documentation to support claimed hours of operation for any project involving the installation of a custom measure.

### 2.5.2 Program Data Tracking

- » PSE uses several databases to track energy savings in the Commercial Rebates Program. A single, comprehensive database with defined ownership would facilitate data analysis and more frequent assessment of program achievements. During the evaluation, Navigant referenced several databases in order to accrue sufficient data to perform the evaluation. For example, the Pre-Rinse Spray Valve sub-program data are found in three primary databases (one of which is reconstructed annually). Although all sub-program data were available in one or a combination of databases, a great deal of Navigant and PSE communication and collaboration were needed to ensure Navigant had all necessary data. This issue was most prevalent for the Pre-Rinse Spray Valve and CFL Markdown programs, where project level data was archived separately from the main Commercial Rebates tracking database. Additionally, typically only the energy savings and rebate amounts were tracked in the main tracking database. Navigant used the project files to fill out the data gaps in the tracking databases—a time consuming process for large sample sizes. Given the requirement for future evaluations, *Navigant suggests normalization of tracked data and combination of tracking databases as a general best practice.* Navigant understands PSE's prior awareness of this issue and that a new database is being piloted with the Small Business Lighting Program.

**PSE Response: PSE is currently developing functional performance specifications to be incorporated in a Request For Proposal to develop a new comprehensive energy efficiency program management database. In parallel with this enterprise effort, we continue to make incremental improvements in our current tracking processes.**

### 2.5.3 Energy Savings Calculations and Documentation

- A. Although already underway at PSE, *Navigant suggests PSE should standardize business case development and record keeping.* In some cases, the most up-to-date engineering calculations were not obvious; in occasional cases, the engineering calculations were inaccessible. An archival system with dates/timestamps, authors, and completed/pending updates could facilitate future revisions to business cases as well as future evaluations of programs. Navigant suggests reviewing the Regional Technical Forum and California investor-owned utility (IOU) archival systems.

**PSE Response:** PSE has standardized the Measure:Metrics business case development process and increased the rigor of analysis with an Energy Management Engineer quality control (QC) review process now required to validate engineering assumptions and analysis approach. Additionally, all cited references are retained Measure:Metrics to ensure they are available for review at a later date.

Furthermore, increased emphasis is being placed on capturing all secondary data sources (project files, etc.) and retaining them in the Measure:Metrics repository.

- B. PSE can increase traceability and possibly report more savings if the occupancy sensor reduction factors changed from custom inputs to industry-accepted standards by space type. Navigant suggests the occupancy sensor reduction factors presented in this report and found additional energy savings when recalculating using the adjusted factors. Additionally, *Navigant suggests a potential strategy using standard factors as the default while allowing contractors to submit custom reduction factors with sufficient evidence.*

**PSE Response:** PSE currently provides occupancy hours reduction factors based on business type in the Business Lighting Workbook for deemed occupancy sensor rebates. Per unit savings values were developed using the Commercial Building Stock Assessment (CBSA) to determine operating hours by space type, the RTF Lighting Standard Protocol Lighting Calculator Draft (version 12-6-2012) for operating hours reduction percentage provided by an occupancy sensor, and 2012-2013 PSE program participation data for controlled wattage information.

Additionally, contractors or customers entering information in the Custom Measure Workbook may apply a custom hours reduction percentage for each individual line item when occupancy sensors are installed in conjunction with those fixtures. Custom reduction factors are evaluated and vetted through site visits, customer interviews, and PSE's internal QC process.

- C. PSE can increase the reliability or accuracy of energy savings forecasts of commercial faucet aerators by implementing an in-service rate factor in the prescriptive savings methodology. In-service rates are the percentage of units rebated that actually get used over the effective lifetime of the measure. In-service rates are typical for such measures with high ease of installation (and removal) and variable customer acceptance. Navigant found 28 percent of the sample aerators were unaccounted for, which translates to a 72 percent in-service rate. These finding was driven by two large projects, thus normalizing for these two projects, *Navigant recommends building in an in-service rate into the latest business case.*

**PSE Response:** PSE has already taken several steps to improve accuracy and of savings of faucet aerators:

- The business case was updated for 2014 and included a more appropriate unit energy savings values.
- PSE also began implementing standardized installation expectations for the 3<sup>rd</sup> party contractor, educating them on where installations are not appropriate due to the increased possibility of removal and minimal faucet usage.
- PSE is working with its internal verification team (V-team) to implement inspection protocols to increase installation confidence.

Additionally, in order to better understand the low realization rate around commercial faucet aerators and to drive the realization rate to 100%, PSE requested Navigant perform additional follow-on field work, analysis, and provide recommendations. The primary result of that work was the determination of individual in service rates by facility type. Realizing that the actions listed above will ensure veracity of savings and increase the realization rates, PSE is reviewing the individual in-service rates reported by Navigant and will include in-service factors in deemed Unit Energy Savings (UES) analyses.

- D. *PSE can increase the traceability and reliability of energy savings for the Premium HVAC Service program by reconstructing or initializing an updated business case.* Although the current prescriptive energy savings are reasonable when compared to other similar measures outside of PSE, the lack of traceable energy savings could increase the uncertainty in energy savings forecasts and achievements of the program.

**PSE Response:** PSE has revised the Premium HVAC Business Case. PSE retained Solarc Architecture and Engineering, Inc. to perform computer simulations to establish baseline and post-service conditions for commonly occurring packaged rooftop HVAC systems. In the computer simulations, Solarc used equipment data collected by BPA and PSE as baseline information to establish existing equipment operating conditions. Subsequent computer simulations quantify energy savings from the performance of advanced service procedures. A copy of this report is contained in the business case folder and a copy of the savings tables are contained in the business case. The 2014 updated business case has provided more traceable and reliable results by:

- Inclusion of well-document assumptions used in each of the computer simulations
- Clearly identifying rooftop HVAC equipment energy savings values in 4 commonly-occurring business types

- Clear statement of equipment existing condition to rate equipment performance and quantify energy savings.
- Use of PSE and BPA metered equipment data as baseline system inputs for computer simulations used to estimate energy savings.
- Retention of all documents related to the business case in a folder with clearly labeled, content-specific subfolders.

## Process Evaluation Recommendations

### 3.3 *Process Evaluation Conclusions and Recommendations (Pg. 55-57)*

- 1) **Recommendation:** *PSE should leverage existing data from within the company whenever possible to limit the amount of information the customers and trade allies need to provide.* When customers and trade allies do need to provide information, provide a clear list of needed items up front to limit the amount of back and forth.
- 2) **Recommendation:** *Provide a transparent and timely system that allows customers and trade allies to see how their rebate is progressing through the PSE process.* This could include an online system that allows customers and trade allies to log in and check the status of their application.

**PSE Response (covering #1 & #2 above):** PSE is currently developing functional performance specifications for a new comprehensive energy efficiency program management database with the intent to release an RFP to software providers during 2014. In parallel with this enterprise effort, Business efficiency programs have continued to make incremental improvements in current tracking processes. For example, Commercial Rebate application forms were redesigned in late 2013 by a customer “Touch Points” team focused on customer service improvements. Additionally, a new Business Lighting Program workbook launched in 2014 contains many useful features designed to minimize the amount of input required by the applicant and to reduce duplicate data entry. Commonly used forms are conveniently located in the workbook. The form was designed so that contractors can use the workbook as a quotation form.

- 3) **Recommendation:** *PSE should strive to ensure that program trade allies have access to up-to-date, accurate information about measure eligibility and available funding.* To align with program operations, PSE’s communications with trade allies could include sending trade allies quarterly program updates via email or training sessions so contractors are aware of upcoming program changes in advance.

**PSE Response:** PSE has updated program literature and created a website landing page dedicated to business customer needs (<http://pse.com/mybusiness>).

PSE conducted multiple meetings with trade allies in Q4 2013 to prepare for launch of redesigned business lighting incentives in 2014, and continues providing support to trade allies through follow-on meetings and webinars in 2014.

Furthermore, recent expansion of the Contractor Alliance Network (CAN) into commercial programs is helping PSE to create stronger trade ally relationships. Through this network, contractors receive regular updates on program changes and are afforded training opportunities which clarify PSE expectations and participation requirements. The Alliance also provides a trade ally feedback mechanism for PSE's programs and procedures. Closer ties with trade allies will enhance the customer experience by creating greater customer outreach and awareness.

- 3) **Recommendation:** *PSE should explore ways of making the quarterly amount and status of available funding more transparent to trade allies and customers.*

**PSE Response:** PSE spends significant effort creating budgets that are aligned with markets trends and adaptively manages program portfolios such that we do not need to curtail program participation due to underfunding. We continuously update marketing materials to create awareness and interest in PSE programs. Given previous trade ally comments that PSE programs "run out of money" and trade allies "refrain from promoting the program to avoid wasting the customer's time", we believe that this counterproductive and is not in the customer's or trade allies' best interest to perpetuate the idea that PSE programs may not always be available. Therefore, we will not pursue this recommendation.

- 4) **Recommendation:** *PSE should continue to cultivate personal relationships with trade allies, and should explore ways to better connect customers with trade allies.* For example, PSE could market the CAN to business customers to ensure the network is connecting customers with contractors. Marketing tactics could include messaging about how the CAN worked for similar business via case studies and testimonials.

**PSE Response:** PSE is currently incorporating commercial efficiency programs into the CAN. The main focus has been to strengthen the number of lighting contractors in the CAN through training sessions that train the contractors on the Business Lighting program and the CAN program. In addition, the training session will also provide training on efficient lighting technologies (LEDs, controls, other technologies) to the contractors. PSE will continue to explore the possibility of incorporating more commercial efficiency programs into the CAN in the future.

- 5) **Recommendation:** *PSE should arm trade allies with easy to understand information and tools that explain clearly the amount of savings in terms of energy and cost.* While average savings may be difficult to calculate since projects vary, case studies of similar sector or size programs could help communicate typical scenarios for customers to



consider. A simple cash flow analysis tool for contractors could be helpful in making the sale.

**PSE Response: PSE realizes the value in providing savings estimates in cost and units of energy to assist contractors in the sales process. As part of the Business Lighting Program workbook, we have included a project summary box listing energy and cost savings and simple payback. Customers and contractors are able to see the estimated energy savings and simple payback before and after the estimated PSE incentive.**

**Additionally, PSE is investigating the possibility of including estimated savings values in the closeout documentation sent to participating rebate customers.**

### **Best Practice Recommendations (pp. 61-80)**

PSE's adaptive management of energy efficiency programs includes continuous improvement to incentive structures, savings analyses, program operating procedures and marketing strategies. The evaluation report provides many best practice recommendations. PSE's response to each of the recommendations can be placed into one of three categories:

- 1) Implementing,
- 2) Under Consideration (*not committing to implement in this ERR, but pursuing dependent on enterprise-wide investments in software systems, etc.*), or
- 3) Not Pursuing (*not appropriate to implement under current business environment*).

Responses to the recommendations are grouped into these categories in the sections below:

#### **IMPLEMENTING**

##### **Targeted Marketing Recommendations (Pg. 63)**

**Recommendation: Undertake regular market research including penetration analysis for the program.** What percentage of the commercial real estate stock in PSE service territory has participated in a PSE program? Can this analysis be refined to include segmentation? Utilize program data and compare it to data from public records kept by constituent municipalities, the Commercial Building Stock Assessment (CBSA), Commercial Building Energy Consumption Survey (CBECS), or other databases.

**PSE Response: PSE is pursuing this recommendation along multiple paths:**

- 1) PSE has established a Customer Intelligence team focused on improving PSE's understanding of customers, their facilities and needs.
- 2) PSE is pursuing a new Customer Relations Management (CRM) system to enable better tracking of customer participation in energy efficiency programs, as well as

other interactions with PSE, to better understand both program participation rates as well as customer propensity to participate in additional and/or new programs. This is an enterprise-wide investment dependent on multiple departments external to Energy Efficiency, therefore a firm project timeline has not been established and system specifications are still under development.

- 3) PSE is supporting additional oversampling of facilities within its service area in conjunction with the regional Commercial Building Stock Assessment (CBSA).

**Recommendation:** *Identify corridors of “empowerment zones” where DI or community blitzes will be particularly effective.* Other utilities have a list of specific geographic areas with a high concentration of low income small businesses, which make good candidates for community blitz events, or door-to-door direct install campaigns.

**PSE Response:** PSE seeks to maintain equity in program availability throughout its service area and across all customers, but recognizes some customers and communities require greater encouragement to participate in programs. To address this need, PSE has expanded its outreach staff and in 2014 created a new outreach, education & events team led by a new Manager of Energy Efficiency Outreach. This team leverages internal relationships with PSE’s Customer & Community Engagement Teams and external relations with community leaders and efficiency/sustainability focused organizations to target customers needing additional encouragement to participate in PSE’s efficiency programs.

**Recommendation:** *Recruit program staff, trade allies, or auditors with connections to target communities.* Several urban utilities we spoke with actively recruit bilingual and/or bicultural trade allies or auditors. This effort can be as simple as identifying and recruiting non-participating contractors that could provide inroads into these target markets, or directly recruiting qualified staff from community colleges. Targeting members of bilingual and bicultural communities within cities can yield significant increases in program participation even after only one community member participates, as word of mouth often spreads quickly through these communities.

**PSE Response:** PSE has experienced success through interactions with bilingual and/or bicultural trade allies. An example of this success was increased program awareness through word of mouth advertising among bilingual members of the Coin Laundry Association. PSE developed prescriptive rebates for commercial laundry hot water heaters and boilers in response to this growth in program interest and out of need to simplify communications to aid in overcoming language barriers. Additionally, PSE’s provider of the Small Business Direct Install program has a multilingual call center available to assist in overcoming language barriers encountered in program delivery.

**Recommendation:** *Other possibilities for application of this [targeted marketing] strategy include targeting DSM program efforts where there are transmission and distribution constraints.* Deferring transmission and distribution upgrades is highly valuable and changes the cost effectiveness of DSM solutions. “Geo-targeting” DSM efforts in this way is a strategy under development in a number of utilities around the country. This approach falls under the category of “Big Data” or advanced data collection and analytical methods.

**PSE Response:** PSE utilizes this approach. For example, a targeted DSM initiative was conducted at Point Roberts in 2012. Point Roberts is geographically isolated by international borders (must pass through Canada to travel to Point Roberts by land), increasing power transmission and system maintenance costs in this portion of PSE’s service area. A targeted effort by both Residential and Business Programs enabled the implementation of a significant quantity of energy efficiency measures while minimizing border crossings by PSE staff and implementation contractors. This focused effort resulted in the installation of 841 Small Business Direct Install program measures, delivery of Energy Smart Grocer services at four facilities, completion of 28 HomePrint™ assessments, and 41 residential duct sealing/direct install visits. A similar approach was taken in 2008 to reduce loading on a substation in the Renton area. 117 of 205 customers on a heavily loaded circuit were contacted with 46 customers agreeing to have a detailed energy audit. 17 (37%) of customers receiving audit reports implemented one or more of the suggested measures.

#### **Customer Recognition Recommendations (Pg. 64)**

**Recommendation:** *Use repeat customers to provide testimonials and generate case studies for future marketing efforts.* Have PSE staff think of one customer that provided positive feedback about the program last year. Ask if the customer would be willing to be featured on the website. The feature could be anything from a simple quote to a fully articulated case study and video documentary.

**PSE Response:** PSE is using this approach through customer recognition ads and case studies. These materials are available online at [pse.com](http://pse.com), printed as handouts for distribution by PSE staff when interacting with customers and trade allies, and published in print media targeted at business customers.

**Recommendation:** *Give small businesses a window sticker or certificate for participation.* Window sticker advertising is common in the small business sector, used effectively by companies like Yelp, Zagat, TripAdvisor, and many others. A PSE-branded window sticker could potentially include lifetime energy savings, carbon mitigation, and payback period estimates. A certificate or plaque, such as that used by the U.S. Green Building Council’s Leadership in Energy and Environmental Design (LEED) ratings, may be more appropriate for larger facilities such as schools and municipal offices. In the energy efficiency sector, the U.S. Environmental Protection Agency Energy Star™ program has been very effective at distinguishing products, homes, and businesses with their labels, yard signs, and certificates.

**PSE Response:** PSE has provided window stickers to participants of the Small Business Lighting program for nearly four years and is expanding this to other programs. To ensure these stickers actually get placed in windows, PSE is beginning to ask third party program implementers to affix the sticker to a window rather than leaving behind for the customer to affix at a later date. Additionally, a project completion certificate has been developed for customers and is accompanied by a project summary factsheet suitable for circulation by email or inclusion in the customer's company newsletter, etc. This project "wrap-up" packaged is currently being utilized in the custom grant program and, depending on customer feedback, may be expanded into commercial rebates and other programs.

**Recommendation:** *Create a dedicated role at PSE to develop pilot approaches for customer outreach.* Consider a pilot program with an intern or university student dedicated to discovering the energy needs of a small business segment and advertising directly to that segment. This program could be similar to the Resource Conservation Manager (RCM) program, but rather than targeting a single company or building, they are dedicated to achieving savings within a particular small business segment. This SB-RCM could work to develop case studies, perform market penetration analyses, or implement any of the other recommendations mentioned in this section.

**PSE Response:** PSE created an Energy Efficient Communities team to focus on this, which has been expanded in 2014 and is now led by a new Manager of Energy Efficiency Outreach. This team works with local business and community organizations to identify and act on opportunities to create greater awareness of and participation in business efficiency programs.

Also, a program similar to the RCM program, call Strategic Resource Management (SRM), has been launched in 2014 to target smaller customers not large enough to participate in the RCM program. SRM is being implemented by a third party that aggregates multiple smaller sites into a group for which RCM-type services are cost effective.

#### **Developing a Sales Culture (Pg. 66)**

**Recommendation:** *Cultivate relationships with trade allies, and train them to be program ambassadors.* Specifically train trade allies in sales techniques; help them to understand the customers' needs and tailor their pitch to promote the appropriate aspects of the program. Encourage the trade allies to mention PSE in their sales efforts and co-brand with PSE to lend credibility to their efforts.

**PSE Response:** The Contractor Alliance Network (CAN) has been expanded to include commercial lighting and HVAC contractors. As of May 2014, there are more than 30 commercial sector contractors enrolled in the CAN receiving training in the delivery of PSE

energy efficiency incentive programs to customers and authorization to use co-branded marketing materials.

**Recommendation:** *Implement advanced incentive techniques where applicable.* If the program wishes to experiment with more sophisticated rebate offerings, be sure to closely monitor program participation and make arrangements to measure the effects of the changes.

**PSE Response:** “Advanced” incentive techniques utilized in PSE’s business rebates programs have included point-of-sale (instant) rebates to customers who purchase energy efficient lighting and energy efficient commercial kitchen equipment. These techniques have utilized sales person incentives, commonly referred to as “SPIF,” to motivate vendors and distributors to make the extra effort required to encourage customers to purchase high efficiency equipment utilizing PSE incentives. PSE also uses an “Assignment of Funds” option, enabling incentive payment directly to the contractor installing an efficiency measure to streamline paperwork and accounting for the customer. PSE closely monitors all incentive mechanisms and proactively modifies offerings as required to maintain customer and trade ally participation without providing overly generous incentive amounts or overly burdensome program participation requirements.

**Recommendation:** *Develop performance based incentives for key account representatives and trade allies.* Consider developing a system that rewards PSE staff or trade allies with incentives for increasing program participation, meeting savings targets, or delivering high quality work ahead of schedule. Such a system can be an effective motivational tool to encourage innovation throughout the program.

**PSE Response:** Approximately eight percent of Business Services account representative compensation is funded by PSE’s Business Energy Efficiency programs. Account representatives routinely discuss relevant energy efficiency program offerings with customers and provide quarterly reporting of their energy efficiency engagement activities to Business Energy Management. The Contractor Alliance Network (CAN), which currently has more than 30 contractors enrolled in the areas of commercial lighting and HVAC, is a performance-based program requiring positive customer satisfaction and has project delivery quotas to achieve higher tier membership in the program.

#### **Coordinated Rebate Processing: Recommendations (Pg. 69)**

**Recommendation:** *Assign staff to specific roles to capitalize on their skillsets.* Often highly qualified utility program staff spend considerable time processing and reviewing rebate applications. Ideally, administrative staff can process simpler prescriptive rebates, which will give the qualified engineers an opportunity to perform quality control on custom projects and field inspections on projects that lack sufficient documentation.

**PSE Response:** A reorganization of Energy Efficiency staff has been implemented in 2014, centralizing prescriptive rebate processing and verification functions into a common team that leverages administrative staff to review and process rebate applications, freeing up rebate program managers to focus on program planning, development, reporting and relations with trade allies and customers.

**Recommendation:** *Establish checklists for paperwork review.* Standardized checklists will expedite quality control and rebate application review, and improve the program's consistency. Having a checklist for every step of application review ensures that each application only needs to be touched once by a particular staff member, and reduces the likelihood that an application will be delayed or need to backtrack through the process.

**PSE Response:** All business rebates utilize a review checklist for the following steps: 1) initial project intake, 2) project processing, 3) QC review, 4) management approval, and 5) final payment processing. Over time, these checklists have grown to include numerous checkboxes, with multiple individuals frequently checking the same items. Recognizing a significant amount of time is required to perform QC checks, opportunities for streamlining and building "failsafe" controls into software systems to eliminate the need for select QC review items are being investigated.

**Recommendation:** *Request that the rebate processor provide monthly metrics about average processing time, the number of applications processed, and any notable issues with the applications.* Demonstrating an interest in the rebate processor's progress will motivate their staff to be quick and thorough. Customers rarely know the difference between a utility and an implementation contractor, so oversight of the rebate processor is important to ensure customer and trade ally satisfaction. The mere act of reporting and tracking rebate processing metrics can help improve the rebate processor's efficiency and attentiveness to process improvements.

**PSE Response:** Rebate processing times are monitored for both internally processed and third party processed rebates. In 2014 a reorganization of Energy Efficiency staff has occurred to centralize internal prescriptive rebate processing and verification functions into a central team to enable greater focus on processing times. Third party rebate processors have exhibited a good track record of fulfilling rebate processing timelines, leading the business rebates team to outsource some rebate processing functions for the first time in 2014.

**Recommendation:** *Establish internal limits on rebate processing time, and provide employee incentives for process improvements.* Provide incentives to PSE or the rebate processor's employees (formal recognition, competitions, bonuses, etc.) to expedite paperwork processing time. Set firm and realistic deadlines for batches of paperwork to be fully processed.

**PSE Response:** To expedite paperwork processing time, a reorganization of Energy Efficiency staff has been implemented in 2014, centralizing the residential and business rebate processing teams to enable cross-training of staff to enable shifting of resources when specific programs experience high volumes of activity to maintain acceptable rebate processing times. This team is currently in its initial stages of formation, but as its operational strategies are formalized expectations on rebate processing times will be established.

#### **Application Process Recommendations (Pg. 70)**

**Recommendation:** *Consolidate all forms on a single web page to simplify the customer's process.* The customer-facing website should make it easy to compare rebate applications. Some programs even have "universal applications" that are not measure or program specific to simplify the customer experience. If a universal application necessitates a costly process redesign, a least-cost method for simplifying the customer experience is to consolidate all the forms needed for any rebate application onto a single web page.

**PSE Response:** In late 2013, a customer "touch points" focus group on rebates processing initiated a redesign of both residential and business rebate applications. Where possible, application forms were consolidated per the recommendation. Additionally, in 2014 PSE has established a single landing page with quick links to all business efficiency programs and business account management services at [www.pse.com/mybusiness](http://www.pse.com/mybusiness).

**Recommendation:** *Create a roadmap of the customer experience.* Determine time spent on the various tasks and review the flowchart for bottlenecks. Make an effort to see the program from the customer's perspective. Work with a customer through the rebate process from start to finish, and record their feedback in real time. Consider web site usability testing—a type of research that observes customers using the website while they vocalize their thought processes. Physically draw a map of the customer experience, identify the number of discrete actions they need to take to participate in the program, and determine if it is possible to eliminate or streamline some of those actions. This process has proven successful among many private-sector companies offering complex services to customers, including utility companies. If this proves to be a successful exercise, map the experience of a company attempting to join the Contractor Alliance Network, a partnering vendor, a trade ally submitting a batch of applications, or the experience of any other crucial member of the program's ecosystem. Understanding how these parties interact with the program on a practical and everyday level can lead to numerous insights about how to streamline the overall program operations.

**PSE Response:** In late 2013 a customer "touch points" focus group convened full time for 30 days to map out the customer experience in participating in both residential and business rebates. Many process changes have been implemented as a result of this effort, including a

major reorganization of Energy Efficiency program staff to streamline rebate processing and significant rebate application redesigns. While website usability testing has not been conducted, significant enhancements to website design have occurred, including development of a single landing page with quick links to all business efficiency programs and business account management services at [www.pse.com/mybusiness](http://www.pse.com/mybusiness). Furthermore, PSE communications staff has performed analytics on website traffic regarding business energy efficiency incentives between December 2013 and February 2014 and is using this data to improve website structure and design.

#### **Forming Partnerships Internally and Externally: Recommendations (Pg. 72)**

**Recommendation:** *Add value and build trust among trade allies by offering classes and trainings to educate them on program offerings and new technologies.* In interviews, PSE staff expressed a specific interest in cultivating interaction among other PSE DSM programs. PSE could host events where staff from other programs join members from the CAN to learn about program offerings, technical best practices, or new technologies. Contractors, equipment dealers, and installers acting as program partners can serve as highly effective ambassadors for all DSM programs, not just the programs they represent.

**PSE Response:** *Internally, the approach currently taken by PSE to cultivate interaction and knowledge transfer between programs is the use of “embedded” staff from Corporate Communications, Energy Efficient Communities, Energy Advisors, and Contractor Alliance Network teams in both residential and business efficiency programs. The “embedded” staff members attend all business and residential team staff meetings and are focused on developing comprehensive approaches to interacting with customers and trade allies. A specific area of focus in 2014 is “cross-pollination” between business and residential programs, which may be accomplished by informing employees of efficiency programs they may use in their home when PSE is on site at a business communicating about business efficiency programs.*

*Externally, it has been PSE’s experience that contractors, equipment dealers and other trade allies tend to be focused intently on either commercial or residential markets, with occasional overlap tending to occur in the small commercial sector. Therefore, efforts to make trade allies “ambassadors for all DSM programs” has been structured around awareness and general promotion rather than expecting trade allies to have in-depth knowledge of PSE programs across both residential and business sectors.*

**Recommendation:** *Consider organizing a yearly trade ally conference to recognize successful projects and assemble case studies.* Provide awards for the most savings per trade ally, meet with trade allies on a quarterly basis to share ideas, convert them to program ambassadors, and obtain frequent feedback from the field.

**PSE Response:** PSE supports a major event each year to promote trade ally and customer interaction (West Coast Energy Management Congress in even years & Powerful Business



Conference in odd years.) These events routinely include presentations on successful projects and latest innovations in energy efficiency programs. Additionally, PSE provides awards and recognition to trade allies and customers who successfully participate in energy efficiency programs. Awards have been given not only for most savings, but also for highest customer satisfaction, quality of work and quantity of projects completed. PSE also frequently solicits feedback from the field by holding focus group meetings with trade allies to inform program modifications and new program design. Recent examples include focus groups with lighting contractors in developing new business lighting incentives for 2014, focus groups with commissioning agents to inform modifications to the Comprehensive Building Tune-Up (CBTU) program in late 2013, and meetings with resource conservation managers to guide program modifications for 2014 made in response to impact and process evaluation results of 2013.

#### **Adapting: Recommendations (Pg. 77)**

**Recommendation:** *Consider a comprehensive potential study.* In the long term, Navigant suggests a comprehensive energy efficiency potential study. The goal of such a study would be to provide the technical, economic, and market (achievable) potential for electric and gas energy savings in PSE's service territories and to provide a range of possible outcomes considering uncertainties in key study inputs. Such a study would help PSE more precisely target its efficiency programs where the energy efficiency potential is greatest.

**PSE Response:** PSE completes a Conservation Potential Assessment every two years in developing its Integrated Resource Plan.

**Recommendation:** *Develop and test a methodology for forecasting program participation.* Use program data and supplemental data from third party sources to examine trends of electric and gas savings by participant type, time of year, or the effectiveness of past marketing efforts. Update the forecast on a monthly basis when new data is received from implementation contractors. Compare the ex ante forecast with the reality at the end of the year to refine and reiterate the forecasting methodology. Forecasts of program participation can also leverage efforts outlined in the marketing section—for instance, the forecast could be informed by the potential customers' propensity-to-participate scores.

**PSE Response:** Forecasting and review meetings are held every month by the entire Energy Efficiency team (Residential, Business, New Program Development & Verification, Communications, etc.) to review program performance trends and expenditures. Progress toward annual savings goals is tracked, compared to previous years and forecasted for remaining months of the year with market trends and external drivers reviewed and discussed.

**Recommendation:** *Establish a "pipeline" of projects that can be tapped if programs are below targets.* Track previous customers and determine if they are likely to participate again as part of

PSE's customer relationship management (CRM) strategy. Implement the marketing ideas mentioned in previous sections if the program is below targets. Use CRM to establish relationships with customers in the "pipeline" that may be willing to delay a project until the following year if the program is on track to exceed goals.

**PSE Response:** PSE continuously monitors its "pipeline" of projects through regular check-ins with third party program implementers, trade allies & vendors, as well as monitoring progress of contracted custom grant projects which typically have a longer timeline for completion. PSE generally does not like to ask customers to delay projects and normally encourages early completion where possible, even if it results in a program exceeding its goals.

**Recommendation:** *Develop a list of actions to take based on the results of a forecast.* Such a list can include the most dispatch able measures, communities or companies that are part of the project pipeline, pre-approved applications that can serve as leads for members of the CAN, and many other actions.

**PSE Response:** Forecasting meetings are held each month by all Energy Efficiency teams (Residential, Business, New Program Development & Verification, Communications, etc.) to review program performance and progress toward achieving savings goals. These meetings conclude with a review of action items that program teams will take to adaptively manage energy efficiency program operations to remain on track to meet or exceed overall savings and budget goals of the program portfolio.

#### **Leading: Recommendations (Pg. 79)**

**Recommendation:** *Increase utilization of social media.* Social media is becoming an increasingly important means of communication among consumers. Consider expansion of the utility's social media presence. Move communications away from mail to email, tweets, and text messages. Social media is an excellent platform to build program awareness and increase customer satisfaction. An effective strategy for social media is to create social media profiles of energy efficiency "characters" and monitor these accounts on a continuous basis. Social media platforms may also be effectively utilized to obtain customer feedback in real time. PSE has been commended for its existing social media efforts, with positive responses for its Twitter and Facebook presence.

**PSE Response:** The Business Energy Management team has begun using social media to a greater extent. For example, in May 2014 PSE will be posting approximately 40 "shout outs" to customers via Facebook praising them for making energy efficiency an important part of their business and thanking them for recently completing an energy efficiency upgrade with

**PSE funding. Greater emphasis has also been placed on utilizing Twitter to create customer awareness of energy efficiency program activities.**

## UNDER CONSIDERATION

### Targeted Marketing Recommendations (Pg. 63)

**Develop a methodology for assigning propensity scores to potential program participants.**

Performing data analytics on current program participants allows some programs to target efforts toward customers most likely to participate. These customers are assigned a “propensity score” based on their business type, history of program participation, billing data, location, membership in community organizations, and other factors.

**PSE Response: In 2013 PSE completed an Energy Efficiency Propensity Modeling Pilot. This pilot operated in the residential sector with a focus on owners of single family homes. Propensity models were developed and, based on the model results, targeted campaigns were conducted to recruit customer participation in PSE’s water heat, weatherization, refrigerator decommissioning and HomePrint™ programs. Results of the pilot showed promising results with follow-on work under consideration once the new Customer Information System is stabilized. Implementation is expected to first occur in the residential sector since there is a greater connection between the individual responsible for bill payment and the decision maker for energy efficient purchases and practices.**

### Customer Recognition Recommendations (Pg. 64)

**Recommendation: Highlight non-energy benefits with case studies.** Advertisement of non-energy benefits of the program is currently a priority for PSE staff. A case study is a great way to highlight water savings, better lighting quality, increased comfort, indoor air quality, free publicity, or other non-energy benefits of the program.

**PSE Response: Increased emphasis on non-energy benefits efficiency measures will be considered in developing future advertising and marketing content.**

**Recommendation: Create “accounts” to add convenience to repeat customers.** Customers that participate in the program multiple times or across multiple business locations should receive special treatment. Having an account that tracks their participation would allow rebate forms to be pre-populated and expedite processing. Reliable customers could qualify for enhanced rebate offerings, special financing options, or other perks.

**PSE Response: PSE seeks to maintain equity and fairness in program delivery across its customer base and works to avoid providing special or preferential treatment to specific customers.**

**PSE is pursuing a new Customer Relations Management (CRM) system to enable better tracking of customer participation in energy efficiency programs, and this system will likely contain the recommended feature of pre-populated forms, which may lead to faster incentive**

processing. The CRM is an enterprise-wide investment, dependent on multiple departments external to Energy Efficiency, therefore a firm project timeline has not been established and system specifications are still under development.

Enhanced rebate offerings are currently part of PSE's incentive structure. An example of this is the Enhanced Lighting offering for comprehensive projects that implement all cost effective lighting measures identified at a facility in a single project.

**Recommendation: *Proactively call certain customers.*** Most customers only talk to their utility company when they have a problem. A best practice is to find a positive reason to call a customer. Because of high turnover in commercial real estate, there are many new customers each year. An informational, proactive phone call during the first three months of service can improve customer satisfaction and increase program participation. On the call, the PSE representative can ask the customer if they have any questions about their service, or are interested in knowing which rebate programs they may qualify for. For repeat customers, make it a policy to personally call and thank customers that achieve a certain amount of savings for the program.

**PSE Response:** PSE has begun to be more proactive in its communication with business customers. In 2013 PSE differentiated its approach to management of inbound business customer calls with the creation of business accounts phone and email contacts. Additionally, outbound calls were made to business customers by Business Services staff in 2013 during the transition to a new Customer Information System (CIS) and energy efficiency program messaging was included in this communication.

Significant work is also underway to improve the customer on-boarding process for new accounts. These efforts are primarily addressing non-energy efficiency concerns at this time, but as processes are improved the addition of proactive energy efficiency messaging will be considered.

While not a personalized call, PSE is proactively reaching out to business customers through its energy efficiency programs by operating a Business Energy Reports pilot program through Opower that is targeted to communicate with up to 10,000 business customers about their energy use and opportunities for energy savings beginning in late 2013. Also, to say "thank you" to customers for their participation, a project completion certificate has been developed for customers and is accompanied by a project summary factsheet suitable for circulation by email or inclusion in the customer's company newsletter, etc. This project "wrap-up" packaged is currently being utilized in the custom grant program and, depending on customer feedback, may be expanded into commercial rebates and other programs.

#### Developing a Sales Culture (Pg. 66)

**Recommendation: *Bulk Discounts:*** "We want it all, and we are willing to pay for it!" – proclaims PSE's website describing the whole building lighting retrofit incentive bonus.

Perhaps similar bonuses could be applied to other programs, such as providing an enhanced incentive for installing variable speed drives on every HVAC unit serving a particular building.

**PSE Response:** PSE currently deploys this strategy with its Enhanced Lighting, Small Business Direct Install, and New Construction Whole Building Approach offerings. Additionally, bundling of measures is an available option under the Custom Grant program to enable longer payback measures to be combined with short payback measures to create a larger comprehensive project with greater savings and an acceptable return on investment. However, opportunities for improved promotion of comprehensive upgrades likely exist and will be investigated in future program planning efforts.

**Recommendation:** *Upselling:* United Illuminating in Connecticut provides a 10 percent bonus on incentive payments for projects that address multiple end-use categories. A project can potentially earn a 20 percent bonus by addressing lighting, HVAC, and refrigeration. This encourages a comprehensive approach for energy efficiency, and may provide an opportunity for a cash-strapped business to undertake more expensive HVAC upgrades in conjunction with relatively inexpensive lighting upgrades.

**PSE Response:** PSE has used “upselling” approaches to effectively encourage more in-depth projects in the areas of lighting retrofits (Enhanced Lighting) and new construction (Whole Building Prescriptive Approach). Additionally, PSE allows bundling of measures in the Custom Grant program to encourage more comprehensive projects that still offer the customer an acceptable return on investment. However, feasible opportunities for additional “upselling” likely exist and will be investigated in future program planning efforts.

#### **Application Process Recommendations (Pg. 70)**

**Recommendation:** *Consider implementing an online application.* Online applications have the potential to be very convenient for program staff, expedite rebate processing time, and reduce errors. However, a complex measure may not be appropriate for an online form, as customers can experience dissatisfaction due to browser time-out or refresh errors. Automatic error checking should not withhold information from those filling out the form, nor prevent them from filling in a certain portion of the form. Instead, error checking is most effective as “flags” that warn participants of missing information, unrealistic numbers, or other potential flaws. This system is best piloted with certain programs before attempting a portfolio-wide rollout. In any case, customers should always have a paper alternative to the online form.

**PSE Response:** Online applications are being pursued, but a timeline for implementation is uncertain depending on enterprise-wide software investments. An online application is currently being testing for the Business Lighting program, but submitted information does not automatically populate the CSY project management system, requiring manual transfer of data. Ultimately, an online application process in which customer account and contact information is automatically populated in form fields and energy efficiency measure

information is automatically loaded into the project management system is desired. Implementation timeline will be dependent on timing of investments in Customer Relations Management (CRM) and Demand Side Management (DSM) software systems.

#### Functional Databases: Recommendations (Pg. 71)

**Recommendation:** *Expand on the Oracle database to consolidate PSE customer information into one place.* PSE is currently in the process of piloting an Oracle database for the Small Business Lighting Program to shift away from a large and nearly dysfunctional Excel spreadsheet. Navigant recommends using this transition period as an opportunity to consider the myriad capabilities of a sophisticated database. Customer billing data, past program participation, future program eligibility, and a record of interactions with PSE should all be searchable by customer account number.

**PSE Response:** PSE's Energy Efficiency department is currently pursuing a comprehensive upgrade to a new program management software platform that will consolidate multiple databases including CSY, CMS and Excel tracking spreadsheets. At this time, functional performance requirements are being developed with the intent of issuing an RFP for software providers in late Q2 2014.

**Recommendation:** *Permit different parties to edit certain information in the database so it becomes a tool for collaboration.* Consider allowing input from members of the Contractor Alliance Network. Some utility databases have a page for each customer, where the contractor can add qualitative and quantitative data about the customers' specific building, propensity to participate in future programs, and levels of customer satisfaction. These data can then be used to inform future program plans and marketing efforts.

**PSE Response:** PSE is currently pursuing a comprehensive upgrade to a new program management software platform. Opportunities for third party access to the database with potential editing capabilities will be considered as appropriate during the project. Security of program data and confidential customer information will need to be ensured.

#### Forming Partnerships Internally and Externally: Recommendations (Pg. 72)

**Recommendation:** *Partner with financing organizations to shorten payback time for cash-strapped businesses.* Energy efficiency financing is complex yet widely successful in a variety of contexts. The numerous caveats and considerations associated with offering financing packages to cover the upfront cost of efficiency are beyond the scope of this best practice review. However, many utilities have unlocked huge savings through the use of financial mechanisms. Several utilities Navigant interviewed suggested that financing a project so it is immediately cash flow positive for a business can substantially broaden the customer base and increase program appeal. Consider developing a simple cash flow analysis tool to aid trade allies in explaining the implications of EE investments and the use of financing on monthly cash flows to aid them in making a sale.

**PSE Response:** PSE continues to weigh the risks and benefits of involvement in project financing and may pursue options such as financing or equipment leasing to enable greater customer participation in energy efficiency programs.

**Recommendation:** *Capitalize on potential spillover from other programs, even residential.*

Small business owners also tend to be homeowners. Provide those who interact with customers on a daily basis with brochures describing the overall DSM portfolio and suite of potential incentives to leave behind after a successful audit or installation. Train customer-facing program representatives (e.g., trade allies, vendors, implementation contractors) to answer questions and promote all of PSE's program offerings. For vendors, PSE could provide retailers with point-of-purchase marketing materials, in store applications, training, and other tools to encourage store staff promotion of the program.

**PSE Response:** PSE's Energy Efficient Communities team is focused on developing comprehensive approaches to "cross-promoting" residential and business efficiency programs. Additionally, literature and information regarding PSE's efficiency programs (both residential and business) may be provided to third party program implementers for distribution when on site interacting with business customers to raise their awareness of additional business efficiency incentive programs as well as residential programs for their home.

**Recommendation:** *Work with local organizations to help facilitate the "community blitzes" for marketing.*

Some examples of local organizations for outreach include Washington Restaurant Association, Northwest Environmental Business Council, Building Owners and Managers Association (Washington Chapters), Building Industry Association of Washington, Northwest Energy Efficiency Council, Northwest Energy Coalition, Washington State Hotel and Lodging Association, National Association of Industrial and Office Properties (Washington Chapter), Washington Retail Association. Other partnerships could be formed through collaboration with PSE's Energy Efficient Communities Program.

**PSE Response:** PSE typically collaborates with these organizations on "sector" outreach and program promotion initiatives while coordinating community blitzes with local agencies such as Chambers of Commerce and government officials. However, PSE will consider opportunities for increased collaboration with these organizations in supporting local community blitz initiatives.

**Adapting: Recommendations (Pg. 77)**

**Recommendation:** *Collect additional data on program participants.* In the near-term, Navigant has suggestions for how to improve the reliability and predictability of program performance. Table 29 outlines the additional data for PSE's consideration, in order to identify



and capitalize on significant savings opportunities and to identify gaps in current program design.

**PSE Response:** PSE leverages much of the data listed in Table 29 that is purchased through Dun & Bradstreet, collected from publicly available county property assessor data, and compiled internally from PSE's Customer Information System and CSY energy efficiency program management database. While this data is currently used on a case-by-case and as-needed basis for specific projects, PSE is considering utilizing this data at a greater level. One example of this is the Small-to-Medium Business Energy Reports pilot that has commenced in 2014. PSE is using this, as well as other, data to identify like type businesses and proactively engage with them regarding their energy use and savings opportunities.

#### **Leading: Recommendations (Pg. 79)**

**Recommendation:** *Implement a portal for real-time customer feedback.* Implementation of a portal for real-time customer feedback can be achieved through social media or online chat assistance on the utility website. It is also important to obtain real-time feedback from customers through ongoing surveys.

**PSE Response:** Energy efficiency program teams are considering opportunities to obtain more real-time customer feedback. In 2013, the Business Energy Management team mapped out all points of interaction with customers throughout an energy efficiency project cycle and identified feedback information that would be beneficial to program management at points along the way. The team is currently considering opportunities to gather "real-time" data in addition to the current project evaluations given to customers after an incentive is paid.

**Recommendation:** *Engage customers through creative measures.* Engaging customers through creative measures, such as online videos, contests, and promotions is an effective strategy to increase participation and awareness. PSE was commended for its "Rock the Bulb" social media contest to promote energy efficiency. PSE was also recognized for posting a short video documentary of its wind power development activities. Another example of success is from Southern California Edison, which developed an award-winning mini-video series to promote energy efficiency.

**PSE Response:** PSE is considering expansion of its "creative" approaches to engaging customers in the business sector and weighing the costs versus benefits of online videos, etc.

## NOT PURSUING

### Developing a Sales Culture (Pg. 66)

**Recommendation:** *Time sensitivity:* Salt River Project effectively communicates remaining rebate funds to contractors and customers with a “meter” (shown below in Figure 19) on each program’s homepage. This simple, transparent communication of remaining incentive budget builds trust with trade allies, and instills potential participants with a sense of urgency.

**PSE Response:** PSE does not limit program participation to budgeted amounts – if a program is running strong and outperforming its targeted budget and/or savings in a program cycle, PSE will reallocate funds from other programs, etc. to continue meeting customer demand and achieving all cost-effective conservation. Much effort has been invested in dispelling the myth that PSE’s conservation programs “run out of money” and may not be available at the time a customer wishes to participate. While a “meter” may drive increased participation by instilling a sense of urgency, it would likely also create confusion about availability of funding, especially near year-end as targeted savings and expenditures are reached, and often exceeded.

### Forming Partnerships Internally and Externally: Recommendations (Pg. 72)

**Recommendation:** *Educate PSE call center employees on the status of the program.* Organize meetings between call center staff, key account reps, and implementation contractors. Be sure program information is passed to new employees in areas of high turnover. Ultimately, trade allies, account representatives, utility staff, call center staff, and implementation contractors should all be trained to assist the customer (at various levels of detail) with technical or program information. At a minimum, each party should have a clear idea of where to direct a customer if they themselves do not have an immediate answer.

**PSE Response:** The short-term approach taken to improving the business customer experience has been creation of a unique business call center number which routes callers directly to Business Services staff and Energy Advisors who are familiar with business energy efficiency program offerings.

There are no immediate plans to educate all call center employees on business energy efficiency programs. PSE’s long term strategy to enable more broad dissemination of energy efficiency program information is to leverage the Customer Information System (CIS) and potentially a new Customer Relations Management (CRM) platform to provide prompts with scripted content to call center staff to enable general conversations regarding program offerings, but the dedicated business call center number is likely more effective for connecting business customers with information regarding business energy efficiency incentives.

## **Adapting: Recommendations (Pg. 77)**

**Recommendation:** *Plan budgets on a longer term (three year) cycle to develop consistency for businesses that depend on the program.* If ramping or curtailing of program savings must occur, it is beneficial to plan budgets on a long term cycle. With longer term planning, the need to suspend programs that are delivering above savings targets, or spend excess marketing dollars on programs which are below targets, is rare. Infrequent ramping and curtailing of programs adds some consistency to the economic actors dependent on program incentives. Price certainty enables contractors in the CAN to make investments in training their personnel and using the correct equipment—both factors that lead to market transformation.

**PSE Response:** Shifting from a two-year to a three-year program planning cycle would misalign energy efficiency program operations with biennial requirements of the State of Washington’s Energy Independence Act RCW 19.285. Therefore this will not be pursued at this time.

**Recommendation:** *Be transparent—do not hesitate to communicate budgetary constraints or program savings goals to trade allies, vendors, and customers.* Salt River Project developed a tool on their program website that clearly shows the remaining rebate funds for the year. Use the relationships that PSE has established with vendors, contractors, and customers to communicate program goals and budgetary constraints. Consistent communication will help to build trustworthy relationships with these program partners, and may result in alliances with PSE staff in order to meet targets to ensure the program continues in subsequent years.

**PSE Response:** PSE makes great effort to be transparent with its trade allies, third party program implementers, customers and regulatory advisory groups. Energy efficiency program teams are constantly in communication with their constituents and adaptively managing expectations to maintain program performance. The Business Energy Management team believes a website graphic or other communication displaying “remaining rebate funds” for the year would add to the myth that PSE’s programs “run out of money” and that funding may not always be available. In recent years PSE program teams have gone to great effort to make customers aware that, while we may occasionally have promotional or bonus offers, our programs are always available to provide funding according to their project’s timeline.



# Commercial Rebates and Small Business Lighting (SBL) Programs Evaluation

**Final Report  
(Amended with Addendum Results)**

**Prepared for:**



Navigant Consulting, Inc.  
Contact: Jan Harris  
1201 Third Avenue  
Suite 3320  
Seattle, WA 98101

206.607.9507  
[www.navigant.com](http://www.navigant.com)

June 3, 2014



## Acknowledgements

Navigant Consulting, Inc. (Navigant) gratefully acknowledges the time and input provided by various Puget Sound Energy (PSE) staff members on this evaluation. The project benefitted from this collaboration, which included regular meetings and frequent communication.

Additionally, we acknowledge invaluable input from the numerous interviewees for this project including customers, trade allies, and various other stakeholders in the PSE program, as well as program managers, consultants, and other experts from the industry outside this area.

Finally, we acknowledge the contribution of the authors of this report who include:

Michael Noreika  
Jennifer Hampton  
Jonathon Strahl  
Jan Harris

## Table of Contents

<b>Executive Summary .....</b>	<b>1</b>
Approach .....	1
Key Findings and Recommendations .....	1
Impact Evaluation .....	1
Program-Level Realization Rates .....	1
Small Business Lighting .....	2
Commercial Rebates .....	2
Calibrated Commercial Rebate Realization Rates .....	3
Process Evaluation .....	4
Best Practices .....	5
Opportunities for Further Research .....	6
<b>1 Introduction .....</b>	<b>8</b>
1.1 Evaluation Objectives .....	8
1.2 Program Descriptions .....	8
1.2.1 Commercial Rebates Program Description <i>Schedules Electric &amp; Gas 262</i> .....	8
1.2.2 Small Business Lighting Program Description <i>Schedule E255</i> .....	9
<b>2 Impact Evaluation .....</b>	<b>12</b>
2.1 Program-Level Realization Rates .....	13
2.1.1 Small Business Lighting .....	13
2.1.2 Commercial Rebates .....	13
2.2 Impact Evaluation Methodology .....	14
2.2.1 Data Sources .....	14
2.2.2 Project File Review .....	20
2.2.3 On-Site Measurement and Verification Analysis .....	20
2.2.4 Calculation of Gross Energy Savings and Determination of Realization Rates .....	23
2.3 Impact Evaluation Findings .....	25
2.3.1 Small Business Lighting Realization Rates .....	26
2.3.2 Commercial Rebates Realization Rates .....	26
2.4 Factors Influencing Realization Rates .....	28
2.4.1 Occupancy Sensor Meta-Analysis .....	29
2.4.2 Pre-Rinse Spray Valve Program (Commercial Faucet Aerators) .....	31
2.4.3 Premium HVAC Service .....	33
2.5 Impact Evaluation Recommendations .....	33
2.5.1 Program Data Requirements .....	33
2.5.2 Program Data Tracking .....	33
2.5.3 Energy Savings Calculations and Documentation .....	34
<b>3 Process Evaluation .....</b>	<b>35</b>

3.1	Process Evaluation Methodology .....	35
3.1.1	In-Depth Interviews with Staff .....	36
3.1.2	Program Materials and Tracking System Review .....	36
3.1.3	Customer Phone Survey .....	36
3.1.4	Trade Ally Phone Interviews .....	39
3.2	Process Evaluation Findings.....	39
3.2.1	Customer and Trade Ally Awareness.....	40
3.2.2	Participation Drivers and Barriers.....	43
3.2.3	Marketing and Leveraging External Relationships.....	45
3.2.4	Participant Experience .....	47
3.3	Process Evaluation Conclusions and Recommendations .....	58
<b>4</b>	<b>Select Review of Best Practices .....</b>	<b>61</b>
4.1	Best Practice Research Methodology .....	61
4.2	Best Practice Research Findings .....	64
4.2.1	Marketing: Increasing Customer Awareness.....	64
4.2.2	Customer Recognition.....	66
4.2.3	Developing a Sales Culture .....	68
4.2.4	Executing: Timely Rebates, Clear Applications, and Functional Databases.....	70
4.2.5	Functional Databases.....	74
4.2.6	Leveraging: Forming Partnerships Internally and Externally .....	75
4.2.7	Adapting: Building in Program Agility and Flexibility.....	77
4.2.8	Best Practice for Managing Program Variability .....	80
4.2.9	Leading: Appropriate and Effective Technology Utilization .....	82
<b>Appendix A</b>	<b>Survey and Interview Instruments.....</b>	<b>A-1</b>
A.1	Participant Customer Survey Questions.....	A-1
A.2	Non-Participant Customer Survey Questions.....	A-7
A.3	Participant Trade Ally Interview Questions .....	A-10
A.4	Low-Frequency Participant Trade Ally Interview Questions.....	A-12
<b>Appendix B</b>	<b>Sub-Program Snapshots .....</b>	<b>B-1</b>
B.1	Small Business Lighting Program.....	B-1
B.2	Commercial Lighting Program .....	B-4
B.3	Premium HVAC Program.....	B-6
B.4	Commercial Laundry Program .....	B-8
B.5	Commercial Kitchen Program.....	B-10

## List of Figures

Figure 1. Illustration of As-Reported Savings Compared to As-Evaluated Savings.....	24
Figure 2. Common Evaluation Issues Resulting in Differences in Realization Rates .....	28
Figure 3. Example Participating Customer Sample Stratification.....	38
Figure 4. How Did Participant Customers Hear about the Programs?.....	40
Figure 5. Had Non-Participant Customers Heard of the Programs? .....	41
Figure 6. Why Did Customers Participate in the Program? .....	43
Figure 7. Did Customers Consider Installing the Measure Before Enrolling in the Program?.....	44
Figure 8. How Influential were the Program Components on the Customer’s Decision to Install Energy Efficient Measure? .....	45
Figure 9. What Did Participant Customers Expect to Gain from the Program? .....	47
Figure 10. Did the Program Meet Customer Expectations?.....	48
Figure 11. Did Anything Make Program Participation Difficult for Customers?.....	49
Figure 12. How Satisfied are Customer Participants with the Program and PSE Overall?.....	51
Figure 13. How Did the Program Affect Participant Customer Perceptions of PSE Overall? .....	52
Figure 14. How Did Participant Customers Rate the Variety of Energy Efficiency Programs Offered?....	53
Figure 15. How Satisfied are Customers with Contractors, Vendors and PSE Staff? .....	54
Figure 16. How Satisfied are Participant Trade Allies with the Program?.....	55
Figure 17. How Satisfied are Participant Trade Allies with the Time it Takes to Work through the Application Process? .....	56
Figure 18. How Satisfied are Participant Trade Allies with the Time it Takes to Manage Their Program Participation? .....	57
Figure 19. How Satisfied Are Trade Ally Participants with PSE Staff?.....	58
Figure 20. Salt River Project’s Rebate Funds Meter .....	69
Figure 21. Cost of Electric Energy Savings by Program Type .....	71
Figure 22. 2012 Cost of Electric Energy Savings.....	71
Figure 23. 2011 Savings vs. Target (Large Programs).....	77
Figure 24. 2011 Savings vs. Target (Small Programs) .....	78
Figure 25. 2012 Savings vs. Target (Large Programs).....	79
Figure 26. 2012 Savings vs. Target (Small Programs) .....	80
Figure B-1. How Satisfied Were Small Business Lighting Program Respondents with Program Components and PSE Overall?.....	B-2
Figure B-2. How Satisfied Were Commercial Lighting Program Respondents with Program Components and PSE Overall? .....	B-5
Figure B-3. How Satisfied Were Premium HVAC Program Respondents with the Program Components and PSE Overall? .....	B-7
Figure B-4. How Satisfied Were Commercial Laundry Program Respondents with Program Components and PSE Overall? .....	B-9
Figure B-5. How Satisfied Were Commercial Kitchens Program Respondents with Program Components and PSE Overall? .....	B-11



## List of Tables

Table ES-1. Summary of Small Business Lighting Realization Rates (2011-2012) .....	2
Table ES-2. Summary of Commercial Rebates Realization Rates (As-reported, PY2011-2012) .....	2
Table ES-3. Summary of Pre-Rinse Spray Valve Sub-program Realization Rates (PY 2011-2012).....	3
Table ES-4. Summary of Commercial Rebates Realization Rates with Adjusted Prescriptive Savings (As-evaluated, PY 2011 – 2012) .....	3
Table ES-5. Summary of Pre-Rinse Spray Valve Subprogram Realization Rates with Adjusted Prescriptive Savings (As evaluated, PY 2011 – 2012).....	4
Table 1. Commercial Rebate Program Measures (2012).....	9
Table 2. Small Business Lighting Program Measures, (2012) .....	11
Table 3. Summary of Small Business Lighting Realization Rates (PY 2011 – 2012).....	13
Table 4. Summary of Commercial Rebates Realization Rates PY 2011 – 2012).....	13
Table 5. Summary of Commercial Rebates Realization Rates (As-evaluated, PY 2011 – 2012) .....	14
Table 6. Summary of Pre-Rinse Spray Valve Sub-program Realization Rates (PY 2011 – 2012) .....	14
Table 7. Impact Evaluation Data Collection Sources .....	15
Table 8. Small Business Lighting Program Coefficients of Variation.....	18
Table 9. Commercial Rebates Program Coefficients of Variation.....	18
Table 10. Final Small Business Lighting Impact Evaluation Sample Sizes .....	19
Table 11. Final Commercial Rebates Impact Evaluation Sample Sizes .....	20
Table 12. Overview of M&V Options .....	23
Table 13. Summary of Small Business Lighting Realization Rates (PY 2011 – 2012).....	26
Table 14. Summary of Commercial Rebates (Electric) Realization Rates (PY 2011 – 2012) .....	26
Table 15. Summary of Commercial Rebates (Gas) Realization Rates (PY 2011 – 2012) .....	26
Table 16. Summary of Pre-Rinse Spray Valves Adjusted Realization Rates .....	27
Table 17. Occupancy Sensor Reduction Factor Sources .....	30
Table 18. Occupancy Sensor Reduction Factors by Space Type.....	30
Table 19. Determination of In-Service Rate for Faucet Aerators.....	32
Table 20. Isolation of Faucet Aerator Fuel Source Differences .....	32
Table 21. Sub-Program Inclusion in Process Evaluation Sample .....	37
Table 22. Survey Disposition of Participant and Non-Participant Customers by Sub-Program .....	38
Table 23. Participant and Low-Frequency Participant Trade Ally Interview Disposition by Subgroup ...	39
Table 24. Programs Included in Best Practice Review.....	62
Table 25. Data Sources by Program.....	63
Table 26. List Cross-Program Interviewees.....	64
Table 27. Potential Marketing Strategies to Target Various Customer Segments .....	65
Table 28. Marketing Strategies.....	69
Table 29. Recommended Supplemental Data .....	81
Table B-1. Number of Survey/Interview Respondents for Small Business Lighting Respondents.....	B-1
Table B-2. Number of Survey/Interview Respondents for Commercial Lighting Respondents .....	B-4
Table B-3. Number of Survey/Interview Respondents for Premium HVAC Program.....	B-6
Table B-4. Number of Survey/Interview Respondents for Commercial Laundry Respondents .....	B-8
Table B-5. Number of Survey/Interview Respondents for Commercial Kitchen Program .....	B-10

## Executive Summary

For the program period of January 1, 2011, through December 31, 2012, this report provides impact, process, and best practice evaluation findings of these two programs:

- » Commercial Rebate Program, *electric and gas Schedules 262*
- » Small Business Lighting, *electric Schedule 255*

This executive summary provides summaries of findings by evaluation approach; impact, process and best practices, as well as suggestions for possible follow-on research.

### *Approach*

The approach to evaluation included verification of incented measure savings estimates, development of savings realization rates, a review of the program's operations to confirm consistency with program plans, an assessment of customer and trade ally experience and satisfaction, and a review of industry best practices. Specific impact, process, and best practice evaluation methodologies are described in the succeeding report sections.

### *Key Findings and Recommendations*

Specific key findings, conclusions, and recommendations are provided at the end of each section of the report and are reiterated here in summary form.

### **Impact Evaluation**

The as-reported and as-evaluated realization rates provide insight into the accuracy of the calculations used to forecast energy savings. The results of this evaluation clearly indicate that PSE staff is appropriately tracking and reporting projects as reflected by the near-100-percent as-reported realization rates across both programs evaluated. Additionally, the as-evaluated realization rates in the Small Business Lighting are near 100 percent, indicating the accuracy with which PSE estimates ex post energy savings. The Commercial Rebates Program resulted in lower realization rates, which resulted from the energy savings of commercial faucet aerators in the Pre-Rinse Spray Valve sub-program. Because of the relative importance to each fuel source's savings, the overestimation impacted the expected gas savings significantly more than the expected electric savings. After adjusting ex ante estimates for the Pre-Rinse Spray Valve sub-program, deviations between the ex ante and ex post savings estimates for all measures were explainable through idiosyncratic factors and by the inherent variability surrounding measure performance (e.g., occupancy sensors and variable-frequency drives).

### **Program-Level Realization Rates**

For each project included in the evaluation, Navigant determined the following metrics of gross energy savings:

- » **As-Reported:** The as-reported energy savings seeks to evaluate PSE's ability to record and track expected energy savings in internal databases. In programs such as these, many projects are completed and data transcription and integrity are critical to reporting accuracy. For example, a

100-percent realization rate for as-reported energy savings signifies PSE accurately recorded data collected in the project application. Discrepancies above or below 100-percent realization rates indicate processing errors within PSE’s control.

- » As-Evaluated: The as-evaluated energy savings is the traditional Impact Evaluation methodology. The metric compares PSE’s energy savings estimation methodology to actual field data and performance. In contrast to as-reported savings, the as-evaluated savings methodology considers factors such as discrepancies between recorded and actual measure specifications, in-service rates, and inaccurate calculation methodologies for non-prescriptive measures.

**Small Business Lighting:**

**Table ES-1. Summary of Small Business Lighting Realization Rates (2011-2012)**

Fuel Source	Ex Ante Savings	As-Reported Realization Rate	As-Reported Savings	As-Evaluated Realization Rate	As-Evaluated Savings
Electric	42,054,768	100.0%	42,065,331	100.5%	42,260,343

Source: Navigant analysis of tracking data and field verification

**Commercial Rebates:**

**Table ES-2. Summary of Commercial Rebates Realization Rates (As-reported, PY2011-2012)**

Fuel Source	Ex Ante Savings	As-Reported Realization Rate	As-Reported Savings	As-Evaluated Realization Rate	As-Evaluated Savings
Electric	70,324,544	100.6%	70,726,887	91.6%	64,426,161
Natural Gas	1,889,441	101.2%	1,912,573	25.1%	474,789

Source: Navigant analysis of tracking data and field verification

As the Impact Evaluation unfolded, Navigant observed the prescriptive energy savings estimation methodology for the Pre-Rinse Spray Valve sub-program did not align with on-site data collection findings and other available sources. Specifically, for the commercial faucet aerators, which represent the majority of the energy savings in the Pre-Rinse Spray Valve sub-program, a detailed review of the prescriptive savings estimation methodology yielded results detrimental to the program’s expected achievements. Notably, PSE has already undertaken efforts to rectify the known overestimation of energy savings, and this report seeks to diligently report realization rates with the understanding that the Pre-Rinse Spray Valve program represents an anomalous result, albeit a significant result. As a result, Navigant developed the traditional realization rates, but also developed an adjusted realization rate for this sub-program to more effectively communicate pertinent findings from the field data collection efforts. That realization rate is as follows:

- » Adjusted As-Evaluated: The adjusted as-evaluated energy savings is the traditional Impact Evaluation methodology using an adjusted ex ante baseline. Navigant determined the adjusted baseline through a review of the PSE energy savings algorithms and assumptions. For example,

a 100-percent realization rate for adjusted as-evaluated energy savings signifies the findings from the field data collection align with the expected data as per the tracking database and project file, though the energy savings may not align with ex ante estimations due to inaccurate prescriptive savings values.

**Table ES-3. Summary of Pre-Rinse Spray Valve Sub-program Realization Rates (PY 2011-2012)**

Program	Ex Ante Savings	Adjusted, As-Evaluated Realization Rates	Adjusted, As-Evaluated Savings
Electric	10,785,574 kWh	131.1%	5,638,479 kWh
Natural Gas	1,583,383 therms	45.1%	352,991 therms

*Source: Navigant analysis of tracking data and field verification*

### Calibrated Commercial Rebate Realization Rates

As a result of the initial impact evaluation, PSE requested Navigant’s consideration and proposal of additional scope concerning the 2011-2012 Commercial Rebates Program evaluation. Navigant designed a targeted evaluation of faucet aerators. Specifically, Navigant sought an increase in the confidence interval and relative precision of the realization rate and in-service rates as well as providing any additional recommendations for the design of the program uncovered in the targeted evaluation. The full results of the additional scope can be found in the addendum to this report.

Table ES-4 and Table ES-5 provide an overview of the Commercial Rebates Program realization rates for the as-evaluated energy savings. These results include the increased precision and calibration of the Pre-Rinse Spray Valve Program resulting from this study. The ex-ante savings for the Pre-Rinse Spray Valve Program have been adjusted to align with the adjusted prescriptive energy savings using the updated UES (please refer to full Evaluation report). Note, the realization rates shown in these tables include both faucet aerators and pre-rinse spray valves.

**Table ES-4. Summary of Commercial Rebates Realization Rates with Adjusted Prescriptive Savings (As-evaluated, PY 2011 – 2012)**

Program	Ex Ante Savings	Realization Rates	Ex Post Savings
Electric	63,839,090	99.7%	63,622,672
Natural Gas	1,089,470	91.2%	993,694

*Source: Navigant analysis of tracking data and field verification*

**Table ES-5. Summary of Pre-Rinse Spray Valve Subprogram Realization Rates with Adjusted Prescriptive Savings (As evaluated, PY 2011 – 2012)**

Program	Ex Ante Savings	Realization Rates	Ex Post Savings
Electric (kWh)	4,300,120	88.3%	3,796,500
Natural Gas (Therms)	783,412	87.8%	687,636

*Source: Navigant analysis of tracking data and field verification*

### Process Evaluation

Overall customer and trade ally satisfaction with the program is high and the program positively affects participant perception of PSE. Trade allies were clear in their feeling that the PSE staff is great to work with; however, trade allies reported several overarching concerns with the application process. They felt the rebate payments take too long to receive, and they feel “out of the loop” regarding application status. In some cases, customer and trade ally respondents relayed stories about ineffective communication between them and PSE staff.

The evaluation team recommends that PSE leverage existing data from within the company whenever possible to limit the amount of information the customers and trade allies need to provide via the application process. When customers and trade allies do need to provide information, provide a clear list of needed items up front to limit the amount of back and forth. As also recommended in the best practice findings, the application process would benefit by providing a transparent and timely system that allows customers and trade allies to see how their rebate is progressing through the PSE process. This could include an online system that allows customers and trade allies to log in and check the status of their application.

As expected, contractors play a key role in promoting the programs to qualifying customers. Trade allies proactively promote the programs to their customers, but contractors noted that changing program qualifications and uncertainty regarding the availability of incentive funding present an element of ambiguity and confusion. Because trade allies strive to be a source of reliable information to their customers, they become reluctant to promote the programs when eligible measures or funding availability is unclear. In some cases, trade allies will push the customer to handle the rebate on their own, creating a potential barrier to participation.

To align with program operations, PSE’s communications with trade allies could include sending trade allies quarterly program updates via email or training sessions so that trade allies have access to up-to-date, accurate information about measure eligibility and available funding. PSE should also explore ways of making the quarterly amount and status of available funding more transparent to trade allies and customers.

The Small Business Lighting, Commercial Kitchens, and Premium Heating, Ventilation, and Air Conditioning (HVAC) programs face an awareness barrier in addition to other barriers to participation, while the Commercial Lighting and Commercial Laundry programs face less of an awareness barrier and may only need to focus on addressing other barriers to participation. Barriers to participation

include not having enough time to look at and gather additional information about program requirements, not believing the upgrade would result in saving money, and being unfamiliar with what equipment qualifies for the program. Customers are primarily driven to participate by energy and costs savings.

The evaluation team recommends that PSE continue to cultivate personal relationships with trade allies and explore ways to better connect customers with trade allies. For example, PSE could market the Contractor Alliance Network (CAN) to business customers to ensure the network is connecting customers with contractors. Marketing tactics could include messaging about how the CAN works for similar business via case studies and testimonials.

Additionally, PSE could arm trade allies with easy to understand information and tools that explain clearly the amount of savings in terms of energy and cost. While average savings may be difficult to calculate since projects vary, case studies of similar sector or size programs could help communicate typical scenarios for customers to consider. A simple cash flow analysis tool for contractors could also be helpful in articulating the benefits of financing or other considerations that may help in making the sale.

### **Best Practices**

Navigant uncovered myriad insights from conversations with program managers and industry specialists around the country. Improvements in technology and database management have led to the creation of a variety of innovative practices among different utilities. It is likely that not all of these practices will apply to PSE territory, yet several may warrant consideration.

***Marketing: Increasing Customer Awareness.*** Utilities are applying sophisticated marketing techniques once thought to be only applicable to multinational corporations or Fortune 500 companies. Improvements in technology have made it possible for even small utilities to implement customer relationship management techniques, use data analytics to target marketing, and easily track performance based sales incentives among their staff. PSE could consider using segmenting strategies to tailor their marketing messages to specific customers, and use sales analytics to motivate staff with performance based incentives.

***Executing: Rebates, Applications, and Databases.*** The most cost effective programs have streamlined and automated several of the everyday tasks of program execution. Applications are clear and easy to access for trade allies and potential customers. Rebate processing is a smooth, coordinated process between the implementation contractor and the utility, with standard procedures and checklists for quality control. Databases track program participation and are able to receive inputs from utility staff, implementation contractors, and trade allies.

***Leveraging: Forming Partnerships Internally and Externally.*** The most innovative programs actively look outside of the organizations currently associated with the program to find allies in occasionally unexpected places—such as trade organizations, religious groups, local banks, cultural centers, and environmental advocates. Similarly, program administrators may find fruitful partnerships within other divisions of the utility itself.

***Adapting: Building in Program Agility and Flexibility.*** High performance programs use sophisticated analysis of program history, market penetration, and customer energy use combined with predictive

modeling to assess likelihood of participation among untapped or under-tapped customer segments. Tracking of potential customers is essential to developing detailed forecasts of yearly savings. After a forecast has been developed, program staff is able to develop a plan of potential actions they can take to boost or curtail program savings to meet targets.

***Leading: Appropriate and Effective Technology Utilization.*** The utilization of technology and social media is an effective way for utilities to communicate with customers and increase awareness of energy efficiency and demand-side management (DSM) programs. Importantly, social media is a primary medium for communication among younger audiences—future PSE customers. Electronic communications offer many advantages to both utility companies and their customers, enabling utilities to tailor messages to targeted customers. Customer satisfaction has been shown to increase when utilities adopt and offer appealing new technologies. Satisfaction is notably higher among customers who use electronic billing and payment; are provided outage information by email, text or mobile applications; visit their electric utility company’s website; or recall a message sent to them via email, website or social media platform.

### ***Opportunities for Further Research***

It is the goal of this evaluation to provide results that will best inform current or follow-on program cycles. Below is a list of opportunities for additional research worthy of further investigation that were identified through this evaluation;

- » Determine needed improvements in the program tracking database to optimize operations
  - Navigant recognizes that the programs’ internal tracking databases are in transition
- » Review the application process
  - Review the rebate processing flow charts for each program, and update them to indicate timing goals, ideal customer touch points, and bottlenecks
  - Interview PSE’s recently hired rebate processing firm to assess the feasibility of implementing the rebate application recommendations found in this report
  - Create a roadmap of the customer experience<sup>1</sup>. Review the application and rebate processing process from the customer’s perspective from start to finish, and record their feedback in real time
- » Develop and test a methodology using advanced data and analytics for forecasting program participation by developing scores for all customers indicating their propensity to participate.
  - Use propensity scores to target marketing
- » Develop a methodology for estimating savings from maintenance and operations behaviors
- » Conduct an emerging technology scan – search for new measures, screen for cost effectiveness, develop pilot plans
  - List of 20 technologies which are on track for commercialization in the near future
  - Determine which ones can work for PSE energy efficiency (EE) programs

---

<sup>1</sup> This process has proven successful among many private-sector companies offering complex services to customers, including utility companies.  
 Rawson, Alex, et al. *The Truth about Customer Experience: Touchpoints Matter, but it’s the Full Journey that Really Counts.* Harvard Business Review. September, 2013.

- » Conduct some version of a potential study to assess the current penetration and saturation of energy efficient technologies and EE potential in PSE's market.
  - Once EE potential has been determined, conduct planning to confirm programs align with market potential (evaluation findings were that savings projection by sub-program did not align with delivered savings)
- » Develop a methodology for estimating savings that can be claimed by PSE from changes in codes and standards
  - Determine how the program functions within the market and if it influences code compliance rates
  - Determine how much of the savings from changes in codes and standards can be attributed to PSE programs
- » Standardize business case development and record keeping. Develop a consistent format to ensure that engineering calculations are accessible, transparent, and up-to-date



## 1 Introduction

This report summarizes the evaluation of the Commercial Rebates & Small Business Lighting (SBL) programs at Puget Sound Energy (PSE) during the period of January 1, 2011, through December 31, 2012. Evaluation research and findings are intended to validate savings claims, assumptions, and calculations, assess customer and trade ally experience, and provide industry best practice highlights. Evaluation findings are designed to provide actionable recommendations to assist PSE in optimizing program performance.

### 1.1 Evaluation Objectives

Primary evaluation objectives were to conduct complete impact and process evaluations for the Commercial Rebates and Small Business Lighting Programs, spanning both electric and natural gas fuels, as well as to conduct a review of best practices from similar programs. Specific objectives included the following:

- » **Impact Evaluation:** Verification of savings claimed through engineering review of available documentation and on-site verification as determined necessary for the savings verification process in order to develop realization rates of ex ante savings estimates
- » **Process Evaluation:** Determination of customer and trade ally experience and satisfaction as well as identification of program awareness and barriers to participation
- » **Best Practices:** Description of applicable best practice activities of similar programs around the country

The evaluation's desired outcomes were to report observations and make recommendations to help PSE improve the processes and documentation of savings to more effectively deliver the Commercial Rebates and Small Business Lighting Programs.

### 1.2 Program Descriptions

#### 1.2.1 Commercial Rebates Program Description Schedules Electric & Gas 262

PSE offers fixed rebates for select, commonly applied measures to commercial customers. Rebated measures are those with energy savings that can reasonably be standardized over a wide variety of applications, and that have competitive market pricing to ensure cost effectiveness. The following measure categories are managed in-house by PSE staff:

- » High Efficiency HVAC (new and retrofit)
- » Variable Speed Drives
- » Electronically Commutated Motors (ECMs)
- » Commercial Washers, gas and electric
- » Commercial Laundry Water Heating
- » Commercial Kitchens, gas and electric
- » Commercial Lighting Rebates (lamps and controls)
- » Hospitality Rebates
- » Portable Classroom Controls

- » PC Power Management

PSE contracts with industry experts to develop and implement cost effective measures tailored to the unique needs of target markets. The following measure categories are offered through contracted programs:

- » HVAC Service Program, gas and electric
- » Pre-Rinse Spray Valves and Aerator Direct Install
- » Green Motor Rewind
- » Small Business Direct Install Measures

The program staff collect tracking data, monitor program performance, and report results and trends. Measures rebated through the program are summarized in Table 1 below.

**Table 1. Commercial Rebate Program Measures (2012)**

Measure Category	Ex Ante Savings KwH	Ex Ante Savings Therm	Measure Quantity / Unit
HVAC – Commercial and Industrial	8,392,862	118,276	8,621
Kitchen, Commercial	1,087,264	162,433	697
Lighting – Commercial	215,844	-	1,388
Lighting – Prescriptive	32,319,868	-	246,726
Motors - Commercial	6,425,684	-	624,191
O and M	1,701,720	-	71,010
Rebate Thermostats	53,147	10	25
Refrigeration – Commercial	126,208	-	121
Software	3,898,180	-	32,833
Traffic Lighting – Commercial	418,253	-	1,302
Water Heating – Commercial	11,080,990	1,600,117	13,627
<b>Totals</b>	<b>65,720,020</b>	<b>1,880,836</b>	<b>1,000,540</b>

*Note: The energy savings and measure quantities in this table may not exactly match those in Navigant’s analysis of the tracking databases.*

### 1.2.2 Small Business Lighting Program Description Schedule E255

The Small Business Lighting Program provides a menu of lighting retrofit rebate options that meets the needs of most small business customers. The program also maintains a network of lighting contractors and vendors that effectively serve small businesses. Rebates cover a wide variety of efficient conversions for incandescent, fluorescent, high intensity discharge (HID), exit lights, and lighting controls.

Rebates cover many efficient incandescent and fluorescent lighting conversions to high efficiency light-emitting diode (LED) and fluorescent HID technologies. Incentives are set at levels slightly above the custom grant under the electric/gas Commercial and Industrial Retrofit Program in order to:

- » Capture the small business manager’s attention in an environment where many different business needs compete for limited budgets.

- » Enable contractors to achieve a sufficiently high sales closure rate to sustain interest in the program.

Applicable Small Business Lighting measure category headings include, but are not limited to, retrofit and replacement of:

- » Incandescent lamps & Fixtures and Exit Sign Replacements
- » Higher Wattage Incandescent & HID, Retrofits & Fixtures
- » 4' & 8' Fluorescents – Retrofits and Fixtures

Measures rebated through the program and their respective ex ante savings estimates are summarized in the following Table 2.

Table 2. Small Business Lighting Program Measures, (2012)

Measure Name	KWH	% of Total KWH	Measure Quantity/Unit	Paid Grant Amt	Total Cost
\$70 Lamps reduced to 2 or 3 F32T8 LBF reqd	6,788,411	16.085%	24,672	\$ 1,726,431.16	\$ 2,218,920.71
Custom Analysis	6,265,729	14.847%	14,258	\$ 1,332,818.66	\$ 3,095,420.96
\$190 New 6 lamp F32T8 fixture EB	4,005,982	9.492%	5,717	\$ 1,086,230.00	\$ 1,497,743.34
\$75 Four F32T8 lamps EB	3,818,009	9.047%	11,110	\$ 833,250.00	\$ 1,066,305.04
\$85 2 F32T8 lamps, 1 EB	2,815,128	6.671%	13,486	\$ 1,145,865.00	\$ 1,291,116.91
\$50 Reduce lamps to 2 F32T8 lamps and 1 EB	2,623,140	6.216%	10,115	\$ 505,750.00	\$ 689,749.24
\$190 New 4 lamp F54T5HO fixture EB	2,460,032	5.829%	4,428	\$ 841,320.00	\$ 961,419.34
\$40 Lamp for lamp F32T8 lamp(s) Low ballast reqd	2,254,845	5.343%	26,274	\$ 1,052,010.00	\$ 1,346,428.07
\$45 lamp for lamp F32T8 lamps low ballast reqd	2,047,961	4.853%	11,127	\$ 500,790.00	\$ 699,868.33
\$130 New CFL fixture greater than 80 input	974,562	2.309%	1,520	\$ 197,600.00	\$ 277,738.74
\$110 New CFL fixture greater than 40 input	970,805	2.300%	2,328	\$ 256,080.00	\$ 307,341.59
\$80 Occupancy Sensor, controlling 200W or more	857,683	2.032%	2,922	\$ 233,760.00	\$ 343,347.19
\$80 Four F32T8 lamps with reflector 1 EB	721,176	1.709%	2,092	\$ 167,360.00	\$ 277,358.51
\$6 less than 26 watt specialty lamp	706,344	1.674%	4,549	\$ 27,294.00	\$ 34,724.23
\$60 4 F32T8 lamps, 1 EB	575,958	1.365%	4,584	\$ 275,040.00	\$ 408,196.46
255 LTG - reduced measure cost	488,931	1.159%	2,003	\$ 92,188.17	\$ 96,442.17
\$50 New LED exit not kit, 5 watts or less	452,586	1.072%	1,912	\$ 95,600.00	\$ 137,962.00
\$60 2 F32T8 lamps, 1 EB reqd	307,742	0.729%	2,469	\$ 148,140.00	\$ 167,377.14
\$3 CFL: Screw in, less than 26 watts, ES	297,493	0.705%	1,926	\$ 5,778.00	\$ 10,510.44
PS MH greater than 25% input Wattage reduction	274,936	0.651%	435	\$ 43,500.00	\$ 69,102.00
\$95 New 4 lamp fixture F32T8 fixture reflector EB	201,648	0.478%	433	\$ 41,135.00	\$ 90,968.68
\$95 New 4 lamp fixture F32T8 fixture reflector EB	201,648	0.478%	433	\$ 41,135.00	\$ 90,968.68
\$20 LED Integral Omnidirectional	185,221	0.439%	697	\$ 13,940.00	\$ 19,932.78
\$60 New linear FF, 1 or 2 lamp EB	183,107	0.434%	684	\$ 41,040.00	\$ 72,237.49
\$40 Occupancy Sensor, controlling 100 to 199W	162,447	0.385%	1,098	\$ 43,920.00	\$ 71,168.00
\$ 85 2 F32T8 lamps, 1 EB	147,107	0.349%	513	\$ 43,605.00	\$ 77,030.83
\$40 1 or 2 F32T8 lamp(s) LB factor req'd	139,098	0.330%	1,576	\$ 63,040.00	\$ 121,760.30
\$55 new CFL fixture or hardwired kit, 26 input	126,619	0.300%	373	\$ 20,515.00	\$ 41,856.09
\$55 new CFL fixture or hardwired kit, 26 input	126,619	0.300%	373	\$ 20,515.00	\$ 41,856.09
\$6 26 to 39 watt specialty lamp	109,837	0.260%	662	\$ 3,972.00	\$ 6,056.00
\$90 kit four F32T8 lamps EB	100,488	0.238%	300	\$ 27,000.00	\$ 33,306.00
\$60 4 F32T8 lamps, 1 EB LBF reqd	95,461	0.226%	828	\$ 49,680.00	\$ 143,133.06
\$25 Integral/ Recessed downlight, replace PAR30	82,098	0.195%	360	\$ 9,000.00	\$ 13,815.00
\$225 new 6 lamp F32T8 fixture EB	74,264	0.176%	93	\$ 20,925.00	\$ 26,131.00
\$70 Kit lamps reduced to 2 or 3 F32T8 LBF	69,983	0.166%	250	\$ 17,500.00	\$ 20,251.00
\$60 reduce lamps to 2 F32T8 lamps EB	62,361	0.148%	323	\$ 19,380.00	\$ 30,856.00
\$3 screw-in CFL, >26 watts, E Star	45,793	0.109%	288	\$ 864.00	\$ 1,492.00
\$55 lamp for lamp F32T8 LBF	42,025	0.100%	184	\$ 10,120.00	\$ 14,178.00
\$25 LED Integral/ Recessed DL, replace PAR38 or 40	33,706	0.080%	144	\$ 3,600.00	\$ 6,214.75
\$35 New CFL fixture or HW kit, 25 total input	33,213	0.079%	288	\$ 10,080.00	\$ 19,705.24
\$50 lamp for lamp F32T8 lamps LBF	28,221	0.067%	296	\$ 14,800.00	\$ 20,645.00
\$70 Kit four F32T8 lamps 1 EB	24,066	0.057%	121	\$ 8,470.00	\$ 10,443.00
\$75 New HID fixture: HPS or MH 50-100 W	20,655	0.049%	39	\$ 2,925.00	\$ 4,178.00
\$85 Kit two F32TL8 lamps 1 EB	20,202	0.048%	74	\$ 6,290.00	\$ 6,336.00
\$50 Kit 1 or 2 F32T8 LBF reqd	20,052	0.048%	140	\$ 7,000.00	\$ 8,760.00
\$50 Kit 1 or 2 F32T8 LBF reqd	20,052	0.048%	140	\$ 7,000.00	\$ 699,868.33
\$20 LED Integral/ Recessed downlight, replace PAR20	19,600	0.046%	112	\$ 2,240.00	\$ 3,871.00
\$95 Kit four F32 lamps with reflector 1 EB	19,317	0.046%	44	\$ 4,180.00	\$ 6,086.00
\$20 LED MR 16	18,279	0.043%	130	\$ 2,600.00	\$ 3,428.35
\$70 new four F32T8 lamps 1 EB LBF	17,756	0.042%	105	\$ 7,350.00	\$ 10,870.00
\$12 greater than or equal to 40 watt lamp	11,184	0.027%	48	\$ 576.00	\$ 784.00
\$225 new 4 lamp F54T5HO fixture EB	9,682	0.023%	16	\$ 3,600.00	\$ 3,600.00
\$90 new HID: HPS or MH 50-100W	8,737	0.021%	19	\$ 1,710.00	\$ 3,102.00
\$90 new four F32T8 lamps 1 EB	8,288	0.020%	34	\$ 3,060.00	\$ 5,975.00
\$50 new LED exit sign (not kit) ES	7,883	0.019%	38	\$ 100.00	\$ 111.00
\$70 new lamps reduced to 2 or 3 F32T8 LBF	3,392	0.008%	19	\$ 1,330.00	\$ 2,992.00
\$70 new linear floor. fixture, 1 or 2 lamp 1 EB	3,392	0.008%	19	\$ 1,330.00	\$ 2,992.00
\$10 LED Integral Decorative	2,790	0.007%	18	\$ 180.00	\$ 205.00
\$15 LED Integral PAR20 or less	2,191	0.005%	16	\$ 240.00	\$ 381.20
\$6 screw-in CFL, 26-40W E Star	2,051	0.005%	11	\$ 66.00	\$ 103.00
Low wattage T8 relamp, 26 to 28 watts	1,444	0.003%	90	\$ 90.00	\$ 90.00
\$50 new 1 or 2 F32 lamps LBF reqd	1,440	0.003%	24	\$ 1,200.00	\$ 1,302.00
\$70 new lamps reduced to 2 or 3 F32T8 LBF	1,305	0.003%	15	\$ 1,050.00	\$ 1,170.00
<b>Totals</b>	<b>42,202,175</b>	<b>100%</b>	<b>159,395</b>	<b>\$ 11,145,157.99</b>	<b>\$ 16,737,282.28</b>

## 2 Impact Evaluation

This section summarizes the Impact Evaluation methods and findings used to develop program-, sub-program-, and measure-level realization rates for the Small Business Lighting Program and the Commercial Rebates Program. The independent review of program achievements from the Impact Evaluation provides PSE staff with the feedback needed to increase program efficacy and advance the research and policy objectives of PSE staff, the Conservation Resource Advisory Group, and the Washington Utilities and Transportation Commission.

More specifically, the Impact Evaluation of PSE's 2011-2012 Small Business Lighting Program and Commercial Rebates Program aimed to characterize program-specific energy impacts for commercial retrofit measures by doing the following:

- » Quantifying the impacts of all measures and activities on annual gross energy consumption.
- » Establishing post-implementation performance for installed measures and activities.
- » Explaining discrepancies between the results of this study and the ex ante savings estimates.

The key components of retrofit and prescriptive impact evaluations are the tracking database, the project files, and the algorithms and assumptions used to determine energy savings. Navigant proposed a reporting methodology to isolate each component to ascertain PSE's data tracking and energy savings estimation accuracy. For each project included in the evaluation, Navigant determined the following metrics of gross energy savings:

- » **As-Reported:** The as-reported energy savings seeks to evaluate PSE's ability to record and track expected energy savings in internal databases. In programs such as these, many projects are completed and data transcription and integrity are critical to reporting accuracy. For example, a 100-percent realization rate for as-reported energy savings signifies PSE accurately recorded data collected in the project application. Discrepancies above or below 100-percent realization rates indicate processing errors within PSE's control.
- » **As-Evaluated:** The as-evaluated energy savings is the traditional Impact Evaluation methodology. The metric compares PSE's energy savings estimation methodology to actual field data and performance. In contrast to as-reported savings, the as-evaluated savings methodology considers factors such as discrepancies between recorded and actual measure specifications, in-service rates, and inaccurate calculation methodologies for non-prescriptive measures.

As the Impact Evaluation unfolded, Navigant observed the prescriptive energy savings estimation methodology for the Pre-Rinse Spray Valve sub-program did not align with on-site data collection findings and other available sources. Specifically, for the commercial faucet aerators, which represent the majority of the energy savings in the Pre-Rinse Spray Valve sub-program, a detailed review of the prescriptive savings estimation methodology yielded results detrimental to the program's expected achievements. Notably, PSE has already undertaken efforts to rectify the known overestimation of energy savings, and this report seeks to diligently report realization rates with the understanding that the Pre-Rinse Spray Valve program represents an anomalous result, albeit a significant result. As a result, Navigant developed the traditional realization rates, but also developed an adjusted realization rate for this sub-program to more effectively communicate pertinent findings from the field data collection efforts. That realization rate is as follows:

- » **Adjusted As-Evaluated:** The adjusted as-evaluated energy savings is the traditional Impact Evaluation methodology using an adjusted ex ante baseline. Navigant determined the adjusted baseline through a review of the PSE energy savings algorithms and assumptions. For example, a 100-percent realization rate for adjusted as-evaluated energy savings signifies the findings from the field data collection align with the expected data as per the tracking database and project file, though the energy savings may not align with ex ante estimations due to inaccurate prescriptive savings values.

## 2.1 Program-Level Realization Rates

Tables 3 through 6 provide an overview of the program realization rates for both as-reported and as-evaluated energy savings. These results were accomplished through careful review of project documentation and comparison of the energy savings assumptions used to develop ex ante savings estimates to the ex post observations. In addition to the project input assumptions, Navigant also compared the ex ante calculation methodologies against industry standards and accepted engineering practices. Finally, Navigant collaborated with PSE to ensure that all available information collected during the participation process was properly accounted for in the ex post savings analysis.

The results of this effort clearly indicate that PSE staff are applying mathematically astute methods to the ex ante analyses that are consistent with industry standards and generally predict ex post savings estimates accurately.

### 2.1.1 Small Business Lighting

**Table 3. Summary of Small Business Lighting Realization Rates (PY 2011 – 2012)**

Fuel Source	Ex Ante Savings	As-Reported Realization Rate	As-Reported Savings	As-Evaluated Realization Rate	As-Evaluated Savings
Electric	42,054,768	100.0%	42,065,331	100.5%	42,260,343

Source: Navigant analysis of tracking data and field verification

### 2.1.2 Commercial Rebates

**Table 4. Summary of Commercial Rebates Realization Rates PY 2011 – 2012)**

Fuel Source	Ex Ante Savings	As-Reported Realization Rate	As-Reported Savings	As-Evaluated Realization Rate	As-Evaluated Savings
Electric	70,324,544	100.6%	70,726,887	91.6%	64,426,161
Natural Gas	1,889,441	101.2%	1,912,573	25.1%	474,789

Source: Navigant analysis of tracking data and field verification

**Table 5. Summary of Commercial Rebates Realization Rates (As-evaluated, PY 2011 – 2012)**

Program	Ex Ante Savings	Realization Rates	Ex Post Savings
Electric	70,324,554	91.6%	64,426,161
Natural Gas	1,889,441	25.1%	474,789

*Source: Navigant analysis of tracking data and field verification*

**Table 6. Summary of Pre-Rinse Spray Valve Sub-program Realization Rates (PY 2011 – 2012)**

Program	Adjusted Ex Ante Savings	Adjusted Realization Rates	Adjusted Ex Post Savings
Electric	4,300,120	131.1%	5,638,479
Natural Gas	783,412	45.1%	352,991

*Source: Navigant analysis of tracking data and field verification*

## 2.2 Impact Evaluation Methodology

This section presents an overview of Navigant’s approach to evaluating *gross* savings attributed to PSE’s Small Business Lighting Program and Commercial Rebates Program, along with discussion of several key issues related to the Impact Evaluation process. Navigant relied primarily on the tracking database and project file data supplemented with site-specific measurement and verification to verify savings for incented measures and systems.

More specifically, Navigant focused evaluation efforts on verifying project file data and measure-level energy savings calculation methodologies. Navigant adjusted prescriptive energy savings and project-specific energy savings calculations based on evaluation findings. Gross energy savings represent the calculated difference between the evaluation findings and the tracking database. In addition to verifying energy savings of the projects in the programs, the measurement and verification (M&V) effort assessed and validated energy savings calculation algorithms and assumptions for prescriptive and custom measures.

### 2.2.1 Data Sources

The data for evaluation was gathered through a number of activities. The Impact Evaluation team reviewed tracking system data and project files, conducted telephone interviews, and performed on-site verification of a sample of projects. Additionally, the team leveraged findings from the PSE staff interviews to fully understand the objectives of the impact study.

**Table 7. Impact Evaluation Data Collection Sources**

Data Collection Type	Targeted Population	Data Source	Sample Design	Sample Size
Tracking Data Analysis	2011-2012 projects	PSE CSY Database	N/A	All
Installation and Operation Verification	2011-2012 projects	PSE CSY Database	Stratified Ratio Estimation	Achieve 90%/10% confidence/precision
On-site Data Verification	2011-2012 projects	PSE CSY Database	Stratified Ratio Estimation	Achieve 90%/10% confidence/precision

**2.2.1.1 Tracking Data**

The Impact Evaluation team was able to extract most key program participation data from the CSY tracking database, which was provided by PSE staff in MS Excel format. The tracking data used for this evaluation were extracted for 2011 through 2012. Database tables included a project level dataset with measure type, total savings impacts, grant amount, and project completion date. Project data is linked to measure-level information by a unique project number.

For Pre-Rinse Spray Valves, the CSY database contained only monthly totals of installation metrics. Thus, PSE provided supplementary tracking spreadsheets containing project level details.

**2.2.1.2 Program Documentation**

The Impact Evaluation team also reviewed program materials developed by PSE, including the technical reference spreadsheets documenting prescriptive savings, the program policies and procedures, and program application materials.

**2.2.1.3 Measure Prioritization and Sampling Framework**

The development of a measure prioritization hierarchy was critical to ensure cost effective allocation of limited evaluation resources toward specific technologies and/or projects of interest to PSE. The first step in the measure prioritization process involved a thorough review of PSE’s tracking databases, which store contextual project data along with ex ante project savings estimates. In addition to verifying both the consistency and quality of information within each database, Navigant used the available data to gain a better understanding of the distribution of savings across measure technologies and participant segments. This review focused primarily on verifying the factors that influence ex post realized savings estimates, including the following:

- » Types of measures installed (i.e., the prescriptive measure name)
- » Quantity of measures installed
- » Total energy savings for installed measures
- » Contact information for all parties involved (e.g., customer, contractor, PSE staff)



- » Contextual variables such as building type and square footage, operating hours and usage/occupancy profiles

The subsequent measure prioritization process involved review of the following criteria:

- » **Distribution of Ex Ante Savings** – Navigant calculated the distribution of ex ante savings across all measure categories incented through Program Schedules E262, G262, and E255.
- » **Measure Uncertainty** – Measures with a high level of uncertainty were defined as those technologies that (1) have variable operating conditions, (2) yield significant variability in application of claimed savings estimates, and (3) have not been investigated extensively in previous evaluation studies.
- » **PSE Priority** – PSE assigned a unique priority to each measure category based on utility interest in that measure.

Because of the large number of measures and sub-programs offered in the Small Business Lighting and Commercial Rebates programs, Navigant recommended focusing on those measures of high importance to PSE. In order to develop an efficient, yet broad sampling framework, Navigant analyzed the 2011-2012 tracking database and facilitated measure prioritization with PSE staff. In the Small Business Lighting Program, 82 distinct measures were categorized into four priority categories and one general “other” category:

1. Custom measures
2. Linear fluorescents
3. Screw-in LEDs
4. Occupancy sensors
5. All others

These categories became the strata for the stratified ratio sampling discussed below.

Similarly, in the Commercial Rebates Program, each of the 20 sub-programs was analyzed by number of projects, number of installations, total energy savings, and average energy savings per project. Navigant and PSE reviewed the results to determine priority and non-priority sub-programs. The priority sub-programs were generally the sub-programs with the greatest savings impacts, and these sub-programs were consequently included in the sampling framework:

1. Commercial Lighting Rebates
2. Pre-Rinse Spray Valves
3. Commercial CFL [compact fluorescent lamp] Mark Down Program
4. Variable Speed Drives
5. Premium HVAC Service
6. Commercial Cooking Equipment
7. All Others

Using the prioritized sampling strata, Navigant developed a sampling framework that provided an enhanced level of statistical accuracy (i.e., 90/10 confidence/precision) using the *Stratified Ratio Estimation* approach. This approach to sampling achieves increased precision and reliability by taking advantage of a relatively stable correlation between an auxiliary variable and the variable of interest (i.e., the ratio of

actual savings to program reported savings). This approach served to reduce the overall coefficient of variation within the population.

Small Business Lighting and Commercial Rebates projects exhibited a very broad range of ex ante savings based on the size of each participating building and breadth of measures installed. Both the average size and the average savings for different participants had very large coefficients of variation, thereby increasing the sample size required to achieve a specific confidence/precision threshold if the evaluation aimed to estimate the *magnitude* of program savings.

However, evaluation experience has demonstrated that a majority of participants will have a ratio of actual savings to program reported savings between 70 and 120 percent, regardless of the *magnitude* of each individual project's energy savings. This ratio is the *realization rate* for gross verified savings and a core objective of this Impact Evaluation. As such, the standard deviation of the realization rate is generally much smaller than that of the magnitude of individual project savings. It follows that the sample sizes required to achieve a specific confidence/precision threshold may be greatly improved by estimating the realization rate instead of total energy savings.

Per the 2004 California Evaluation Framework,<sup>2</sup> sample sizes developed using the Stratified Ratio Estimation approach comply with the following equation:

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

where:

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

The sampling activities for each program met or exceeded 90 percent confidence with 10 percent relative precision at the program level, as agreed upon by PSE and Navigant. Additionally, each stratum met or exceeded 80 percent confidence with 20 percent relative precision. In developing the overall sample, Navigant leveraged its Excel-based sample design tool to estimate proposed sample sizes. Sample sizes were estimated using the number of projects by measure and sub-program between January 1, 2011, and December 31, 2012, as provided by PSE<sup>3</sup> and assumed coefficients of variation (CV). The CVs were tailored to each measure and sub-program based on evaluation experience and statistical analysis of program data as shown in Table 8 and Table 9.

<sup>2</sup>TecMarket Works, June 2004, *The California Evaluation Framework*.

<sup>3</sup> Evaluation databases provided by PSE: "SmallBusLgt2011-2012.xlsx;" "Com'lRebates2011-2012.xlsx;" "262CommercialRebateMasterSpreadsheet\_2011.xlsm;" "262CommercialRebateMasterSpreadsheet\_2012.xlsm;" "HISTORICAL – PSE Pre Rinse Program thru 5-31-13.xlsm"

A CV of 0.3 assumed for the majority of the Small Business Lighting sample design is conservative based on Navigant’s most recent Impact Evaluation of PSE’s E250 and E258 Commercial/Industrial Retrofit Schedules. Lighting technologies comprised approximately 50 percent of ex ante savings for these Schedules during the 2009-2010 Program years and the ex post findings revealed accurate realization rates that exhibited low variation. Moreover, lighting technologies are well researched and understood and prior experience has shown that these projects are documented very well within PSE. In aggregate, the Navigant team has leveraged this experience to develop a more efficient sample design for this study. Custom projects were set at a CV of 0.4 due to the inherent variability of custom projects compared to standard lighting projects. Similarly, Occupancy Sensor projects were set at a CV of 0.5 due to the expected variability of the evaluation findings.

**Table 8. Small Business Lighting Program Coefficients of Variation**

Stratum	CV
Custom	0.4
Linear Fluorescent	0.3
Screw-In LED	0.3
All Other	0.3
Occupancy Sensor	0.5

In the Commercial Rebates sampling design, the Commercial Lighting Rebates program used a CV of 0.3 for similar reasons as those mentioned in the Small Business Lighting Program design. Most other strata used a CV of 0.4 to allow for additional variability of the measures. The Pre-Rinse Spray Valve strata used a higher CV of 0.5 reflecting the expected variability in the evaluation findings. Commercial faucet aerators comprise the majority of energy savings in the Pre-Rinse Spray Valve sub-program, and these measures have particularly unpredictable evaluation results. Additionally, the All Other category consists of many sub-programs of differing technologies and implementation mechanisms, thus a CV of 0.6 was assigned to account for the high variability in expected realization rates.

**Table 9. Commercial Rebates Program Coefficients of Variation**

Stratum	CV
Commercial Lighting Rebates	0.3
Pre-Rinse Spray Valves	0.5
Commercial CFL Mark Down	0.4
Variable Speed Drives	0.4
Premium HVAC Service	0.4
All Other	0.6

As noted, the initial sample designs achieved 90/10 confidence/precision at the program level and attempted to achieve 80/20 confidence/precision at the stratum level.<sup>4</sup> Navigant randomly selected the appropriate number of projects from the program tracking databases to meet each stratum’s quota. Navigant further analyzed the random project selections to ensure the project distribution reflected the project distribution of the relevant population. That is, the average energy savings of the sampled projects in a sub-program closely aligned with the average energy savings of all projects in a sub-program.

As is the nature of retrofit and prescriptive programs, many projects containing one measure type also include other measure types. For example, a project may have been selected as a Linear Fluorescent project in the Small Business Lighting sample design. During the review of the project files, Navigant discovered the project also included occupancy sensors and a custom measure. In order to enhance the precision of the evaluation findings, Navigant included any such concurrent measures in the evaluation. This method effectively increased individual strata sample sizes and raised precision levels, while the overall program sample size remained unchanged. The final sample designs are shown in Table 10 and Table 11.

**Table 10. Final Small Business Lighting Impact Evaluation Sample Sizes**

Stratum	Confidence/ Margin of Error (%)	Ex Ante kWh Savings in Evaluation	Project Count in Evaluation Sample
Custom	80/7.6	6,329,676	45
Linear Fluorescent	80/4.9	29,441,394	62
Screw-In LED	80/11	264,717	11
All Other	80/7.5	4,978,893	27
Occupancy Sensor	80/19	1,040,088	13
<b>Total</b>	<b>90/5</b>	<b>42,054,768</b>	<b>158</b>

<sup>4</sup> Although +/-20 percent was set as the individual measure and subprograms precision level, this was not achievable within the constraints of the budget and timeline for some of the measures and subprograms with high CVs. That is, the incremental precision decreases with increasing sample size. In such cases, Navigant optimized the sample size to ensure high confidence/precision levels within reason.

**Table 11. Final Commercial Rebates Impact Evaluation Sample Sizes**

Program Path	Confidence/ Margin of Error (%)	Ex Ante kWh Savings in Evaluation	Ex Ante Therms Savings in Evaluation	Project Count in Evaluation Sample
Commercial Lighting Rebates	80/12	26,143,896	0	12
Pre-Rinse Spray Valves	80/19	10,785,574	1,583,3830	12
Commercial CFL Mark Down	80/20	9,220,835	0	8
Variable Speed Drives	80/14	6,361,531	0	13
Premium HVAC Service	80/20	4,853,603	115,026	8
All Other	80/36	12,959,105	0	6
Other Gas Projects	80/36	0	191,032	6
<b>Total</b>	<b>90/10</b>	<b>70,324,544</b>	<b>1,889,441</b>	<b>67</b>

### 2.2.2 Project File Review

Navigant conducted a thorough review of project documentation, including energy savings methodology and results. PSE maintains project level documentation for Small Business Lighting and Commercial Rebates applications and requires submission of the project application, invoices, specification sheets, and savings calculation documentation (when applicable). For all projects, Navigant employed the following strategies:

1. **Documentation Review:** Collected and reviewed all of the critical input files and supporting documents including tracking databases and application materials. The documentation review provided project contact information and measure-specific energy savings information, both of which were used in the evaluation effort. This effort also entailed a comparison of the data in the project files to the data in the tracking database.
2. **Business Case Review:** Navigant reviewed relevant calculation methodologies employed by PSE to estimate prescriptive and custom measures in the programs. PSE maintains these “business case” files for all applicable measures, and the calculation methodologies and prescriptive savings drive the energy savings impacts for both programs. Navigant analyzed the business case files to assess the accuracy and reasonableness of prescriptive assumptions. Specifically, Navigant looked at the age of the business case, the level of traceability to and strength of sources for assumptions, and the applicability of algorithms used to quantify savings.

### 2.2.3 On-Site Measurement and Verification Analysis

The team verified gross impacts for energy and demand savings through different approaches depending on the measure category, PSE objectives, and budget limitations. Available methods for estimating gross savings range include engineering desk review, telephone surveys, end-use monitoring,

and billing analysis. Factors that were considered in matching these approaches to different measures and programs included the following:

- » Size and proportion of the expected impact
- » Degree of site-by-site variation in per unit savings
- » Aggregate size of the measure's impact
- » Cost of applying the savings estimation method
- » Sampling size and associated sampling error
- » Reliability of the measured data
- » Length of the evaluation and its timing relative to implementation (e.g., to assess whether billing analysis is feasible)

Navigant employed a combination of engineering review and on-site end-use verification to evaluate the two programs. Navigant evaluation activities for lighting measures were limited to an engineering "desk" review supplemented by phone and on-site verification as needed. This strategy was based on the anticipation of near-100-percent realization rates found from experience in past evaluations. For HVAC, motors, and hot water end uses, the team developed on-site M&V strategies to verify and possibly enhance input assumptions used to estimate ex ante savings. Using the various M&V strategies, Navigant sought to address the following questions:

- » Are the measures reported correctly in the program database?
- » Are the measures installed and operating as expected?
- » Are the savings calculation methodologies thorough and accurate?

#### **2.2.3.1 Evaluation of Reported Savings**

Navigant performed a review of energy savings as recorded in the tracking database. This ensured that PSE is reporting accurate information. The audit included the following components.

##### Program Application Reviews

- » Comparison of project files and program tracking database to confirm proper transfer of data.
  - Confirm installed quantities, measure types, savings amount, and grant amount.
  - Confirm the customer type (electric/gas) matches the claimed savings type (electric/gas).
  - Confirm the building type and other relevant variables for saving and grant calculations.

##### Energy Savings Review

- » Review energy savings calculation methodologies
  - Confirm reasonable inputs and applications (e.g., building types)

#### **2.2.3.2 Installation and Operation Verification**

Navigant verified reported measures were installed and operating properly. Navigant collected primary data from participant telephone and on-site surveys. Telephone surveys relied upon participant reported information and were not always independently verified. On-site surveys were performed to confirm were the result of physical verification of installation and operation. This process allowed Navigant to address the following issues:

- » Incented measures that have never been installed

- » Measures that were installed but later removed
- » Measures that were improperly installed
- » Measures that did not match those identified in the tracking database

### 2.2.3.3 On-Site M&V Activities

Navigant limited on-site M&V activities to projects that represented a significant portion of energy savings, projects with several measures, and projects with measures requiring additional rigor. Navigant did not utilize on-site activities for most lighting projects. The PSE Verification Team (V Team) conducts a statistically significant number of post-installation on-site reviews, which supports the decision to constrain on-site M&V during this evaluation. as PSE recently conducted an internal review of many lighting projects. On-site inspections encompassed a range of activities, including the following:

- » Simple verification of measure installations
- » Confirmation of measure counts, capacities, and efficiencies
- » Observation of the quality of installation of the technology
- » Collection of nameplate and other performance data
- » Observation of control systems and schedules
- » Confirmation of baseline conditions (as possible)
- » Discussions with building operators about building construction features, occupancy schedules, and energy systems characteristics and operation

In addition to these on-site inspection and verification activities, Navigant performed spot measurements of particular measures. Spot measurements are the first and simplest level of on-site performance measurement and include one-time instantaneous measurements of technology, system, or environmental factors including temperature, volts, amperes, true power, power factor, light levels, and other variables. As a general guide, these measures are used to quantify single operating parameters that do not vary significantly over time or are intended to provide a snapshot in time. They are not intended to capture seasonal or longer term effects. Another way of looking at this approach is that it is useful in assessing the savings of constant performance measures.

Navigant developed site-specific M&V plans that allowed the team’s field engineers to easily document field verified parameters. Navigant recognized that an important aspect of this study was to select an appropriate method that is commensurate with the unknowns and uncertainties inherent in projects/measures under analysis. A useful construct for thinking about this topic is the International Performance Measurement and Verification Protocol (IPMVP).<sup>5</sup> Navigant used the IPMVP protocol for this evaluation. This protocol is consistent with, and complementary to, the approach that the Navigant team has used for many program evaluation projects and with the Electric Power Research Institute’s (EPRI’s) End-Use Performance Monitoring Handbook. Navigant’s experience has shown that it is more useful to think of measures in terms of their “performance characteristics” rather than whether they are purely prescriptive or custom when selecting analytic and data collection methods.

Table 12 presents a listing of the IPMVP protocols, the nature of the performance characteristics of the measures to which M&V options typically apply, and an overview of the data requirements to support

---

<sup>5</sup>*International Performance Measurement & Verification Protocol, Concepts and Options for Determining Energy Savings in New Construction, Volume III, IPMVP New Construction Subcommittee, January 2006.*

each option. Navigant’s approach to selecting M&V strategies adheres to these guidelines throughout the evaluation.

**Table 12. Overview of M&V Options**

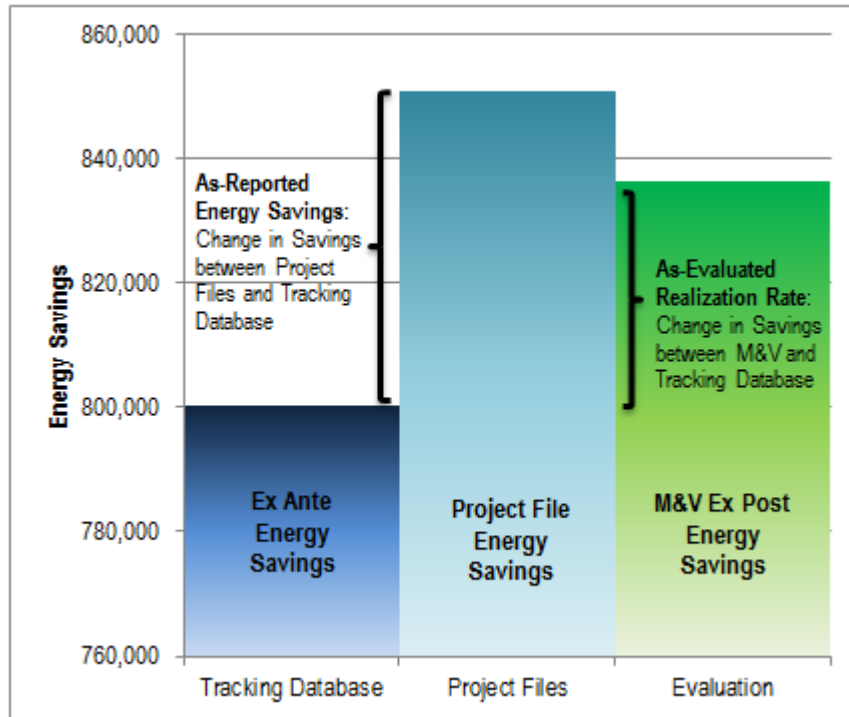
IPMVP M&V Option	How Baseline is Determined	Typical Applications
<p><b>Option A: Partially Measured ECM Isolation</b></p> <p>Savings are determined by partial measurement of the energy use of the system(s) to which an ECM was applied separate from the energy use of the rest of the facility. Some parameters are stipulated.</p>	<p>Projected baseline energy use is determined by calculating the hypothetical energy performance of the baseline system under operating conditions during the M&amp;V period.</p>	<p>Lighting systems where power draw is periodically measured. Operating hours may be stipulated if there is relatively little uncertainty (e.g., hospitals).</p>
<p><b>Option B: ECM Isolation</b></p> <p>Savings are determined by full measurement of the energy use and operating parameters of the system(s) to which an ECM was applied separate from the rest of the facility.</p>	<p>Projected baseline energy use is determined by calculating the hypothetical energy performance of the baseline system under measured operating conditions during the M&amp;V period.</p>	<p>Motors, VFDs - electricity use is measured on a continuous basis throughout the M&amp;V period.</p>
<p><b>Option C: Whole Building Comparison</b></p> <p>Savings are determined at the whole building level by measuring energy use at main meters or with aggregated submeters.</p>	<p>Projected baseline energy use determined by measuring the whole building energy use of similar buildings without the ECMs / <i>ex ante</i> modeling calculations.</p>	<p>New buildings with interactive energy efficiency systems / measures.</p>
<p><b>Option D: Whole Building Calibrated Simulation</b></p> <p>Savings are determined at the whole building level by measuring energy use at main meters or submeters, or using whole building simulation calibrated to measured energy use data.</p>	<p>Projected baseline energy use is determined by energy simulation of the baseline under the operating conditions of the M&amp;V period.</p>	<p>Savings determination for the purposes of a new building Performance Contract, with the local energy code defining the baseline.</p>

#### 2.2.4 Calculation of Gross Energy Savings and Determination of Realization Rates

In past evaluations with PSE, Navigant has developed two different realization rates: as-reported and as-evaluated. The as-reported realization rates compare PSE’s reported savings to actual installed cases; the as-evaluated compare the post-installation measure performance to a calibrated baseline based on post-installation performance. This evaluation similarly developed separate realization rates in order to clearly isolate successes and shortcomings of the programs. The realization rates follow a stair-step approach to the final as-verified ex post realization rates. Figure 1 shows the analyzed categories of energy savings values. It is important to note that the as-evaluated energy savings in this evaluation are traditionally the ex post energy savings in impact evaluations.



**Figure 1. Illustration of As-Reported Savings Compared to As-Evaluated Savings**



**2.2.4.1 As-Reported Realization Rates (Project File to Tracking Database)**

For each project in the sample, Navigant determined the as-reported ex ante savings in the tracking database and the corresponding ex ante savings in the project files. In the ideal case, these ex ante savings values are identical, which implies faultless transcription of data from the application process to the reporting process. As shown in Figure 1, this realization rate was calculated as the energy savings determined from the project files compared to the energy savings determined from the tracking database. The realization rate for the as-reported savings is calculated by the following equation:

$$\text{Project Realization Rate}_{\text{As-Reported}} = \frac{\text{Project File Energy Savings}}{\text{Tracking Database Ex Ante Energy Savings}}$$

**2.2.4.2 As-Evaluated Realization Rates (Evaluation to Tracking Database)**

Also, for each project in the sample, Navigant determined the as-evaluated ex post savings from the M&V results. The M&V findings included such discrepancies as misreported equipment specifications (e.g., motor horsepower), incorrect measure quantities, and unaccountable measures (e.g., missing faucet aerators). As shown in Figure 1, this realization rate was calculated as the energy savings determined from the evaluation compared to the energy savings determined from the tracking database. The realization rate for the as-evaluated savings is calculated by the following equation:

$$\text{Project Realization Rate}_{\text{As-Evaluated}} = \frac{\text{M\&V Ex Post Energy Savings}}{\text{Tracking Database Ex Ante Energy Savings}}$$

### 2.2.4.3 Overall Ex Post Realization Rates and Ex Post Energy Savings

Navigant calculated realization rates for each project in the evaluation sample. The program-level and measure-level realization rates are calculated as the ratio between the product of case weights and ex post (i.e., project file, M&V) savings estimates and the product of case weights and ex ante (i.e., tracking database) savings estimates. The case weight is simply the energy savings in the population in each stratum divided by energy savings in the final sample in the corresponding stratum.<sup>6</sup> In other words, projects with greater ex ante energy savings will have a correspondingly greater influence on the overall realization rate. Furthermore, measures and sub-programs with greater ex ante energy savings will have a correspondingly greater influence on the overall realization rate. This process is illustrated by the following equation:

$$\text{Program Realization Rate}_i = \frac{\sum_{i=1}^n \text{Case Weight}_i \times \text{Verified Savings Estimate}_i}{\sum_{i=1}^n \text{Case Weight}_i \times \text{Reported Savings Estimate}_i}$$

## 2.3 Impact Evaluation Findings

As noted earlier, Navigant adopted the Stratified Ratio Estimation sampling approach to achieve 90/10 confidence/precision for the evaluation of PSE’s program-level realization rates. Under this approach, Navigant divided the sample population into subgroups (i.e., strata) and selected sample units equal to the portion of the population in each strata. This strategy ensured that Navigant evaluated the largest contributors to program performance, while also addressing a sufficient number of smaller projects that, in aggregate, could represent a substantial percentage of ex ante savings.

PSE also expressed an interest in maximizing the confidence and precision of realization rate estimates for key measures of interest identified through the measure prioritization task, recognizing that the expected total sample size would remain the same. The final sampling framework generally achieved 80/20 confidence/precision across electric technologies and gas technologies.

The following subsections present the realization rates calculated through the evaluation, along with an additional interpretation of realization rates by path.

---

<sup>6</sup> The TecMarket Works Team, The California Evaluation Framework, Prepared for the California Public Utilities Commission and the Project Advisory Group, June 2004

### 2.3.1 Small Business Lighting Realization Rates

**Table 13. Summary of Small Business Lighting Realization Rates (PY 2011 – 2012)**

Stratum	Ex Ante Savings (Tracking Database, kWh)	As-Reported Realization Rate	As-Reported Savings (kWh)	As-Evaluated Realization Rate	As-Evaluated Savings (kWh)
Custom	6,329,676	100.0%	6,329,731	100.1%	6,335,985
Linear Fluorescent	29,441,394	100.0%	29,441,394	100.3%	29,525,108
Screw-In LED	264,717	100.0%	264,717	100.0%	264,717
All Other	4,978,893	99.9%	4,971,914	100.0%	4,978,750
Occupancy Sensor	1,040,088	101.7%	1,057,575	109.3%	1,137,263
<b>Total</b>	<b>42,054,768</b>	<b>100.0%</b>	<b>42,065,331</b>	<b>100.5%</b>	<b>42,260,343</b>

### 2.3.2 Commercial Rebates Realization Rates

**Table 14. Summary of Commercial Rebates (Electric) Realization Rates (PY 2011 – 2012)**

Stratum	Ex Ante Savings (Tracking Database, kWh)	As-Reported Realization Rate	As-Reported Savings (kWh)	As-Evaluated Realization Rate	As-Evaluated Savings (kWh)
Commercial Lighting Rebates	26,143,896	100.0%	26,143,896	100.0%	26,143,896
Pre-Rinse Spray Valves	10,785,574	100.0%	10,785,574	42.6%	4,599,990
Commercial CFL Mark Down	9,220,835	100.0%	9,220,835	100.0%	9,220,835
Variable Speed Drives	6,361,531	106.3%	6,763,874	104.5%	6,648,732
Premium HVAC Service	4,853,603	100.0%	4,853,603	100.0%	4,853,603
All Other	12,959,105	100.0%	12,959,105	100.0%	12,959,105
<b>Total</b>	<b>70,324,544</b>	<b>100.6%</b>	<b>70,726,887</b>	<b>91.6%</b>	<b>64,426,161</b>

**Table 15. Summary of Commercial Rebates (Gas) Realization Rates (PY 2011 – 2012)**

Stratum	Ex Ante Savings (Tracking Database, Therms)	As-Reported Realization Rate	As-Reported Savings (Therms)	As-Evaluated Realization Rate	As-Evaluated Savings (Therms)
Pre-Rinse Spray Valves	1,583,383	101.5%	1,606,515	10.7%	168,731
Premium HVAC Service	115,026	100.0%	115,026	100.0%	115,026
All Other	191,032	100.0%	191,032	100.0%	191,032
<b>Total</b>	<b>1,889,441</b>	<b>101.2%</b>	<b>1,912,573</b>	<b>25.1%</b>	<b>474,789</b>

### 2.3.2.1 Pre-Rinse Spray Valve Sub-program Adjusted Realization Rates

During the analysis of the Pre-Rinse Spray Valve sub-program, Navigant reviewed the engineering assumptions and algorithms in the PSE business case for commercial faucet aerators. Faucet aerators represent 80 percent of the electric and 70 percent of the therms savings in the Pre-Rinse Spray Valve sub-program. Upon review of the business case, Navigant realized a significant overestimation of prescriptive savings for the commercial faucet aerators. Specifically, PSE developed the business case based on assumptions for Commercial Kitchens. Navigant’s on-site M&V showed that the majority of aerators installed through the program are installed in commercial restrooms and other non-kitchen applications. Both scenarios have a different usage profile and consequently less savings than those of Commercial Kitchens. As a result, the as-evaluated realization rates for the Pre-Rinse Spray Valve sub-program both in an absolute sense and comparatively to the other PSE sub-programs and low.

Navigant would like to report the results of this particular sub-program anomalous to the overall findings. PSE identified this as a potential issue of this evaluation through an internal review of all PSE deemed savings calculations in preparation for the 2014-2015 program planning. Navigant recognizes PSE’s initiative and action already taken to rectify the known issue of savings overestimation for this sub-program. Additionally, PSE intends to use the findings of this evaluation to further refine the energy savings for these measures. Although PSE expected low realization rates for this sub-program, PSE did not know the quantified impact the overestimation had on the overall Commercial Rebates Program prior to this evaluation. While the Pre-Rinse Spray Valve sub-program represents only 15 percent of the ex ante electric savings in PSE’s tracking database, the sub-program represents 84 percent of the ex ante gas savings. Thus, a low realization rate in the sub-program significantly drives the overall realization rate for the Commercial Rebates Program gas measures.

In an objective Impact Evaluation such as this, Navigant has the responsibility to report ex post energy savings as they were evaluated. However, in order to sufficiently credit PSE’s awareness of and action on the issue, Navigant has developed adjusted realization rates for this sub-program. Navigant reviewed the newly developed business case<sup>7</sup> for accuracy and reasonableness and the full tracking database data for the sub-program. Based on the relative proportion of commercial faucet aerators in the sub-program, Navigant adjusted the ex ante savings using the prescriptive savings values in the new business case. Table 16 shows the adjusted as-evaluated energy savings by fuel source for the Pre-Rinse Spray Valves sub-program.

**Table 16. Summary of Pre-Rinse Spray Valves Adjusted Realization Rates**

Fuel Source	Adjusted Ex Ante Savings	Adjusted Realization Rate	Adjusted As-Evaluated Savings
Electric	4,300,120 kWh	131.1%	5,638,479 kWh
Gas	783,412 therms	45.1%	352,991 therms

*Note: The adjusted realization rates are discussed further in later sections.*

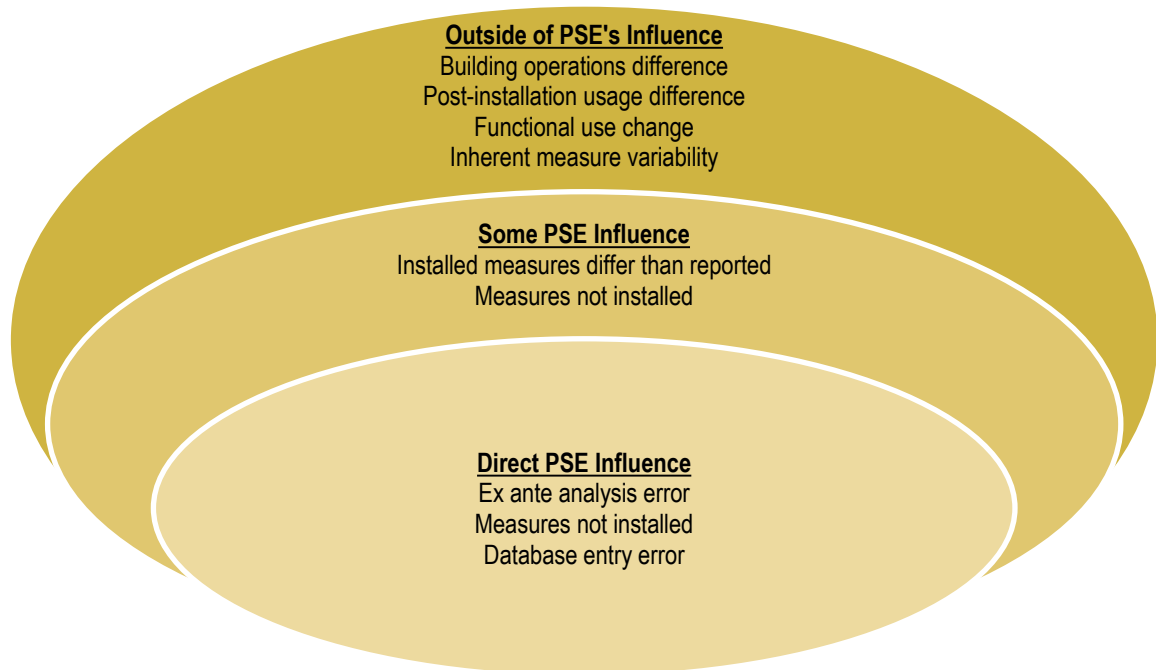
<sup>7</sup> PSE plans to enact the newly developed business case in January 2014.

## 2.4 Factors Influencing Realization Rates

The realization rates in the previous section provide insight into both the as-reported and as-evaluated energy savings. Out of necessity, the merits of energy efficiency projects must be judged by the best information available, which is usually operating practices observed at the time of evaluation. Navigant observed that the information reported in some of the project files differed from the actual information gathered during the on-site verification. In these cases, Navigant carefully reviewed the documentation on evaluated projects and compared the ex ante assumptions to the ex post observations and feedback from facility personnel. In addition to the project input assumptions, Navigant also compared the ex ante calculation methodologies against industry standards and accepted engineering practices. Finally, Navigant collaborated with PSE to ensure that all available information collected during the participation process was properly accounted for in the ex post savings analyses.

Figure 2 shows the common reasons realization rates are less than or greater than 100 percent and PSE’s influence on those issues. Notably, PSE conducts verification of a sample of projects; thus, any incorrectly reported measures could be considered directly within PSE influence. Overall, though some issues resulted from ex ante energy calculation discrepancies, the evaluation concluded most substantial issues with realizations resulted from factors outside of PSE’s influence.

**Figure 2. Common Evaluation Issues Resulting in Differences in Realization Rates**



The as-evaluated realization rates provide insight into the accuracy of the calculations used to forecast savings. The results of this evaluation clearly indicate that PSE staff are correctly applying mathematically astute methods to the ex ante analyses. This finding is reflective of the high realization rates across both programs evaluated, with the exception of the Pre-Rinse Spray Valve sub-program previously discussed. For a majority of the projects evaluated, deviations between the ex ante and ex

post savings estimates were explainable through idiosyncratic factors and by the inherent variability surrounding measure performance (e.g., occupancy sensors and variable-frequency drives [VFDs]).

The following sections explore non-programmatic factors and their effect on project- and program-level realization rates. Navigant distinguished the impacts from each of these factors through on-site M&V and discussions with facility personnel during the evaluation process.

#### 2.4.1 Occupancy Sensor Meta-Analysis

In the initial stages of the Impact Evaluation, PSE requested a study specific to the occupancy sensor measures in the Small Business Lighting Program. The current program provides prescriptive rebates for occupancy sensors controlling either 100-199 W or more than 200 W. Eligible occupancy sensors include standard wall boxes, fixture mounted, and timer controls. The project application allows contractors to submit pre-installation and post-installation hours of operation for each occupancy sensor. The application does not require a detailed description or engineering calculation of the pre- and post-installation hours of operation. So, no standard occupancy sensor reduction factor exists in the program.

PSE staff asked Navigant to assess occupancy sensor reduction factors, preferably by space type. An M&V study to analyze such factors would require a great deal of time and coordination and the results are often highly variable. For example, in order to meet specific confidence/precision levels by space type, the evaluator would need to develop discrete sampling plans by space type. The sampling plans would require a comprehensive review of project file data, because space types are not reported in the tracking database. Additionally, only post-installation data would be available, thus inherent uncertainty would exist in assuming the pre-installation conditions.

Understanding the constraints of an M&V occupancy sensor evaluation, Navigant proposed a meta-study of existing studies. The research found that the Regional Technical Forum recently performed a similar investigation, and much of Navigant’s findings are based on the Regional Technical Forum findings. Table 17 shows the utilities and entities researched as part of the meta-study. Occupancy sensor reduction factors are calculated in a variety of methods:

- » **Space Type:** Reduction factors are defined based on the operational profiles by space type within a building.
- » **Control Type:** Reduction factors are constant based on control type (e.g., wall box, timer).
- » **General: Reduction** factors are constant and independent of control type and space type.
- » **Custom:** Reduction factors are custom-calculated based on actual project operational profiles.

As noted previously, PSE currently allows contractors to use custom reduction factors on project applications.

**Table 17. Occupancy Sensor Reduction Factor Sources**

Source	Occupancy Sensor Reduction Factor Methodology	Reduction Factor Range
Lawrence Berkeley National Laboratory	Space Type	7%-45%
California Statewide Programs	Space Type	15%-45%
Efficiency Maine	Space Type	15%-45%
Seattle City Light	Custom	N/A
Bonneville Power Authority	General	25%
Pacific Power	Control Type	10%-30%
Tacoma Power	General	33%
Energy Trust of Oregon	General	25%-45%
Idaho Power	Control Type	15%-30%
Efficiency Vermont	Control Type	10%-30%

*Source: Navigant and Regional Technical Forum analysis*

Table 18 shows the results of the meta-study, which were largely influenced by the Regional Technical Forum work. Navigant reviewed the analysis with the Regional Technical Forum to ensure the data were the most up-to-date and most appropriate for PSE’s program. Note, many of the space types are likely outside the scope of the Small Business Lighting Program, but Navigant has presented all findings to support possible integration of the space type methodology into PSE’s standard practices.

**Table 18. Occupancy Sensor Reduction Factors by Space Type**

Space Type	Reduction Factor	Space Type	Reduction Factor
Assembly	36%	Lodging (Guest Rooms)	45%
Break Room	20%	Open Office	22%
Classroom	18%	Parking Garage	15%
Computer Room	35%	Private Office	22%
Conference Room	35%	Process	45%
Dining	35%	Public Assembly	36%
Gymnasium	35%	Restroom	40%
Hallway	15%	Retail	15%
Hospital Room	45%	Stairs	25%
Industrial	45%	Storage	45%
Kitchen	30%	Technical Area	35%
Library	15%	Warehouses	31%
Lobby	25%	Other	7%

*Source: Navigant and Regional Technical Forum analysis*

Navigant used the results of the meta-study to determine the as-evaluated energy savings for the occupancy sensor measures in the Small Business Lighting Program. The hypothesis was that contractors were likely to overestimate reduction factors because of the need to present the highest possible energy savings to project sponsors. However, mapping the reduction factors to the space types provided in the project files and verified through M&V, the space type methodology resulted in greater energy savings than the current custom methodology.

#### 2.4.2 Pre-Rinse Spray Valve Program (Commercial Faucet Aerators)

As discussed previously, the Pre-Rinse Spray Valve sub-program has low as-evaluated realization rates due to overestimated prescriptive savings values. After adjustment of the ex ante energy savings and comparison to the as-evaluated energy savings, the realization rates still significantly deviate from 100 percent. Navigant performed on-site M&V for all sampled<sup>8</sup> Pre-Rinse Spray Valve projects and uncovered two notable findings, specifically for commercial faucet aerators:

- » **Measure Quantity Discrepancies:** In several projects, the on-site M&V resulted in lower quantities than expected from the project files. Facility personnel interviews provided insight into possible reasons, including broken and stolen fixtures. Although such instances did not occur at every site, the impact of unaccounted for aerators was sufficiently significant to influence the sub-program realization rates. One site in particular was expected to have 155 aerators, but only 148 possible aerators were found. Of those 148, only 89 were low-flow. This suggests the number of aerators installed was miscounted during the installation. At another site, one of the three expected aerators was missing because a patron broke the fixture and the site replaced it with a standard efficiency aerator. These findings had a significant impact on the realization rate for the sub-program. In aggregate, Navigant could not account for 28 percent of all faucet aerators in the sampled projects. The 28 percent is driven by the results of three sites, all of which had 50 or more aerators reported as installed in the tracking database. Notably, all three sites were schools (two high schools and one elementary school).

The issue is a result of both miscounts during the installation and post-installation snapback. The magnitude of those issues is difficult to quantify because of the uncertainty of where the aerators were installed in the first place.

- » **Fuel Source Discrepancies:** The primary driver of the adjusted realization rates was the discovery of fuel source discrepancies. The project files and tracking database allows the contractor to input one fuel source type. Navigant’s on-site M&V found cases of multiple fuel sources. For example, a school may have a central gas system providing hot water for most of the school, but may also have individual electric systems providing hot water for smaller applications. Thus, the energy savings for such a project still exist, but the reported savings were in the incorrect units. The higher electric realization rate indicates the discrepancy happened most often for gas fuel sources.

---

<sup>8</sup> Navigant reviewed 12 Pre-Rinse Spray Valve projects. The M&V findings suggest the estimated pre-M&V coefficient of variation of 0.5 was conservative. The M&V results showed post-M&V coefficient of variation of 0.4. Thus, the findings are statistically significant to 80 percent confidence at 16 percent relative precision.



Because of the interdependence of these discrepancies, the relative magnitudes are difficult to quantify. Three of the 12 evaluated projects were reported in the tracking database as a single fuel source, but Navigant found them to have both electric and gas water heating. By isolating the projects based on fuel source, Navigant determined the impact of in-service rate. Furthermore, review of the three projects with fuel source discrepancies provides a method of quantifying the impact of the fuel source discrepancy issue.

**Table 19. Determination of In-Service Rate for Faucet Aerators**

Fuel Source	Projects Evaluated	Expected Count	Actual Count	In-Service Rate
Electric	7	128	118	92%
Gas	2	140	94	67%
Both	3	223	143	64%
<b>Total</b>	<b>12</b>	<b>491</b>	<b>355</b>	<b>72%</b>

Table 20 shows the reviewed projects and the expected and actual aerator counts by fuel source. The combined in-service rate considers all aerators found on-site, regardless of fuel source. The isolated in-service rate is the actual count of aerators divided by the expected count for the reported fuel source. Particularly, for two of the projects, the isolated in-service is significantly lower than the combined in-service rate. Aggregated, 72 percent of the expected aerators were accounted for and 52 percent of the expected aerators were reported with the correct fuel source. In other words, nearly half of the accounted for aerators of these three projects were reported with the incorrect fuel source.

**Table 20. Isolation of Faucet Aerator Fuel Source Differences**

Project	Expected Count Electric Aerators	Expected Count Gas Aerators	Actual Count Electric Aerators	Actual Count Gas Aerators	Combined In-Service Rate	Isolated In-Service Rate
1	5	0	0	0	0%	0%
2	7	0	7	0	100%	100%
3	8	0	6	0	75%	75%
4	10	0	8	0	80%	80%
5	19	0	0	19	100%	0%
6	23	0	22	0	96%	96%
7	37	0	37	0	100%	100%
8	38	0	38	0	100%	100%
9	0	155	78	11	57%	7%
10	0	3	0	2	67%	67%
11	0	49	4	31	71%	63%
12	0	137	0	92	67%	67%
<b>Total</b>	<b>147</b>	<b>344</b>	<b>200</b>	<b>155</b>	<b>72%</b>	<b>52%</b>

### 2.4.3 Premium HVAC Service

The Premium HVAC Service sub-program uses a matrix of inputs to estimate energy savings per ton of cooling for eligible units. Although several supplementary files were available for the evaluation, the basis for the estimated energy savings was unavailable.<sup>9</sup> Navigant verified serviced units and inputs to PSE’s energy savings matrix, but the team was unable to review the engineering calculations used to estimate the energy savings. As the best possible evaluation option, Navigant reviewed other sources with similar HVAC service measures. Navigant concluded PSE’s energy savings estimated are reasonable, though a duplicate or original business case analysis is recommended for future implementation and evaluation.

## 2.5 Impact Evaluation Recommendations

Navigant staff thoroughly documented the Impact Evaluation process in an effort to capture and assess program feedback based on discussions with participants, program data, auxiliary reports, and evaluation observations. This information has been used to develop recommendations that will improve future program and Impact Evaluation cycles. Based on the study of the impacts, Navigant offers the following recommendations:

### 2.5.1 Program Data Requirements

- » In the Small Business Lighting Program, PSE can require contractors to submit the rationale behind annual operating hours calculations. Currently contractors provide a single annual value for each applicable measure. Such numbers are more difficult to verify than detailed operating profiles. For example, the contractors can document operating profiles for an average week, holidays, and weekends.

### 2.5.2 Program Data Tracking

- » PSE uses several databases to track energy savings in the Commercial Rebates Program. A single, comprehensive database with defined ownership would facilitate data analysis and more frequent assessment of program achievements. During the evaluation, Navigant referenced several databases in order to accrue sufficient data to perform the evaluation. For example, the Pre-Rinse Spray Valve sub-program data are found in three primary databases (one of which is reconstructed annually). Although all sub-program data were available in one or a combination of databases, a great deal of Navigant and PSE communication and collaboration were needed to ensure Navigant had all necessary data. This issue was most prevalent for the Pre-Rinse Spray Valve and CFL Markdown programs, where project level data was archived separately from the main Commercial Rebates tracking database. Additionally, typically only the energy savings and rebate amounts were tracked in the main tracking database. Navigant used the project files to fill out the data gaps in the tracking databases—a time consuming process for large sample sizes. Given the requirement for future evaluations, Navigant suggests normalization of tracked data and combination of tracking databases as a general best practice. Navigant understands PSE’s prior awareness of this issue and that a new database is being piloted with the Small Business Lighting Program.

---

<sup>9</sup> The business case references a study performed by Ecotope. The study calculates savings for various service packages for 7.5-ton units. PSE normalizes the studied findings to a per-ton basis.

### 2.5.3 Energy Savings Calculations and Documentation

- » Although already underway at PSE, Navigant suggests PSE should standardize business case development and record keeping. In some cases, the most up-to-date engineering calculations were not obvious; in occasional cases, the engineering calculations were inaccessible. An archival system with dates/timestamps, authors, and completed/pending updates could facilitate future revisions to business cases as well as future evaluations of programs. Navigant suggests reviewing the Regional Technical Forum and California investor-owned utility (IOU) archival systems.
- » PSE can increase traceability and possibly report more savings if the occupancy sensor reduction factors changed from custom inputs to industry-accepted standards by space type. Navigant suggests the occupancy sensor reduction factors presented in this report and found additional energy savings when recalculating using the adjusted factors. Additionally, Navigant suggests a potential strategy using standard factors as the default while allowing contractors to submit custom reduction factors with sufficient evidence.
- » PSE can increase the reliability or accuracy of energy savings forecasts of commercial faucet aerators by implementing an in-service rate factor in the prescriptive savings methodology. In-service rates are the percentage of units rebated that actually get used over the effective lifetime of the measure. In-service rates are typical for such measures with high ease of installation (and removal) and variable customer acceptance. Navigant found 28 percent of the sample aerators were unaccounted for, which translates to a 72 percent in-service rate. These finding was driven by two large projects, thus normalizing for these two projects, Navigant recommends building in an in-service rate into the latest business case.
- » PSE can increase the traceability and reliability of energy savings for the Premium HVAC Service program by reconstructing or initializing an updated business case. Although the current prescriptive energy savings are reasonable when compared to other similar measures outside of PSE, the lack of traceable energy savings could increase the uncertainty in energy savings forecasts and achievements of the program.

## 3 Process Evaluation

This section summarizes the Process Evaluation methods and findings used to document current program design and operations, and identify and recommend program improvements that will result in more energy savings, better cost effectiveness, and high participant satisfaction.

### 3.1 Process Evaluation Methodology

The main aims of Process Evaluation are to (1) document current program design and operations and to (2) identify and recommend program improvements that will result in more energy savings, better cost effectiveness, and high participant satisfaction. To meet this end, the evaluation team analyzed process data to triangulate between participant and non-participant survey and interview responses to process related questions, PSE staff in-depth interviews, trade ally interviews, and program material review. Key questions addressed in the process analysis include:

- » Program Design and Process Implementation
  - Is the program being implemented as designed?
  - What is the staff's interpretation of the program goals?
  - What challenges are staff encountering related to implementation of program activities?
  - Does PSE accurately present the program and its processes to potential customer and trade ally participants via its marketing materials?
- » Customer Experience and Satisfaction
  - What barriers exist to program participation? Why do some potential customers choose not to participate?
  - Why did participants decide to participate?
  - What are customer expectations of the program? Is the program meeting these expectations?
  - How satisfied are participants with their experiences and why?
  - Do participants have suggestions for improvement to the program processes? Are these suggestions realistic?
- » Trade Ally Experience and Satisfaction
  - What motivates a trade ally to support the program?
  - What keeps a potential trade ally from recommending the program?
  - How do trade allies deliver program information to potential participants?
  - What can PSE do to make the program experience easier for trade allies?
  - How can the program better leverage the PSE Contractor Alliance Network (CAN)?

After studying the program marketing materials and design documentation, the evaluation team incorporated these research questions into an evaluation approach, which included in-depth interviews with staff and trade allies and a survey of participating and non-participating customers. Through these surveys and interviews, Navigant gathered insights into program awareness, customer satisfaction, barriers to participation, and marketing and sales activities.

### **3.1.1 In-Depth Interviews with Staff**

Navigant conducted six in-depth-interviews with key PSE staff associated with both programs. These interviews helped Navigant develop a full understanding of the current design, procedures, and implementation strategies for each program, including all program marketing, outreach, and training efforts. Because of the interviews, the Navigant team was able to obtain an understanding of (1) the program design and implementation, (2) issues the program staff have with the program, (3) an initial hypotheses about customer satisfaction, and (4) barriers to participation and opportunities to enhance program participation.

### **3.1.2 Program Materials and Tracking System Review**

In-depth interviews with staff were followed by a review of the program tracking systems to both assess their effectiveness and identify sample frames for the trade ally interviews and customer surveys. Navigant also reviewed relevant program materials for both programs including program design documentation and marketing materials. This review provided a foundation for subsequent data collection and analytical efforts.

### **3.1.3 Customer Phone Survey**

Navigant conducted Computer-Assisted Telephone Interviewing (CATI) surveys to interview participating and non-participating customers to better understand customer satisfaction, perceptions of and experience with the program, and barriers to participation. Navigant drafted a survey instrument for review by PSE and contracted with a telephone survey provider to conduct these customer surveys. Navigant designed the survey instruments to gather information regarding participant satisfaction with program participation, the effectiveness of program marketing and outreach activities, perceived barriers to and motivations for program participation, and market effects. Appendix A includes the full participant and non-participant survey guides.

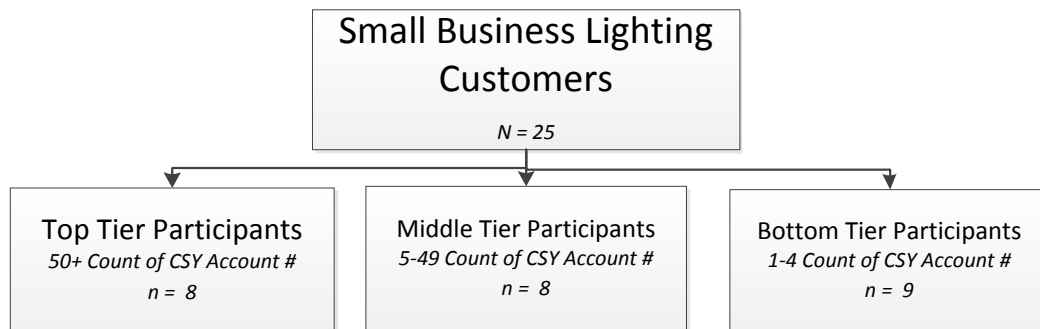
Navigant used the PSE program tracking database to develop a sample of 75 participating customers who completed program projects between January 1, 2011, and December 31, 2012. Upon receipt of the program tracking database for each program, Navigant analyzed the datasets to develop strata for the detailed sample strategies. The Commercial Rebate Program consists of many sub-programs. Each sub-program consists of many eligible measures. Similarly, the Small Business Lighting Program consists of many measures. Thus, Navigant recommended tailoring the sampling plan for Process Evaluation to include those sub-programs and measures PSE would like directly evaluated to inform the 2014-2015 planning process. As a result, prior to developing the detailed sample designs for each program, Navigant requested PSE’s direction for sub-program and measure prioritization. Table 21 indicates whether each sub-program was ultimately included in the sample. Navigant used this same method to identify sub-program strata for the trade ally interview sample.

**Table 21. Sub-Program Inclusion in Process Evaluation Sample**

Sub-Program	Include?
CFL Mark Down	Yes
Commercial Kitchens	Yes
Commercial Lighting	Yes
Commercial Laundry	Yes
Cooler Misers	No
Dishwashers	No
ECMs	No
Green Motor Rewind	No
HE Heat Pumps/Air Conditioners	No
Hospitality	No
LED Traffic Signals	No
PC Power Management	No
Portable Classroom Controls	No
Pre-Rinse Spray Heads	Yes
Premium HVAC Service	Yes
Programmable Thermostats	No
Refrigerators/Freezers	No
Small Business Direct Install	No
Small Business Lighting	Yes
Variable Speed Drives (VSDs)	No

Navigant then determined the sample size for each sub-program based on the Impact Evaluation sampling approach; the process sample used the same sample sizes as the impact sample.<sup>10</sup> Navigant stratified the customer samples for each prioritized sub-program by frequency “tiers” to ensure the evaluation captured input from project representatives that experienced high, medium, and low levels of interaction with the program in 2011 and 2012. Navigant assessed frequency of interactions by the number of projects each customer had completed within the study timeframe. The evaluation team identified project count definitions for each sub-program since the scale of program interactions varied. Figure 3 demonstrates this stratification, using Small Business Lighting Customers as an example.

**Figure 3. Example Participating Customer Sample Stratification**



Navigant also flagged whether the contacts had problems with paperwork using the “Problems with Paperwork?” field in the program database to ensure that at least one contact who has had issues with paperwork is included in each subgroup sample. Navigant mapped qualifying non-participating customer North American Industry Classification System (NAICS) codes to each sub-program strata to develop the non-participant customer sample frame.

As shown in Table 22, Navigant completed surveys with 75 participant and 75 non-participant customers for a total of 150 completes. While the team reached the target number of surveys for most of the sub-program strata, the participant completions had to be adjusted due to sample availability.

**Table 22. Survey Disposition of Participant and Non-Participant Customers by Sub-Program**

Sub-program	Participants		Non-Participants	
	Goal	Completed	Goal	Completed
Small Business Lighting (SBL)	25	25	25	25
Commercial Lighting	15	25	15	15
Commercial Laundry	10	2	10	10
Commercial Kitchens	10	17	10	10
Premium HVAC	9	3	9	9
Pre-Rinse Spray Valves	6	3	6	6
<b>Total</b>	<b>75</b>	<b>75</b>	<b>75</b>	<b>75</b>

*Red font indicates difference between goal and completed*

<sup>10</sup> Sample sizes at the subprogram strata level were not representative of that subprogram’s population.

### 3.1.4 Trade Ally Phone Interviews

The PSE Small Business Lighting and Commercial Rebate programs are designed to utilize a network of participating trade allies to promote the program and deliver program services. Interviews with these parties were a critical part of the Process Evaluation. Navigant conducted in-depth qualitative interviews with trade allies to learn more about how allies promote (or can promote) each program they are involved in and their motivation(s) for participating. Trade allies were also asked to comment on why some of their customers are not interested in participating.

Navigant gathered contacts for trade ally interviews from program tracking data. Navigant developed a sample of 20 vendors, retailers, and contractors who were involved in program projects between January 1, 2011, and December 31, 2012. Navigant stratified the participating trade ally samples for each prioritized sub-program by frequency “tiers” to ensure the evaluation captured input from project representatives that experienced high, medium, and low levels of interaction with the program in 2011 and 2012. Navigant assessed frequency of interactions by the number of projects each trade ally championed during the study timeframe. Project count definitions for each tier were defined at the sub-program level since the scale of program interactions varied. Trade allies that fell in the lowest participation tier were included in the “low-frequency” trade ally sample and asked a similar, but separate set of interview questions. Table 23 presents participant and low-frequency participant trade ally (TA) interview dispositions by subgroup.

**Table 23. Participant and Low-Frequency Participant Trade Ally Interview Disposition by Subgroup**

Strata	Participant Trade Allies		Low-Frequency Participant Trade Allies	
	Sample Size	Interviewed	Sample Size	Interviewed
CFL Mark Down	3	5	3	1
Commercial Kitchens	3	3	3	2
Commercial Lighting	3	7	3	5
Commercial Laundry	3	2	3	2
Pre-Rinse Spray Heads	1	0	1	0
Premium HVAC Service	3	3	3	1
Small Business Lighting (SBL)	4	6	4	4
<b>Total</b>	<b>20</b>	<b>26</b>	<b>20</b>	<b>15</b>

### 3.2 Process Evaluation Findings

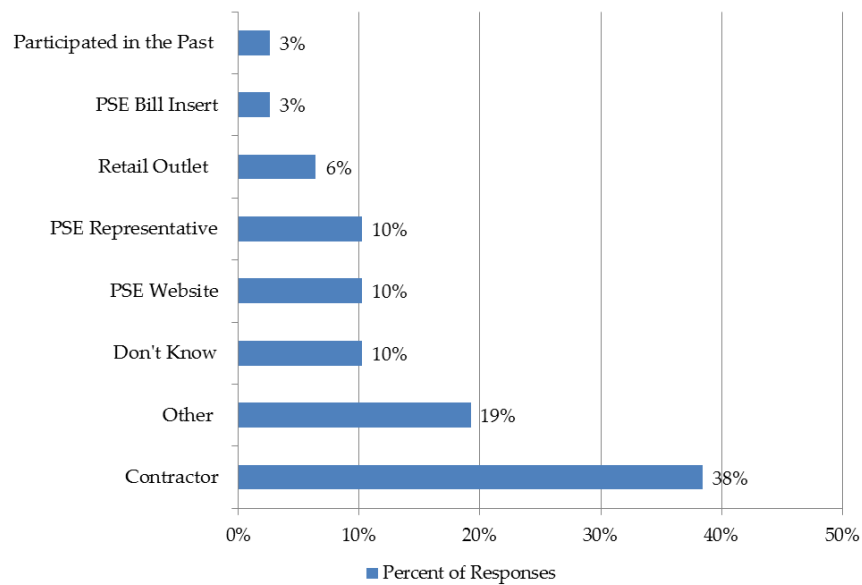
This section presents overarching findings from the Process Evaluation. Section 3.2 presents findings specific to the Small Business Lighting, Commercial Lighting, Premium HVAC, Commercial Laundry and Commercial Kitchens sub-programs.



### 3.2.1 Customer and Trade Ally Awareness

Participant customer respondents most often said they heard about the programs from their contractors, followed by the PSE website and PSE representatives. Other sources mentioned include Community Power Works, Energy Smart Grocers, newspaper, vendor, economic development council, and retail outlets. All respondents who heard about the program from the contractor said that the contractor provided them with enough information about the program, indicating that trade allies are accurately representing the program. Figure 4 presents sources of program awareness by participant customers.

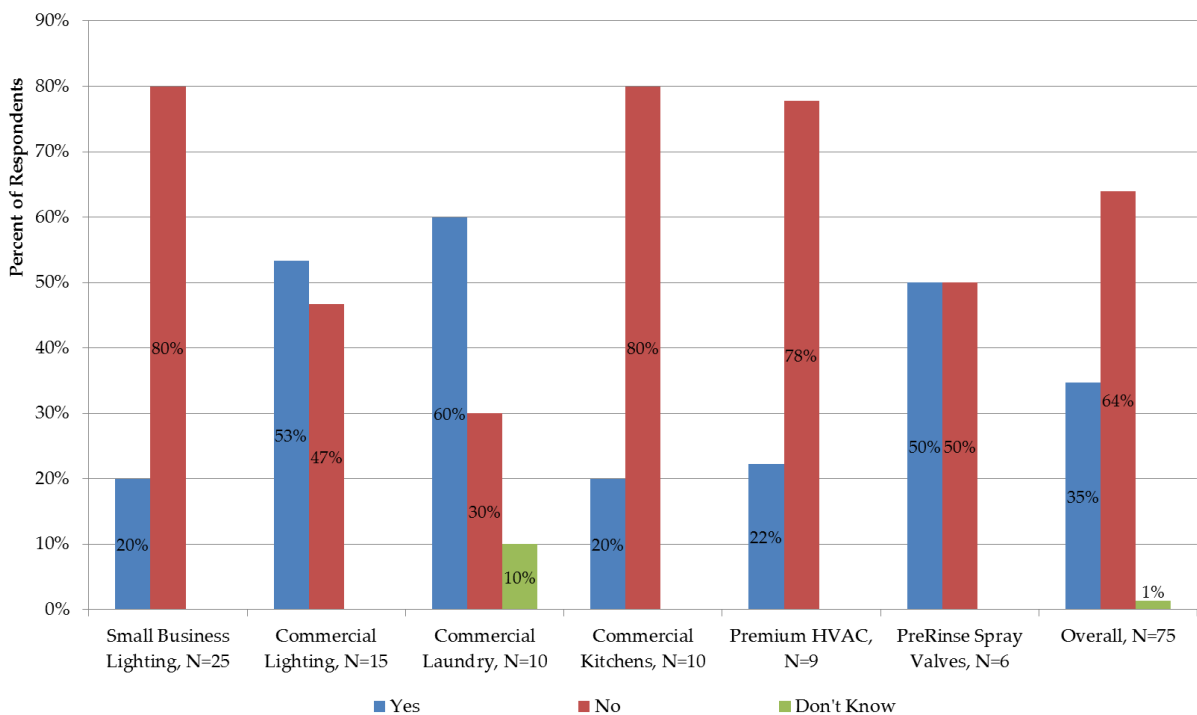
**Figure 4. How Did Participant Customers Hear about the Programs?**



*Categories not mutually exclusive. N = 78*  
*Source: Navigant analysis*

According to the JD Power Business Survey results provided to Navigant by PSE, 53 percent of PSE’s electric service survey respondents and 50 percent of PSE’s gas service survey respondents reported that they were aware of PSE’s energy efficiency programs. This compares to a nationwide average level of awareness of 55 percent for electric and 47 percent for gas, and a western region average of 62 percent for electric and 54 percent for gas.<sup>11</sup> According to Navigant’s survey for this project, overall, 35 percent of PSE non-participant customers said they were aware of PSE programs, as shown in Figure 5. This lower awareness value may be because the JD Power sample included participant and non-participant respondents, while, for this question, Navigant’s sample included only non-participants.

**Figure 5. Had Non-Participant Customers Heard of the Programs?**



Source: Navigant analysis

Overall, most (64 percent) non-participant customer respondents stated that they had not heard of the programs. When looking at the responses by sub-program in Figure 5, we see a few notable data points. Roughly 20 percent of non-participant respondents who qualify for the Small Business Lighting, Commercial Kitchens or Premium HVAC programs said they had heard of the programs. By comparison, the majority of respondents in both the Commercial Lighting and Commercial Laundry sub-program categories said they had heard of the programs. These data points provide two important insights; 1) the Small Business Lighting, Commercial Kitchens and Premium HVAC programs may be facing an awareness barrier in addition to other barriers to participation, and 2) the Commercial Lighting and Commercial Laundry sub-programs are facing less of an awareness barrier and may only need to focus on addressing other barriers to participation. It is also worth noting that the Pre-Rinse Spray Valve program respondents were equally aware and unaware of the program.

<sup>11</sup> JD Powers Business Electric and Business Gas Survey Results provided by PSE.

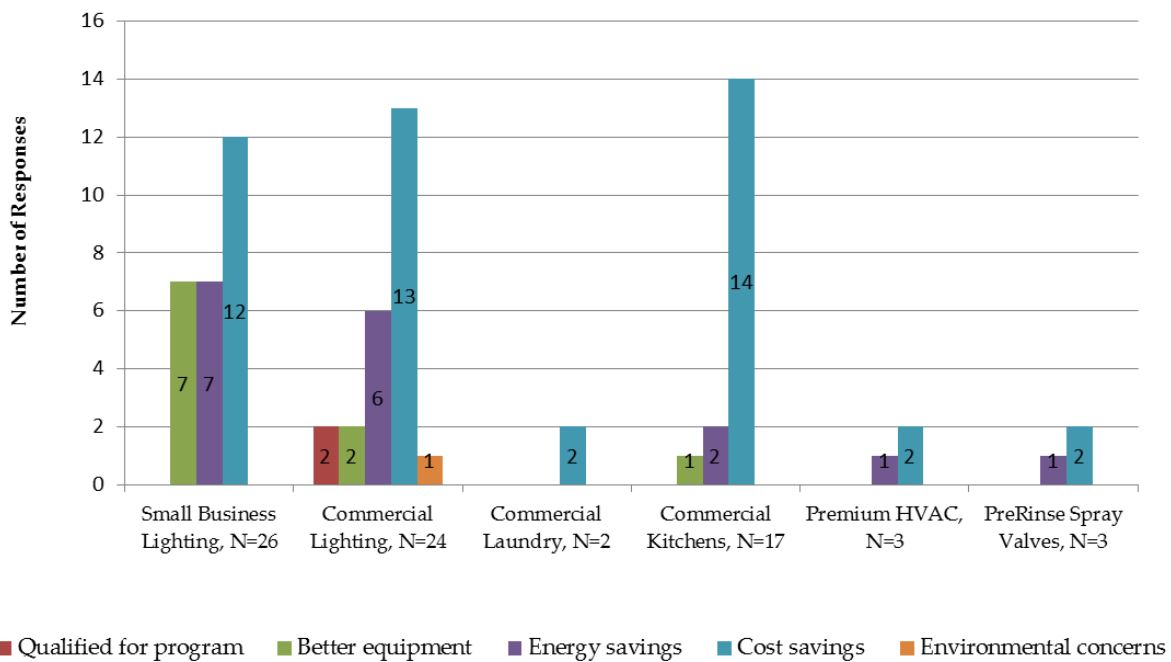
More than half of the non-participant respondents who heard about the program considered enrolling in the program. The reason most frequently mentioned for not participating was not having enough time to look at and gather additional information about program requirements. Some respondents also said they did not see where they could save money, or they were unfamiliar with what equipment qualifies for the program. When asked about what would motivate them to participate in the PSE programs, non-participant respondents overwhelmingly noted cost and energy savings, positive return on investment (ROI), and easy to understand information which explains clearly the amount of savings and follow up after the initial approach.

All participant and low-frequency participant trade ally respondents recalled participating in the programs. Trade allies cited various sources of information for learning about the program, including PSE representatives, the PSE website, and customers. One Commercial Laundry trade ally respondent noted that while they were aware of the program, they are not clear on its status because the program “is always running out of money.”

### 3.2.2 Participation Drivers and Barriers

As seen in Figure 6, a plurality of customer participant respondents in each sub-program said their reason for participation was cost savings, followed by energy savings and a desire for better equipment. Only one Commercial Lighting respondent cited environmental concerns as their reason for participating. This aligns with trade ally perceptions of participation drivers; when asked why customers participate in the program, trade allies for all sub-programs felt that customers participate to receive energy/cost savings, a good ROI, and to replace old equipment as repairs costs almost as much as buying new equipment.

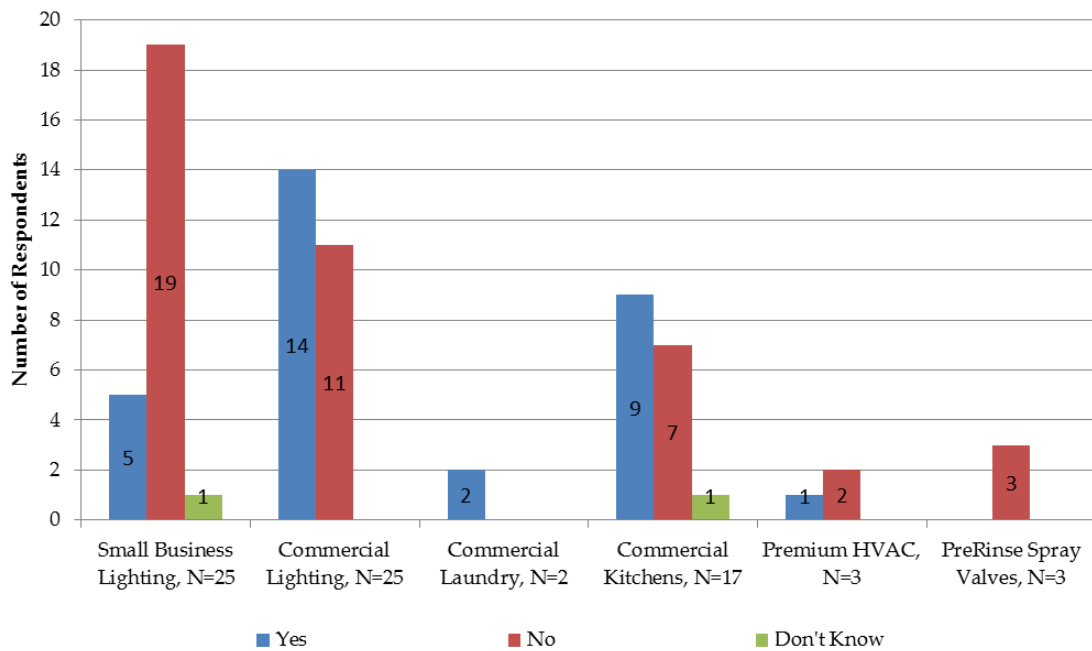
**Figure 6. Why Did Customers Participate in the Program?**



Note: Multiple responses allowed  
 Source: Navigant analysis

Figure 7 presents customer participant respondents who considered installing the measure before enrolling in the program. Most Small Business Lighting participants had not considered installing efficient equipment before the program; other programs had even responses to this question.

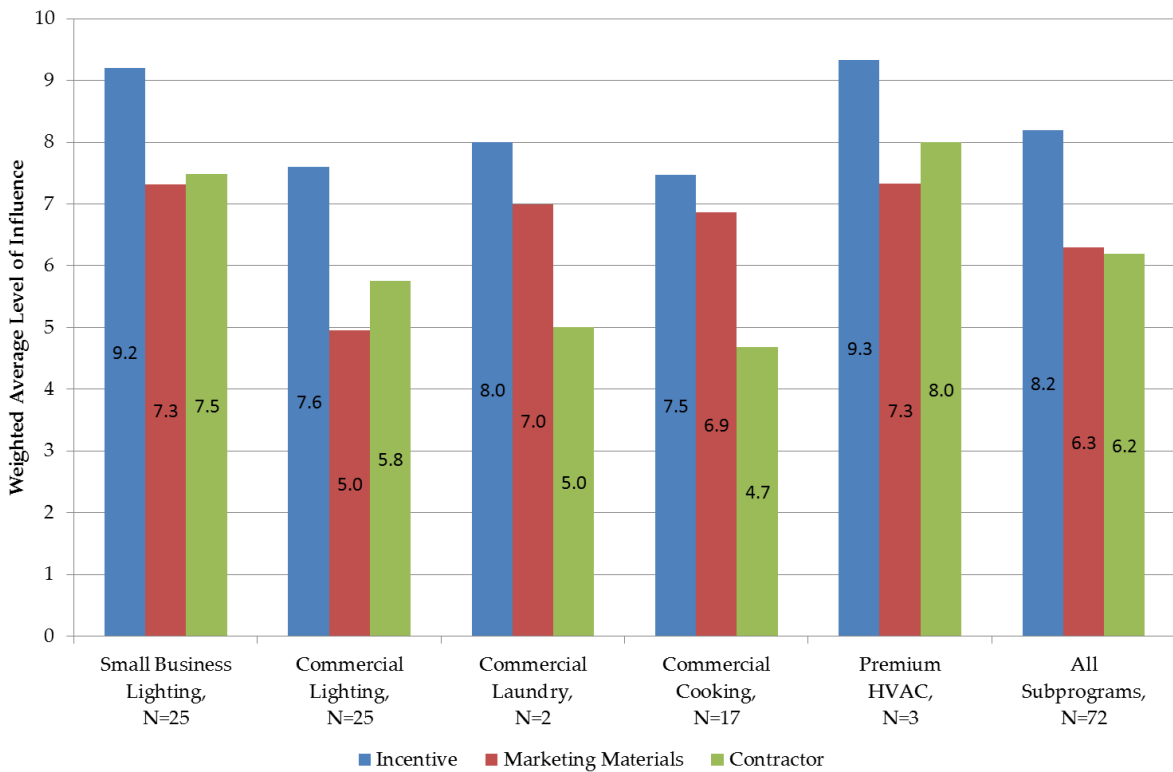
**Figure 7. Did Customers Consider Installing the Measure Before Enrolling in the Program?**



Source: Navigant analysis

Figure 8 shows the level of influence various program components had on the participant customer’s decision to install the energy efficient measure. While the financial incentive was very important, marketing materials and the contractor were less influential on respondents’ decision to participate in the program. The financial incentive and the contractor were very influential for Small Business Lighting and Premium HVAC respondents. The incentives were also influential for the other sub-programs, but to a lesser extent. For Commercial Lighting, marketing materials were less influential than for the other sub-programs.

**Figure 8. How Influential were the Program Components on the Customer’s Decision to Install Energy Efficient Measure?**



1 = no influence, 10 = very influential;  
 Calculations do not include Pre-Rinse Spray Value participants  
 Source: Navigant analysis

### 3.2.3 Marketing and Leveraging External Relationships

As mentioned earlier, contractors play a key role in promoting the programs to qualifying customers. When asked how they found their contractors, one-third of Commercial Lighting, Premium HVAC, and Small Business Lighting participant customers said that the contractor approached them. Other respondents listed previous work with the contractor, referrals, online search, the equipment vendor, and public bids for how they found the contractor who completed the installation. Five of 25 Small Business Lighting respondents said they found the contractor through the PSE Contractor Alliance Network (CAN). These respondents said the CAN made their search easier.

Trade allies described the programs as “a great sales tool” and “a good way to grab the customer's attention.” Participating trade allies noted that the programs provide them with a competitive advantage over their competition. In general, participating trade allies in all subgroups said they promote the program to their customers who are eligible nearly all the time, unless they determine that the customer is ineligible. This underscores the importance of ensuring that program qualification guidelines are clear, and that the trade allies have access to up-to-date, accurate information about customer eligibility. One Commercial Kitchens contactor noted that their commission structure is set up so that the rebate is taken out before their commission is calculated, so some sales staff may see the program as a disincentive or may tell the customers to apply directly themselves. Thus, in some cases the promotion of Commercial Kitchens incentives depends on individual company policies and individual sales staff.

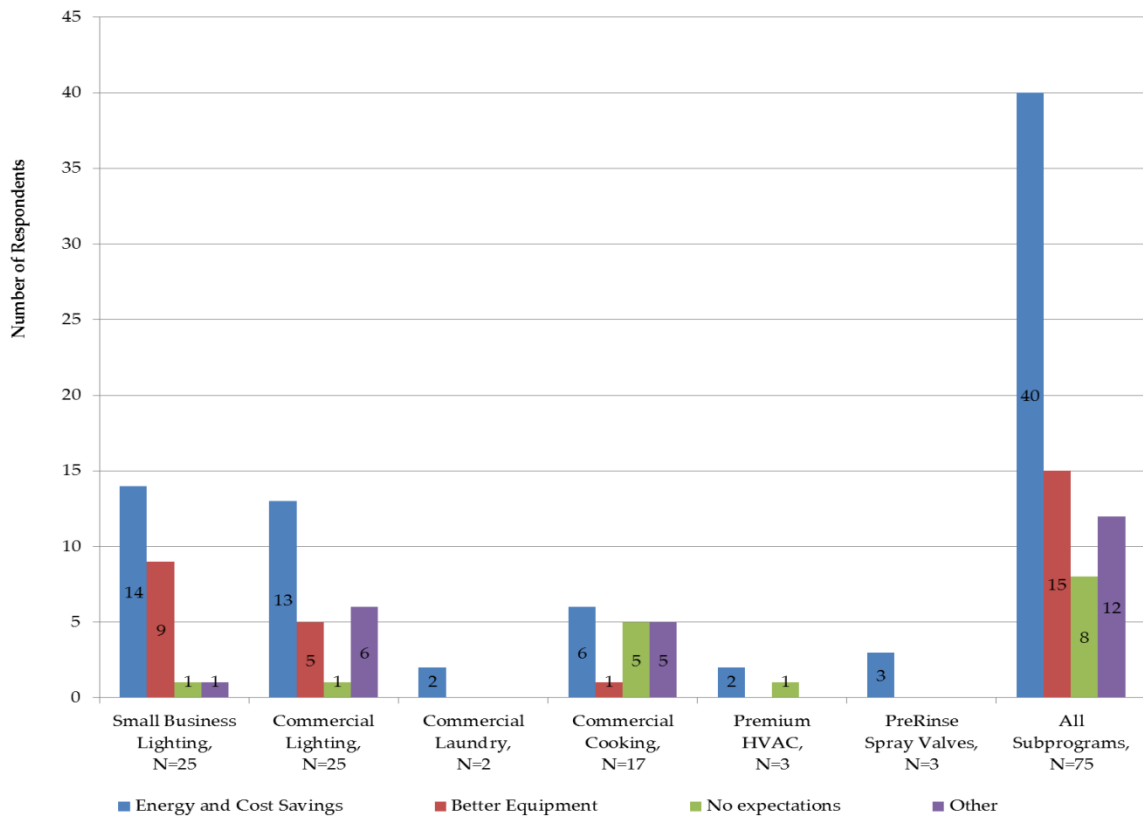
Low-frequency participant trade allies said they promote the program as often they can. However, some noted that they felt there is too much lag time between application and payment, and that small businesses cannot afford up front capital. Two trade allies mentioned that the Commercial Laundry program sometimes “runs out of money” so they refrain from promoting the program to avoid “wasting the customer’s time.”

All trade allies described a variety of mechanisms for keeping customers aware of energy efficiency opportunities and PSE incentives including face-to-face interactions, sales phone calls, and flyers, emails, mailers, websites, traditional advertising, and attendance at trade shows. In general, trade allies felt that PSE’s materials are useful, but some do not use them in front of the customer and instead use them as training material for new sales staff. For example, lighting program trade allies stated that while they receive PSE materials, they do not use them very often because they prefer to be the gatekeepers of information for their customers. Other trade allies echoed this by stating that their customers prefer personalized pitches rather than additional brochures. Several trade allies pointed out that the information in hard copy materials can quickly become outdated.

### 3.2.4 Participant Experience

As mentioned earlier, participant customers enrolled in the program to achieve energy and cost savings and to obtain better equipment. Figure 9 reiterates these customer expectations of the program.

**Figure 9. What Did Participant Customers Expect to Gain from the Program?**



Source: Navigant analysis

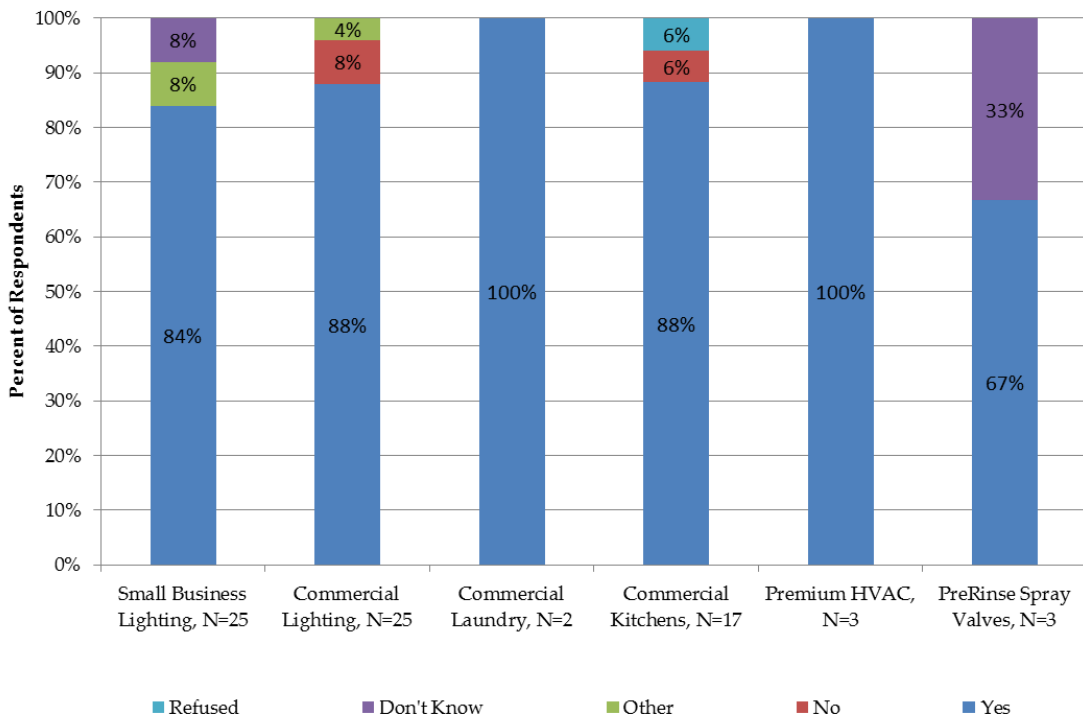


As

Figure 10 presents, the majority of respondents in each sub-program felt the program met their expectations. Only a few Commercial Lighting and Commercial Kitchens program participants said the program did not meet their expectations. Most respondents said they would participate in the program again for the cost and energy savings, depending on what measures and programs are offered and if they have a need for upgrades or more equipment. One respondent noted frustration with their contractor, underscoring the importance of trade ally relationships and training.

*“They met the expectations by reducing electricity costs, however, the contractor completing the work took a very long time (at least 3-4 months). [I wish] that the contractor had been more efficient. Such as, if they had stayed on task and completed the work faster, because there were periods of times when no work was completed for several weeks and we had to remind them various time to do it.” – Participant Customer*

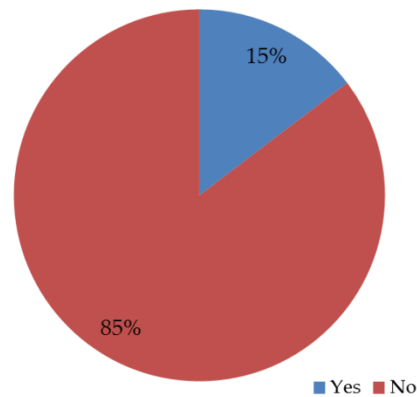
**Figure 10. Did the Program Meet Customer Expectations?**



Source: Navigant analysis

In general, trade allies felt that the programs are easy for customers to participate. Most low-frequency participant and some higher frequency participant trade allies expressed concerns about the labor intensity of the program paperwork; however, as shown in Figure 11, the vast majority of customer participants said that there was nothing that made their program participation difficult.

**Figure 11. Did Anything Make Program Participation Difficult for Customers?**



Note: N=75

Those customers that did have a difficult time with the program provided the following details:

- » Application process is cumbersome/involves too much paperwork
- » Eligible equipment hard to identify
- » Processing time is long/delay on approval of installation
- » PSE contractor list was not up-to-date
- » PSE changed guidelines in the middle of the project

*“When we started the program, it was understood how it worked but during the process as we went through it, something happened with the PSE end. They got tighter with some guidelines the vendor had to use and this affected the program.”*

– Participant Customer

*“Some of the contractors on your list were no longer doing upgrades; this meant making just a couple extra phone calls. We were living in kind of a remote area; the contractor had to come about 50 miles away.”*

– Participant Customer

*“They’re very slow on response time getting projects approved. A lot of times we had to submit additional documentation for completed projects. We had to resubmit application multiple times in order for our customers to receive rebate checks.”*

– Participant Trade Ally

Trade allies reported similar recommendations for improvements to the program. General recommendations included:

- » Dedicate a portion of the PSE website for trade allies to get the necessary information about programs. Improve the PSE website navigation.
- » Provide a transparent and timely system that allows customers and trade allies to see how their rebate is progressing through the PSE process. This could include an online system that allows customers and trade allies to log in and check the status of their application.
- » Upon releasing new application forms, make it easier to transfer information from old forms on to new forms.
- » Provide more proactive information about application requirements and missing information.
- » Provide a one-page description of each program that the contractor could share with customers.
- » Provide a smooth feedback loop from PSE to customers.
- » Be clear about when money is available, and when it is not. Consider adding a ticker on the website so people can see how much money is in a program at any given time.

*“Stop requiring so much info. They need to explain why they need all this info if they can’t pull it up themselves. Sometimes it’s 2 or 3 days of back and forth communication between me and my salesmen.”*

*- Participant Trade Ally*

---

*“Sometimes it’s difficult to figure out if something is on the qualifying list or not.”*

*- Participant Trade Ally*

---

*“I want to be paid in 30 days. If it is taking 60 to 90 days, one day I’m going to stop participating, and my competitors are likely to follow.”*

*- Participant Trade Ally*

---

*“It would be really helpful if there was a way to get information about when money is available. It makes no sense to bring it up with a customer if it is not available.”*

*- Low-Frequency Participant Trade Ally*

---

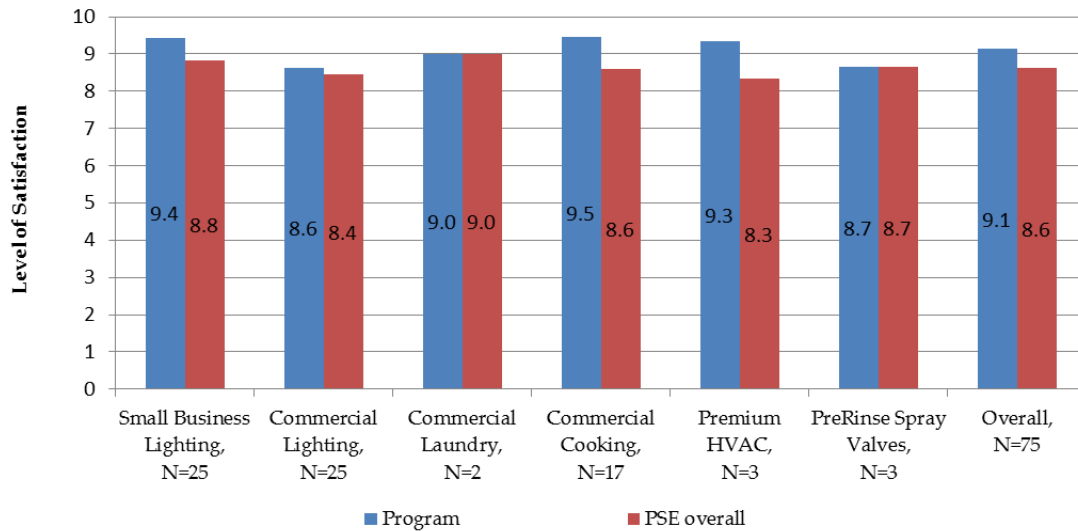
*“Make the program easier. We used to do it on a single sheet, and now you’re writing War and Peace. It’s no longer efficient”*

*- Participant Trade Ally*

---

Customer participant respondents in all sub-program categories reported high levels of satisfaction with the program, and with PSE overall. As Figure 12 shows, the programs received a score of 9.1 and PSE overall received a score of 8.6 on a scale of 1-10, where one means very dissatisfied and ten means very satisfied.

**Figure 12. How Satisfied are Customer Participants with the Program and PSE Overall?**

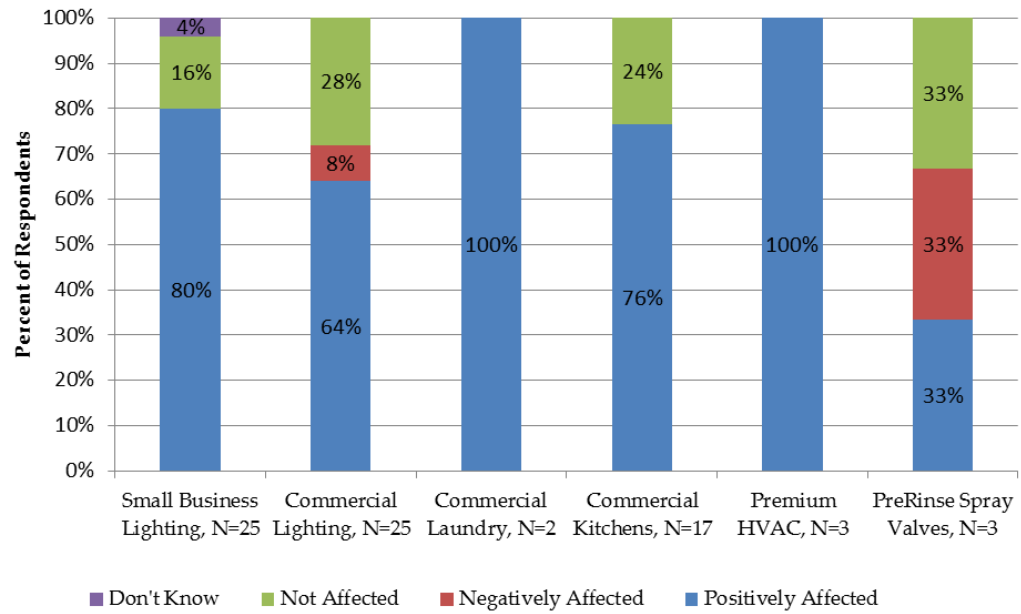


1 = very dissatisfied, 10 = very satisfied

Source: Navigant analysis

By comparison, non-participant customer respondents gave PSE an average score of 7.9. Figure 13 further underscores the role of the programs in affecting satisfaction. In general, participant respondents stated that the programs positively affected their satisfaction with PSE.

**Figure 13. How Did the Program Affect Participant Customer Perceptions of PSE Overall?**

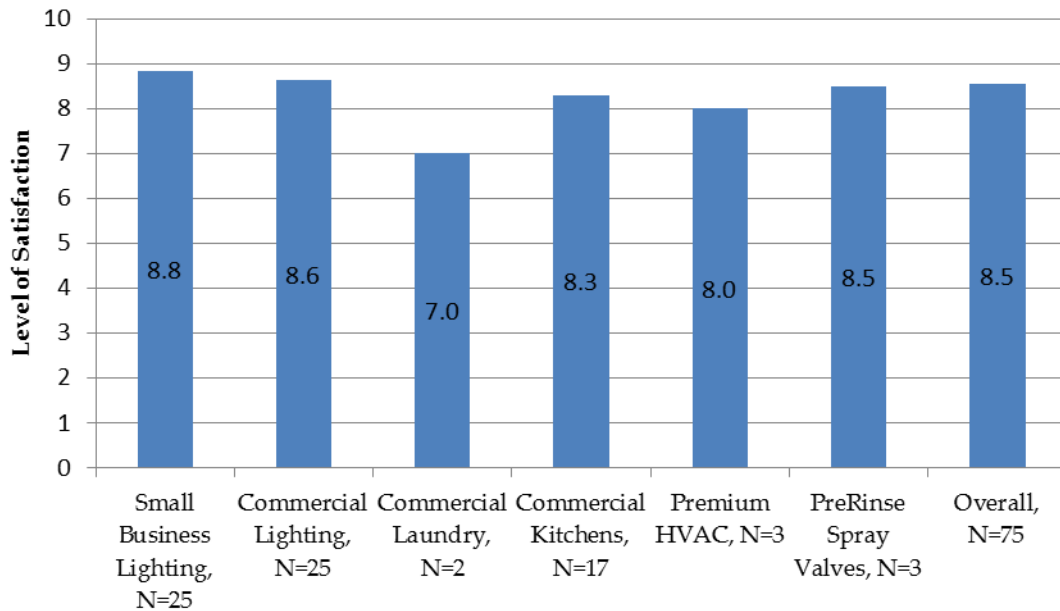


Source: Navigant analysis

Customer participant respondents in all sub-program categories reported high levels of satisfaction with the contractors (8.5), vendors (8.7), and PSE staff (8.9). Figure 14 presents these levels of satisfaction.

According to the JD Power Business Survey, PSE’s electric customers reported an average score of 6.22 (on a scale of 1 to 10 with 1 being dissatisfied) when asked to rate their satisfaction with the variety of energy efficiency programs offered by PSE; PSE gas customers gave an average score of 6.24. This compares to a national top score of 6.66 and a low of 5.19 for electric and a high of 6.92 and low of 5.66 for gas. Navigant’s survey found a participant customer satisfaction average of 8.5, as seen in Figure 14. This higher value might be because the JD Power sample included participant and non-participant customers, while for this question, Navigant’s sample included only participant customers.

**Figure 14. How Did Participant Customers Rate the Variety of Energy Efficiency Programs Offered?**

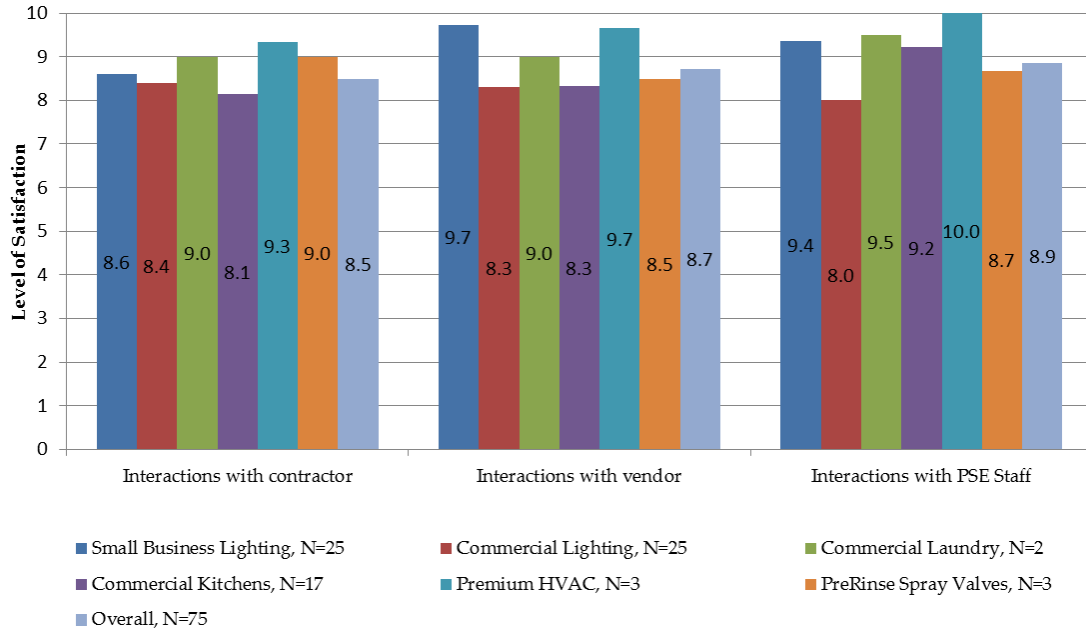


1 = very dissatisfied, 10 = very satisfied

Source: Navigant analysis

Customer participant respondents in all sub-program categories reported high levels of satisfaction with the contractors (8.5), vendors (8.7), and PSE staff (8.9). Figure 15 presents these levels of satisfaction.

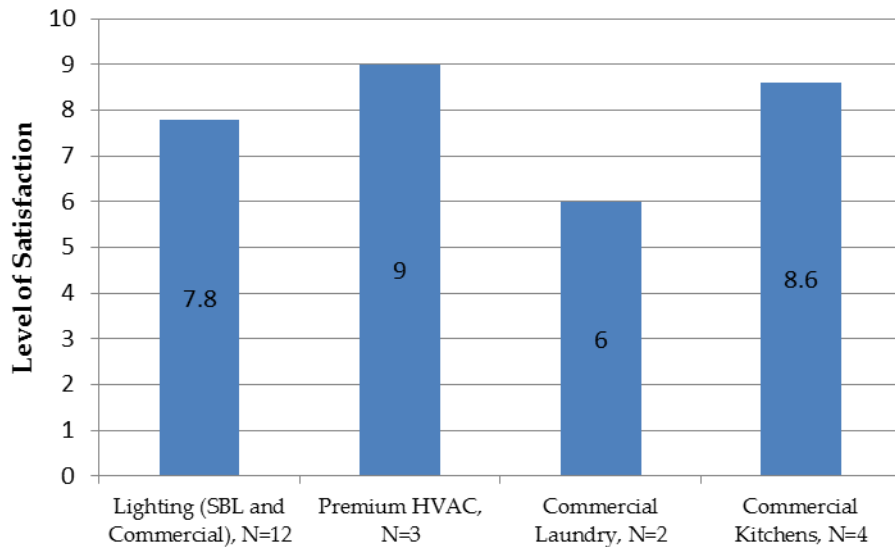
**Figure 15. How Satisfied are Customers with Contractors, Vendors and PSE Staff?**



1 = very dissatisfied, 10 = very satisfied  
 Source: Navigant analysis

Figure 16 shows participant trade allies level of satisfaction with the programs. While Premium HVAC and Commercial Kitchens trade allies reported high levels of satisfaction, Lighting (Small Business Lighting and Commercial Lighting) and Commercial Laundry trade allies reported slightly lower levels of satisfaction.<sup>12</sup>

**Figure 16. How Satisfied are Participant Trade Allies with the Program?**



1= very dissatisfied, 10=very satisfied

Lighting responses include CFL Markdown trade allies since they have experience with lighting programs.

Source: Navigant analysis

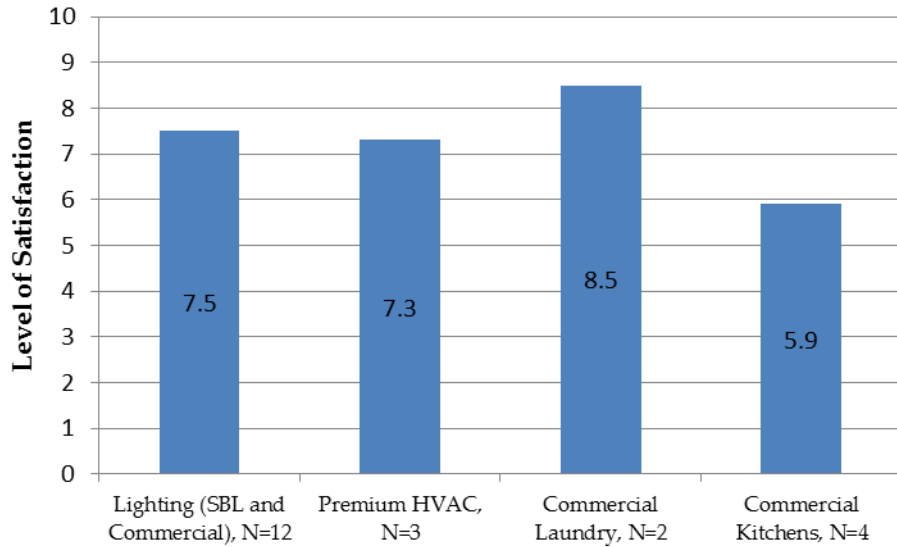
Trade allies that reported lower levels of satisfaction with the program noted several reasons for their dissatisfaction. Generally, these trade allies felt the programs require too much paperwork and that the process takes too much of the contractor’s time. Specifically, trade ally satisfaction with the Small Business Lighting Program is lower due to the pre-approval process being too much of a hassle. Commercial Laundry and Commercial Kitchens trade allies cited a lack of communication with PSE; several trade allies mentioned that communicating with PSE is challenging, especially if they need an answer quickly.

<sup>12</sup> For this section we included Small Business Lighting and Commercial Lighting trade allies in one Lighting category due to sample overlap between the two programs.



Figure 17 shows participant trade ally levels of satisfaction with the time it takes to work through the application process. While Commercial Laundry trade allies reported high levels of satisfaction, the rest of the trade allies were slightly less satisfied.

**Figure 17. How Satisfied are Participant Trade Allies with the Time it Takes to Work through the Application Process?**



1= very dissatisfied, 10=very satisfied

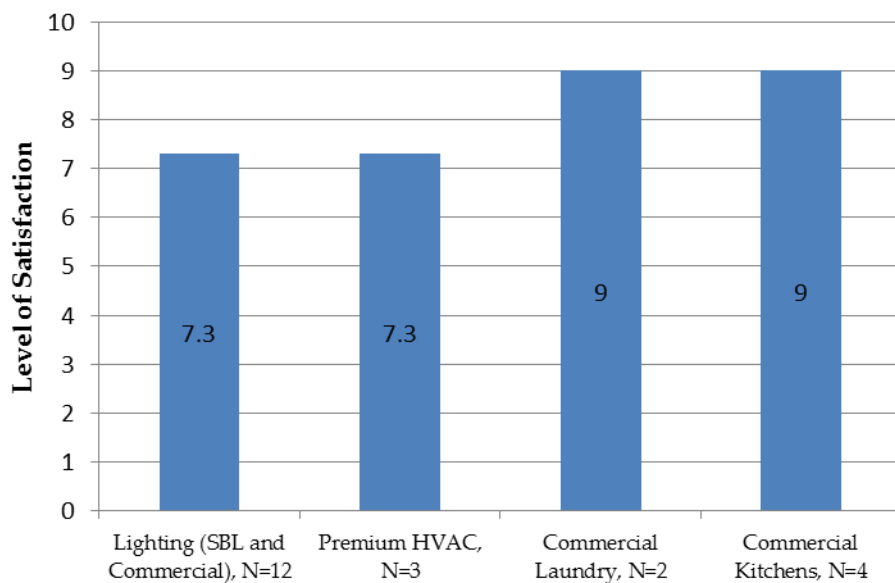
Lighting responses include CFL Markdown trade allies since they have experience with lighting programs.

Source: Navigant analysis

Participant trade allies were clear in their feeling that the PSE staff is great to work with and many trade allies noted that the programs have improved their processes over time. However, trade ally participants reported several overarching concerns with the application process. They felt the rebate payments take too long to receive, and they feel “out of the loop” regarding application status. Some trade allies reported only receiving limited communications from PSE throughout the program experience.

Figure 18 shows participant trade ally levels of satisfaction with the time it takes them to manage their program participation. Overall, trade allies reported high levels of satisfaction. Trade allies that reported lower levels of satisfaction felt that the application process is not clear and said that they have to go back to customers multiple times for additional information. One trade ally noted that having to enter every single line item for LED installations is time consuming and that the spreadsheet and reporting requirements are “tedious.”

**Figure 18. How Satisfied are Participant Trade Allies with the Time it Takes to Manage Their Program Participation?**

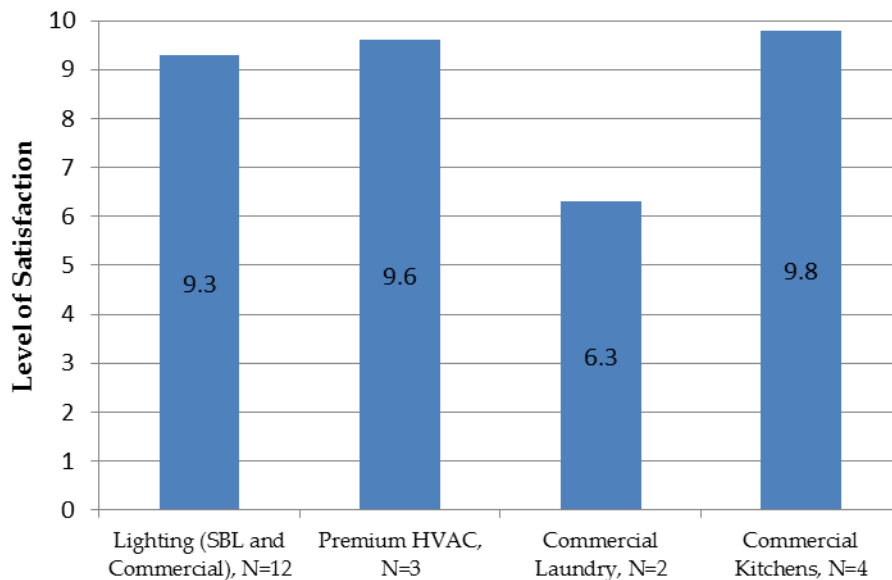


1= very dissatisfied, 10=very satisfied  
 Lighting responses include CFL Markdown trade allies since they have experience with lighting programs.

Source: Navigant analysis

Figure 19 presents participant trade ally levels of satisfaction with PSE staff. Overall, respondents noted that PSE is very friendly, try to respond quickly to questions, and are able to explain very complex issues simply and clearly. In some cases, however, respondents relayed stories about ineffective communication between them and the staff. For example, one respondent described their project as going “into a black hole” because the responsible PSE staff did not return calls and emails. Another respondent described their staff contact was unfriendly and unreachable. One trade ally also expressed concerns about high staff turnover at PSE.

**Figure 19. How Satisfied Are Trade Ally Participants with PSE Staff?**



1= very dissatisfied, 10=very satisfied

Lighting responses include CFL Markdown trade allies since they have experience with lighting programs.

Source: Navigant analysis

### 3.3 Process Evaluation Conclusions and Recommendations

- » Customers feel the program meets their expectations for cost and energy savings and most respondents said they would participate in the program again for the cost and energy savings, depending on what measures and programs are offered and if they have a need for upgrades or more equipment. Overall satisfaction with the program was high, and the program positively affected participants’ perception of PSE. While it was beyond the scope of this evaluation to explore why PSE as an organization has relatively low JD Powers scores, we can conclude that that energy efficiency programs provide an important opportunity to affect PSE’s JD Powers customer satisfaction scores positively.
- » Participant trade allies were clear in their feeling that the PSE staff is great to work with and many trade allies noted that the programs have improved their processes over time. However, trade ally participants reported several overarching concerns with the application process. They felt the rebate payments take too long to receive, and they feel “out of the loop” regarding application status. Some trade allies reported only receiving limited communications from PSE throughout the program

experience. Trade allies that reported lower levels of satisfaction felt that the application process is not clear and said that they have to go back to customers multiple times for additional information.

- » Trade allies noted that PSE staff is very friendly, try to respond quickly to questions, and are able to explain very complex issues simply and clearly. In some cases, however, respondents relayed stories about ineffective communication between them and the staff.
  - Recommendation: PSE should leverage existing data from within the company whenever possible to limit the amount of information the customers and trade allies need to provide. When customers and trade allies do need to provide information, provide a clear list of needed items up front to limit the amount of back and forth.
  - Recommendation: Provide a transparent and timely system that allows customers and trade allies to see how their rebate is progressing through the PSE process. This could include an online system that allows customers and trade allies to log in and check the status of their application.
- » As expected, contractors play a key role in promoting the programs to qualifying customers. Trade allies proactively promote the programs to their customers, but contractors noted that changing program qualifications and availability of incentive funding present an element of uncertainty and confusion. Because trade allies strive to be a source of reliable information to their customers, they become reluctant to promote the programs when eligible measures or funding availability is unclear. In some cases, trade allies will push the customer to handle the rebate on their own, creating a potential barrier to customer adoption.
  - Recommendation: PSE should strive to ensure that program trade allies have access to up-to-date, accurate information about measure eligibility and available funding. To align with program operations, PSE's communications with trade allies could include sending trade allies quarterly program updates via email or training sessions so contractors are aware of upcoming program changes in advance.
  - Recommendation: PSE should explore ways of making the quarterly amount and status of available funding more transparent to trade allies and customers.
- » Trade allies described a variety of mechanisms for keeping customers aware of energy efficiency opportunities and PSE incentives including face-to-face interactions, sales phone calls, flyers, emails, mailers, websites, traditional advertising, and attendance at trade shows. In general, trade allies felt that PSE's materials are useful, but some do not distribute them to the customer because they prefer to be the gatekeepers of information for their customers. Other trade allies echoed this by stating that their customers prefer personalized pitches rather than additional brochures. Trade allies appear to be familiar with the PSE CAN, however a small number of customers reported using the network to connect with contractors.
- » The Small Business Lighting, Commercial Kitchens and Premium HVAC programs face an awareness barrier in addition to other barriers to participation, while the Commercial Lighting and Commercial Laundry programs face less of an awareness barrier and may only need to focus on addressing other barriers to participation. Barriers to participation include not having enough time to look at and gather additional information about program requirements, not believing the upgrade would result in saving money, and being unfamiliar with what

equipment qualifies for the program. Customers are primarily driven to participate by energy and costs savings.

- Recommendation: PSE should continue to cultivate personal relationships with trade allies, and should explore ways to better connect customers with trade allies. For example, PSE could market the CAN to business customers to ensure the network is connecting customers with contractors. Marketing tactics could include messaging about how the CAN worked for similar business via case studies and testimonials.
- Recommendation: PSE should arm trade allies with easy to understand information and tools that explain clearly the amount of savings in terms of energy and cost. While average savings may be difficult to calculate since projects vary, case studies of similar sector or size programs could help communicate typical scenarios for customers to consider. A simple cash flow analysis tool for contractors could be helpful in making the sale.

## 4 Select Review of Best Practices

For this review of industry best practices, Navigant examined program efforts that effectively contribute to the programs' desired outcomes as articulated in the Program Logic Models. Subsequent interviews with PSE staff led to further refinement of other areas of inquiry. The successful approaches and recommendations in this section were derived primarily from interviews with program managers, marketing consultants, and implementation contractors, supplemented with a literature review to inform the interview topics. This section presents the commonalities and unique approaches identified among best practice programs that were deemed applicable to the programs being evaluated.

This review informs Navigant's program recommendations with the goal of providing PSE with unbiased, action-oriented insight for future program decisions. The intention of this section is not to dictate explicit actions that PSE should take regarding these programs, but to present a menu of potential action items that have proven successful among some of PSE's peers.

Specific research questions were derived in an iterative process between Navigant evaluation staff and the PSE program managers and include the following:

- » How do programs match customer needs with utility energy efficiency offerings?
- » Which program efforts best improve utility customer loyalty?
- » What metrics are programs using to assess their impact, and how are they tracking and reporting those metrics?
- » How do programs effectively market energy efficiency to different customer segments?
- » Which elements of the program are contributing to the success of the program, which are not, and why?
- » How do utilities and implementers regulate program participation to achieve savings targets?
- » How do utilities leverage relationships with external organizations?

### 4.1 *Best Practice Research Methodology*

This section presents an overview of Navigant's approach to identifying and reviewing best practices among similar commercial energy efficiency (EE) programs, along with discussion of several key issues uncovered in the process. Navigant relied primarily on practitioner interviews supplemented with a review of secondary data sources. To determine relevant best practices, Navigant:

- » Worked with PSE program staff to discover areas where best practice research is desired. These interviews and subsequent research on PSE's programs contributed to the development of the best practice focus areas listed below.
- » Reviewed PSE program outreach materials including websites and webpages.
- » Developed a framework for the best practices review that focuses on the following five areas:
  - Marketing: increasing customer awareness
  - Executing: timely rebates, clear applications, and functional databases
  - Leveraging: forming partnerships internally and externally
  - Adapting: building in program agility and flexibility
  - Leading: appropriate and effective technology utilization

- » Conducted a literature review of other programs.
  - Navigant leveraged our internal expertise from working with utilities around the country to direct the literature review.
  - Navigant identified and analyzed current research and evaluations for programs with similar goals and implementation structures as the Commercial Rebate and Small Business Lighting programs.
  - Examined similar utilities based on several criteria:
    - i. Size (electricity sales)
    - ii. Geography (Pacific Northwest)
    - iii. Regulatory structure
    - iv. Organizational structure (examples from IOUs as well as non-profits)
- » Interviewed program managers, implementation contractors, and industry consultants to determine unique and effective approaches to achieving success in the five best practice focus areas.

To identify other exemplary programs from across the country, the team referred to Navigant’s library of relevant research articles and evaluations from the large commercial and small business program fields, and reviewed resources made available by the American Council for an Energy Efficient Economy<sup>13</sup> (ACEEE) and the California Public Utilities Commission (CPUC)<sup>14</sup>. The team sought out programs reflective of PSE’s relative size, experience and vision, and programs that might have transferable methodologies or lessons that could contribute to PSE’s goals for this evaluation. Table 24 lists the programs that were selected for this evaluation’s best practice review.

**Table 24. Programs Included in Best Practice Review**

Utility	Service	Programs	Reasoning
Salt River Project	Electric	SBL and CR	similar size to PSE, reputation for innovation
Seattle City Light	Electric	SBL and CR	local, enhanced incentives for demonstration technology
Energy Trust of Oregon	Electric and Gas	CR	local, quick start guide for quick lead generation
BC Hydro	Electric	CR	local, online energy audit tool
Cascade Natural Gas	Gas	CR	local, strong website, gas company
Duke Energy Indiana Inc	Electric	CR	similar size, innovative "savings store"
South Carolina Electric & Gas Co	Electric	SBL	similar size, comprehensive exterior lighting program

<sup>13</sup> Nowak, Seth, et. al. “Leaders of the Pack: ACEEE’s Third National Review of Exemplary Energy Efficiency Programs”. American Council for and Energy-Efficient Economy. June 2013.

<sup>14</sup> The team reviewed the material compiled in the Energy Efficiency Best Practices study managed by Pacific Gas and Electric Company under the auspices of the California Public Utility Commission in association with the California Energy Commission, San Diego Gas and Electric, Southern California Edison, and Southern California Gas Company. <http://www.eebestpractices.com/>

Utility	Service	Programs	Reasoning
Snohomish PUD	Electric	CR	local, energy savings recommendations segmented by cost
Avista	Electric and Gas	SBL and CR	local
MN Center of Energy and Environment	Electric	SBL	Featured by ACEEE-one stop efficiency shop
United Illuminating (CT)	Electric	SBL	Featured by ACEEE-great on bill financing
National Grid	Electric	SBL	Featured by ACEEE - turnkey approach, strong incentives/financing
NICOR Gas of Wisconsin	Gas	CR	Featured by ACEEE- leveraged relationships with outside organizations
Efficiency Nova Scotia	Electric	SBL and CR	Very innovative small business marketing practices

The team researched each of these programs with a variety of efforts including phone interviews and reviews of available reports and evaluations. Furthermore, several program reports and evaluations from other utilities were examined for the purposes of benchmarking PSE’s program performance. Figure 25 summarizes the data sources for each program included in the review.

**Table 25. Data Sources by Program**

	Contacted Program Representative	Website	Outreach Materials	Case Studies	Program Reports / Evaluations	Social Media	Benchmarking
Salt River Project	X	X	X				
Seattle City Light	X	X	X		X	X	X
Energy Trust of Oregon	X	X	X			X	
BC Hydro		X	X				
Cascade Natural Gas		X					
Duke Energy Indiana Inc		X	X		X		
South Carolina Electric & Gas Co		X	X				
Snohomish PUD	X	X					
Avista	X	X					X
MN CEE (Xcel MN)	X	X	X	X	X		X
United Illuminating (CT)	X	X	X	X			
National Grid		X	X	X			
Nicor Gas of Wisconsin		X		X			



	Contacted Program Representative	Website	Outreach Materials	Case Studies	Program Reports / Evaluations	Social Media	Benchmarking
Efficiency Nova Scotia	X	X	X	X	X	X	X
Austin Energy		X	X		X		X
APS	X				X		X
PacificCorp (WA)					X		X
Duquense (PA)					X		X
AEP OH					X		X
Consumers Energy (MI)					X		X
MAEC (IA)					X		X

In addition to comparisons with distinct programs, the team interviewed several marketing and program implementation experts that work across utilities. These interviewees and their organizations are listed in Table 26.

**Table 26. List Cross-Program Interviewees**

Interviewee	Organization	Expertise
Roy Barnes	Blue Space Consulting	Customer experience, customer satisfaction, JD Powers scores
Suzanne Shelton	Shelton Group	Marketing strategies for sustainable businesses and utilities
Lee Ann Head	Shelton Group	Marketing strategies for small business programs
Mana Haeri	PECI	Co-developed innovative commercial marketing campaign with the Energy Trust of Oregon
Bill Biesemeyer	Navigant (formerly DNV KEMA)	Streamlining applications, rebate processing, and databases
Steve Hastie	Navigant	Extensive experience with best practice reports and assessment criteria

## 4.2 Best Practice Research Findings

Findings are presented by implementation focus areas in the following subsections.

### 4.2.1 Marketing: Increasing Customer Awareness

#### 4.2.1.1 Targeted Marketing

Mass marketing typically produces low response rates. In the digital era, customers come to expect that companies know their needs, and will design a message to appeal to them personally. The message of “energy efficiency” does not resonate equally with all PSE commercial customers. Targeting specific

customer segments and engaging them with appealing messages at multiple touchpoints can increase marketing effectiveness. Rather than sending bill inserts to all eligible customers, many well-marketed energy efficiency programs segment their customer base, define motives by segment, and target those most likely to be interested in program offerings. Tracking the results of these efforts is important for refining the segments and obtaining an impression of which segments will readily respond to marketing efforts. Table 27 below summarizes some segmenting strategies undertaken by other successful programs:

**Table 27. Potential Marketing Strategies to Target Various Customer Segments**

Segmentation Strategy	Customer Characteristics	Marketing Strategy
High energy bills	Energy is a priority for them Energy cost may be a significant financial motivator	Targeted bill inserts, phone calls, emails, appeal to non-energy benefits of EE
Business type	Varies by type: similar businesses share similar priorities. Best practice is to determine predominate business types within a service territory	Use case studies to target successful projects in target business types Depending on the program, target business types that historically participate, or tap new markets
Business size (small)	May not qualify for financing Cashflow is important Energy is not a high priority Overwhelmed	Target with a DI program through community blitz events in strategic “empowerment zones”
Business size (large)	Financing options available Dedicated facility staff	Target with a custom program, initiate one-on-one interaction with a qualified PSE engineer
Geographic, cultural, or other community factors	Customer comes from a distinct cultural background Customer is doing business in a geographic area with certain criteria (eg. Downtown) Customer is a member of a certain business/trade organization	Leverage connections of trade ally organizations Present case studies that address their particular point of view, make use of community groups and associations

The primary goal of segmentation is to target marketing efforts that are limited by time and financial constraints. Sending bill inserts to the top 20 percent of energy users in a particular rate class, rather than blanketing all customers, is a cost effective method of segmentation. More sophisticated methods include developing nuanced segments using a variety of data sources and analytics, and targeting each with segment-specific marketing messages. Once a business type segment has been defined, it is effective to market toward that segment with case studies and other approaches which highlight strategies of similar businesses that have experienced success through past program participation. Not all segments will be eligible for or interested in the entire suite of program offerings, so outreach efforts need to be further tailored to the sub-program or even measure level. For example, a direct install program is a good fit among customers with little time, minimal financial flexibility and a lack of intrinsic motivation for energy efficiency upgrades. As one of our interviewees said, “Direct install is like giving someone a fish

rather than teaching them to fish,” meaning the DI program may not perfectly match the utility’s goals, but is an appropriate program offering for certain segments.

#### **4.2.1.2 Targeted Marketing Recommendations**

***Undertake regular market research including penetration analysis for the program.*** What percentage of the commercial real estate stock in PSE service territory has participated in a PSE program? Can this analysis be refined to include segmentation? Utilize program data and compare it to data from public records kept by constituent municipalities, the Commercial Building Stock Assessment (CBSA), Commercial Building Energy Consumption Survey (CBECS), or other databases.

***Develop a methodology for assigning propensity scores to potential program participants.*** Performing data analytics on current program participants allows some programs to target efforts toward customers most likely to participate. These customers are assigned a “propensity score” based on their business type, history of program participation, billing data, location, membership in community organizations, and other factors.

***Identify corridors of “empowerment zones” where DI or community blitzes will be particularly effective.*** Other utilities have a list of specific geographic areas with a high concentration of low income small businesses, which make good candidates for community blitz events, or door-to-door direct install campaigns.

***Recruit program staff, trade allies, or auditors with connections to target communities.*** Several urban utilities we spoke with actively recruit bilingual and/or bicultural trade allies or auditors. This effort can be as simple as identifying and recruiting non-participating contractors that could provide inroads into these target markets, or directly recruiting qualified staff from community colleges. Targeting members of bilingual and bicultural communities within cities can yield significant increases in program participation even after only one community member participates, as word of mouth often spreads quickly through these communities.

Other possibilities for application of this strategy include targeting DSM program efforts where there are transmission and distribution constraints. Deferring transmission and distribution upgrades is highly valuable and changes the cost effectiveness of DSM solutions. “Geo-targeting” DSM efforts in this way is a strategy under development in a number of utilities around the country. This approach falls under the category of “Big Data” or advanced data collection and analytical methods.

#### **4.2.2 Customer Recognition**

Recognizing existing customers improves customer satisfaction, enhances PSE’s reputation, provides positive publicity for stakeholders, and converts program participants into program ambassadors. In Navigant’s survey of best practices, we uncovered many different strategies for making the customer feel good about their continued participation in the program. The key to success with these programs is to make the customer feel unique and valuable to the utility. The goal is to convert program participants into program ambassadors, who enthusiastically recommend the program by word of mouth. Few sales pitches are more effective than those delivered to a colleague or neighbor by a satisfied and excited customer.

Utilities that have succeeded with customer recognition approaches employ a variety of techniques, depending on the customers, marketing budget, and program goals. The most common technique for recognizing a customer is to develop a case study highlighting their energy efficiency project. Case studies involve photos, savings estimates, payback periods, quotes from the customer or contractor, and a description of the services. Case studies should be positioned for easy discovery on the program website. Efficiency Nova Scotia, a Canadian non-profit, has effectively deployed this technique. Each year, they develop a series of video case studies from satisfied program participants, post them on their website and YouTube channel, and hold an annual conference where awards are distributed to each of the businesses. The conference is an opportunity for customers to interact with each other and program staff, and Efficiency Nova Scotia brings in an energy and business-oriented keynote speaker for each event. The award is great publicity for the small businesses, and transforms each awardee into an ardent promoter of the program. Interestingly, energy savings is not the sole focus of the conference or each video case study—a case study is an excellent way to communicate the non-energy benefits of program participation.

*"Many businesses are risk averse, no one wants to be the first, so a case study can go a long way in demonstrating program effectiveness"*

*- Shelton Group*

#### **4.2.2.1 Customer Recognition Recommendations**

As mentioned in the section above, awards are effective motivators for trade allies and customers alike. Awards need not have material value. Recognition alone is a significant motivator. Below are some other forms of recognition for consideration.

***Use repeat customers to provide testimonials and generate case studies for future marketing efforts.***

Have PSE staff think of one customer that provided positive feedback about the program last year. Ask if the customer would be willing to be featured on the website. The feature could be anything from a simple quote to a fully articulated case study and video documentary.

***Give small businesses a window sticker or certificate for participation.*** Window sticker advertising is common in the small business sector, used effectively by companies like Yelp, Zagat, TripAdvisor, and many others. A PSE-branded window sticker could potentially include lifetime energy savings, carbon mitigation, and payback period estimates. A certificate or plaque, such as that used by the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) ratings, may be more appropriate for larger facilities such as schools and municipal offices. In the energy efficiency sector, the U.S. Environmental Protection Agency Energy Star™ program has been very effective at distinguishing products, homes, and businesses with their labels, yard signs, and certificates.

***Highlight non-energy benefits with case studies.*** Advertisement of non-energy benefits of the program is currently a priority for PSE staff. A case study is a great way to highlight water savings, better lighting quality, increased comfort, indoor air quality, free publicity, or other non-energy benefits of the program.

**Create “accounts” to add convenience to repeat customers.** Customers that participate in the program multiple times or across multiple business locations should receive special treatment. Having an account that tracks their participation would allow rebate forms to be pre-populated and expedite processing. Reliable customers could qualify for enhanced rebate offerings, special financing options, or other perks.

**Proactively call certain customers.** Most customers only talk to their utility company when they have a problem. A best practice is to find a positive reason to call a customer. Because of high turnover in commercial real estate, there are many new customers each year. An informational, proactive phone call during the first three months of service can improve customer satisfaction and increase program participation. On the call, the PSE representative can ask the customer if they have any questions about their service, or are interested in knowing which rebate programs they may qualify for. For repeat customers, make it a policy to personally call and thank customers that achieve a certain amount of savings for the program.

*“We only reached one-third of the business owners, but the tone of the call was very friendly once we were speaking to each other.”*

*- Avista staff*

**Create a dedicated role at PSE to develop pilot approaches for customer outreach.** Consider a pilot program with an intern or university student dedicated to discovering the energy needs of a small business segment and advertising directly to that segment. This program could be similar to the Resource Conservation Manager (RCM) program, but rather than targeting a single company or building, they are dedicated to achieving savings within a particular small business segment. This SB-RCM could work to develop case studies, perform market penetration analyses, or implement any of the other recommendations mentioned in this section.

#### 4.2.3 Developing a Sales Culture

Creating a sales culture within an organization can have myriad meanings. In essence, a successful program needs to know its customers. An effective salesperson is empathic to their audience. Many energy efficiency professionals see the implementation of efficiency measures as a “no-brainer” priority, but that is not how many customers perceive the industry. If program staff can help contractors earn more work, the contractors will help to sell the program. Some utilities deliberately hire auditors for their sales experience rather than their energy industry experience, and prioritize partnerships with potential trade allies that have a reputation for being effective salespeople. The intention is to transition the customer-facing side of the program away from an “energy audit” or engineering based approach and toward a sales approach. Some customers are less interested in the technical details, and more interested to hear about the energy savings, cost reductions, and non-energy benefits of a potential project.

*“Energy efficiency professionals all know why people should do these things, and we get tunnel vision and assume our reasons will be their reasons but that is not always the case.”*

*- CEE MN (Xcel MN)*

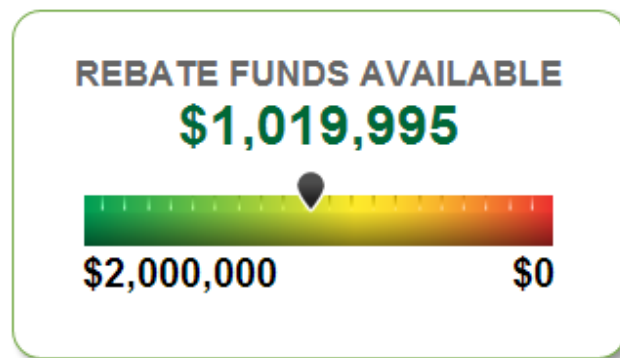
Several utilities use the latest marketing strategies to increase program participation when they may be behind yearly targets. Some examples of marketing strategies are show in Table 28 below:

**Table 28. Marketing Strategies**

Strategy	Other Industry Example	Utility Industry Example
Time sensitivity - "act now!"	steepandcheap.com; groupon.com	Salt River Project-remaining rebate funds meter
Bulk discounts - "The whole enchilada"	Costco	PSE - Whole building incentive bonus for lighting
Upselling - "Buy lighting, get HVAC 10% off!"	"Free shipping on orders of \$100 or more"	United Illuminating - 10% increase in rebates for each end-use covered in the project

**Time sensitivity:** Salt River Project effectively communicates remaining rebate funds to contractors and customers with a “meter” (shown below in Figure 20) on each program’s homepage. This simple, transparent communication of remaining incentive budget builds trust with trade allies, and instills potential participants with a sense of urgency.

**Figure 20. Salt River Project’s Rebate Funds Meter**



**Bulk Discounts:** “We want it all, and we are willing to pay for it!” – proclaims PSE’s website describing the whole building lighting retrofit incentive bonus. Perhaps similar bonuses could be applied to other programs, such as providing an enhanced incentive for installing variable speed drives on every HVAC unit serving a particular building.

**Upselling:** United Illuminating in Connecticut provides a 10 percent bonus on incentive payments for projects that address multiple end-use categories. A project can potentially earn a 20 percent bonus by addressing lighting, HVAC, and refrigeration. This encourages a comprehensive approach for energy efficiency, and may provide an opportunity for a cash-strapped business to undertake more expensive HVAC upgrades in conjunction with relatively inexpensive lighting upgrades.

#### 4.2.3.1 *Developing a Sales Culture: Recommendations*

***Cultivate relationships with trade allies, and train them to be program ambassadors.*** Specifically train trade allies in sales techniques; help them to understand the customers’ needs and tailor their pitch to promote the appropriate aspects of the program. Encourage the trade allies to mention PSE in their sales efforts and co-brand with PSE to lend credibility to their efforts.

*“It’s a problem: PSE is missing from the messaging; the customer may be aware that there is an incentive but they don’t know where it comes from. We lose the connection with the customer.”*

*- PSE staff*

***Implement advanced incentive techniques where applicable.*** If the program wishes to experiment with more sophisticated rebate offerings, be sure to closely monitor program participation and make arrangements to measure the effects of the changes.

***Develop performance based incentives for key account representatives and trade allies.*** Consider developing a system that rewards PSE staff or trade allies with incentives for increasing program participation, meeting savings targets, or delivering high quality work ahead of schedule. Such a system can be an effective motivational tool to encourage innovation throughout the program.

#### 4.2.4 **Executing: Timely Rebates, Clear Applications, and Functional Databases**

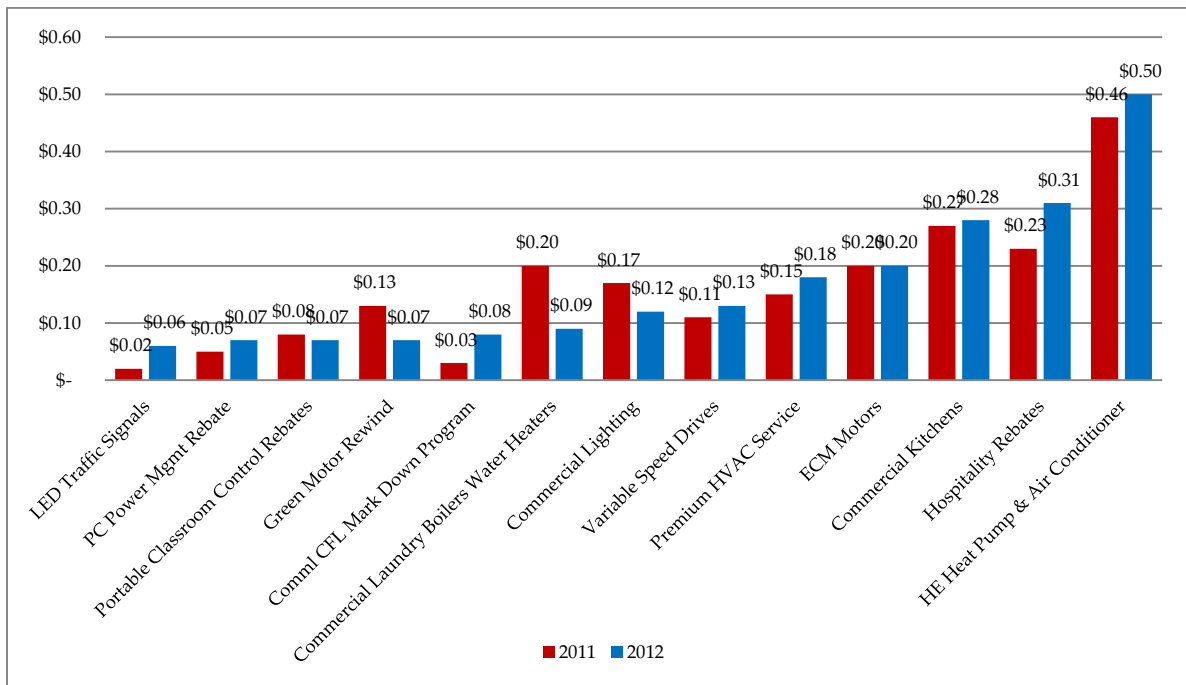
##### 4.2.4.1 *PSE Program Cost Effectiveness*

Navigant examined program data and cost effectiveness as a starting point for researching best practices associated with streamlining program operations. As Figure 21 shows, the cost of electric energy savings (\$/kWh) were highly variable depending on program type. As an example, the Commercial Laundry, boilers, and water heaters program had a cost of \$ 0.20/kWh in 2011. In 2012, however, this cost dropped to \$ 0.09/kWh. Even though the program became more cost effective, the substantial fluctuation of cost effectiveness may make accurate long term and short-term impact planning difficult. Although the SBL and CR programs possessed highly variable cost effectiveness, on average the programs were within the range of cost effectiveness when compared to other energy efficiency programs across the country (Figure 22)<sup>15</sup>. In fact, the SBL and CR programs, on average, are \$0.10/kWh less expensive than the entire portfolio of PSE energy efficiency programs.

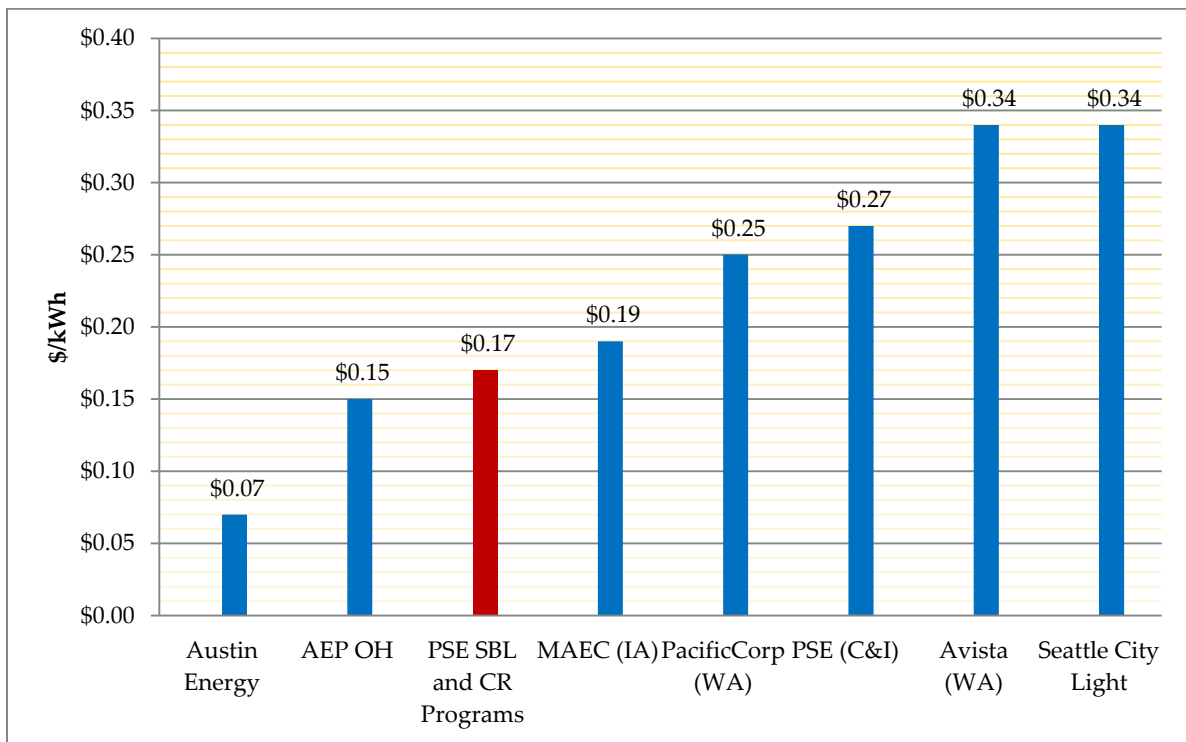
---

<sup>15</sup> Given variation in program offerings and reporting practices across EE portfolios, no benchmarking across programs can achieve a strict apples-to-apples comparison. The usual caveats apply to any accounting information: different organizations aggregate and allocate costs differently, (e.g., Key Account manager time) so these results can only be taken as indicative, particularly regarding the cost per first year kWh saved.

**Figure 21. Cost of Electric Energy Savings by Program Type**



**Figure 22. 2012 Cost of Electric Energy Savings**





In light of this information, the team compiled a series of best practices and recommendations in the following section for PSE’s consideration. Applying these recommendations across the portfolio, or to specific sub-programs where appropriate, could further improve PSE’s program cost effectiveness.

#### **4.2.4.2 Coordinated Rebate Processing**

Programs can become more cost effective on a dollar per kWh-saved basis by reducing the cost of program administration, or increasing the savings per program participant. The previous section includes a discussion of how to influence the latter half of this equation through marketing targeted toward customers with the highest savings potential. This section focuses on reducing the cost of program administration.

Utilities commonly reduce cost by leveraging web-based tools to the greatest extent possible. Existing best practices include programs that feature fully automated application processing systems that include real-time tracking, automated reporting, and large batch submissions. For example, Xcel Energy Minnesota uses an online database for their One Stop Efficiency Shop program, where program staff and trade allies can track the progress of an efficiency retrofit, see the status of rebate processing, add customer-specific comments, and even provide feedback about the propensity of the customer to participate in other DSM programs. Effective dissemination of information through the internet can reduce the amount of time PSE staff need to spend with each program participant. Furthermore, publishing program information and applications on the web can reduce the costs of printing and mailing physical forms and brochures. Electronic tracking of program documents can save valuable time searching for customer-specific records. Online applications can check themselves for errors and flag inaccuracies automatically, so a participant can correct errors before the application is reviewed by a PSE staff member.<sup>16</sup>

Successful programs systematize repetitive tasks to ensure forms are processed quickly yet carefully, so each form only needs to be touched once by a staff member. A best practice is to create a checklist that an administrator can use when reviewing each form. Ongoing, regular communications between and among all staff supporting a program helps to maintain consistency, allow for adequate planning, address unexpected events efficiently, and reduce the risk of problems due to lack of coordination.

#### **4.2.4.3 Coordinated Rebate Processing: Recommendations**

**Assign staff to specific roles to capitalize on their skillsets.** Often highly qualified utility program staff spend considerable time processing and reviewing rebate applications. Ideally, administrative staff can process simpler prescriptive rebates, which will give the qualified engineers an opportunity to perform quality control on custom projects and field inspections on projects that lack sufficient documentation.

**Establish checklists for paperwork review.** Standardized checklists will expedite quality control and rebate application review, and improve the program’s consistency. Having a checklist for every step of application review ensures that each application only needs to be touched once by a particular staff

---

<sup>16</sup> Nexant. *A Guide to Best Practices for Energy Efficiency in Locally Governed Electric Service Areas in the State*. Houston, TX: Nexant, 2011.

member, and reduces the likelihood that an application will be delayed or need to backtrack through the process.

***Request that the rebate processor provide monthly metrics about average processing time, the number of applications processed, and any notable issues with the applications.*** Demonstrating an interest in the rebate processor’s progress will motivate their staff to be quick and thorough. Customers rarely know the difference between a utility and an implementation contractor, so oversight of the rebate processor is important to ensure customer and trade ally satisfaction. The mere act of reporting and tracking rebate processing metrics can help improve the rebate processor’s efficiency and attentiveness to process improvements.

Establish ***internal limits on rebate processing time, and provide employee incentives for process improvements.*** Provide incentives to PSE or the rebate processor’s employees (formal recognition, competitions, bonuses, etc.) to expedite paperwork processing time. Set firm and realistic deadlines for batches of paperwork to be fully processed.

*“When we have a quick turnaround, the applications pick up”*

*– PSE staff*

#### **4.2.4.4 Application Process**

One of the most common sources of dissatisfaction among trade allies and participants is the amount of paperwork associated with obtaining an incentive. Approval and documentation of measures subsidized by the program is necessary for a number of reasons—from tracking budgets to assisting with M&V efforts. However, the paperwork should not be a substantial disincentive for customers to participate, and the best programs consistently work to improve the customer experience in this regard. Furthermore, streamlining the paperwork allows for a better relationship with vendors and contractors, and increases PSE employee satisfaction as they spend more time on the important and creative aspects of program administration.

*“For all lighting programs, potential customers are unclear on which one they qualify for. It is a confusing process from the customer or new trade ally’s perspective.”*

*– PSE staff*

#### **4.2.4.5 Application Process Recommendations**

***Consider implementing an online application.*** Online applications have the potential to be very convenient for program staff, expedite rebate processing time, and reduce errors<sup>17</sup>. However, a complex measure may not be appropriate for an online form, as customers can experience dissatisfaction due to browser time-out or refresh errors. Automatic error checking should not withhold information from those filling out the form, nor prevent them from filling in a certain portion of the form. Instead, error

<sup>17</sup> Harvey, C. *BEST PRACTICES IN SMALL COMMERCIAL HVAC PROGRAMS AT CALIFORNIA UTILITIES*. UNIVERSITY OF CALIFORNIA, DAVIS, 2013.

checking is most effective as “flags” that warn participants of missing information, unrealistic numbers, or other potential flaws. This system is best piloted with certain programs before attempting a portfolio-wide rollout. In any case, customers should always have a paper alternative to the online form.

***Consolidate all forms on a single web page to simplify the customer’s process.*** The customer-facing website should make it easy to compare rebate applications. Some programs even have “universal applications” that are not measure or program specific to simplify the customer experience. If a universal application necessitates a costly process redesign, a least-cost method for simplifying the customer experience is to consolidate all the forms needed for any rebate application onto a single web page.

***Create a roadmap of the customer experience.*** Determine time spent on the various tasks and review the flowchart for bottlenecks. Make an effort to see the program from the customer’s perspective. Work with a customer through the rebate process from start to finish, and record their feedback in real time. Consider web site usability testing—a type of research that observes customers using the website while they vocalize their thought processes. Physically draw a map of the customer experience, identify the number of discrete actions they need to take to participate in the program, and determine if it is possible to eliminate or streamline some of those actions. This process has proven successful among many private-sector companies offering complex services to customers, including utility companies.<sup>18</sup> If this proves to be a successful exercise, map the experience of a company attempting to join the Contractor Alliance Network, a partnering vendor, a trade ally submitting a batch of applications, or the experience of any other crucial member of the program’s ecosystem. Understanding how these parties interact with the program on a practical and everyday level can lead to numerous insights about how to streamline the overall program operations.

#### **4.2.5 Functional Databases**

A database should keep track of every customer touched by the utility. This functional database should be searchable, easy to use, and easy to access. An ideal database is used across silos in the utility—the same data kept by the DSM program administrators can be accessed by the billing department and the staff at the call center. Billing data and past incentive program participation can be recalled by account number, allowing easy service from call center representatives, calculation of potential for future energy saving opportunities, and proactive staff assistance for valuable customers.

Some software can determine patterns among likely participants in order to focus marketing efforts. Complex programs provide different levels of access so trade allies can see their conversion rates and customers can see their projected payback periods on projects alongside their billing data. Regardless of the sophistication of a program or customer relationship management database; trade allies, account representatives, utility staff, call center staff, and implementation contractors should all be trained to effectively use program records to assist the customers.

##### **4.2.5.1 Functional Databases: Recommendations**

***Expand on the Oracle database to consolidate PSE customer information into one place.*** PSE is currently in the process of piloting an Oracle database for the Small Business Lighting Program to shift

---

<sup>18</sup> Rawson, Alex, et al. *The Truth about Customer Experience: Touchpoints Matter, but it’s the Full Journey that Really Counts*. Harvard Business Review. September, 2013.

away from a large and nearly dysfunctional Excel spreadsheet. Navigant recommends using this transition period as an opportunity to consider the myriad capabilities of a sophisticated database. Customer billing data, past program participation, future program eligibility, and a record of interactions with PSE should all be searchable by customer account number.

***Permit different parties to edit certain information in the database so it becomes a tool for collaboration.*** Consider allowing input from members of the Contractor Alliance Network. Some utility databases have a page for each customer, where the contractor can add qualitative and quantitative data about the customers’ specific building, propensity to participate in future programs, and levels of customer satisfaction. These data can then be used to inform future program plans and marketing efforts.

#### **4.2.6 Leveraging: Forming Partnerships Internally and Externally**

All utility efforts are a complex interaction of different entities with different incentives, interests, and expectations. The utility is at the center of this ecosystem of potential discontent, and usually assumes the blame (or recognition) as the responsible party. This contributes to utilities’ tendency to be rather conservative and risk-averse. However, everyone in a DSM program ecosystem has something to gain through a partnership with the utility, and vice versa. Innovative programs actively look outside of the organizations currently associated with the program to find allies in occasionally unexpected places—such as trade organizations, religious groups, local banks, cultural centers, and environmental advocates.<sup>19</sup> Similarly, program administrators may find fruitful partnerships within other divisions of the utility itself.

##### **4.2.6.1 Forming Partnerships Internally and Externally: Recommendations**

***Educate PSE call center employees on the status of the program.*** Organize meetings between call center staff, key account reps, and implementation contractors. Be sure program information is passed to new employees in areas of high turnover. Ultimately, trade allies, account representatives, utility staff, call center staff, and implementation contractors should all be trained to assist the customer (at various levels of detail) with technical or program information. At a minimum, each party should have a clear idea of where to direct a customer if they themselves do not have an immediate answer.

***Add value and build trust among trade allies by offering classes and trainings to educate them on program offerings and new technologies.*** In interviews, PSE staff expressed a specific interest in cultivating interaction among other PSE DSM programs. PSE could host events where staff from other programs join members from the CAN to learn about program offerings, technical best practices, or new technologies. Contractors, equipment dealers, and installers acting as program partners can serve as highly effective ambassadors for all DSM programs, not just the programs they represent.

*“We see our trade allies as our customers too.”*

*– CEE MN staff (Xcel MN)*

---

<sup>19</sup> Riciputi, J. *Taking the Reins of DSM Business Process Management*. Nexant, Inc., 2013.

***Consider organizing a yearly trade ally conference to recognize successful projects and assemble case studies.*** Provide awards for the most savings per trade ally, meet with trade allies on a quarterly basis to share ideas, convert them to program ambassadors, and obtain frequent feedback from the field.

***Capitalize on potential spillover from other programs, even residential.*** Small business owners also tend to be homeowners. Provide those who interact with customers on a daily basis with brochures describing the overall DSM portfolio and suite of potential incentives to leave behind after a successful audit or installation. Train customer-facing program representatives (e.g., trade allies, vendors, implementation contractors) to answer questions and promote all of PSE's program offerings. For vendors, PSE could provide retailers with point-of-purchase marketing materials, in store applications, training, and other tools to encourage store staff promotion of the program.

***Work with local organizations to help facilitate the "community blitzes" for marketing.*** Some examples of local organizations for outreach include Washington Restaurant Association, Northwest Environmental Business Council, Building Owners and Managers Association (Washington Chapters), Building Industry Association of Washington, Northwest Energy Efficiency Council, Northwest Energy Coalition, Washington State Hotel and Lodging Association, National Association of Industrial and Office Properties (Washington Chapter), Washington Retail Association. Other partnerships could be formed through collaboration with PSE's Energy Efficient Communities Program.

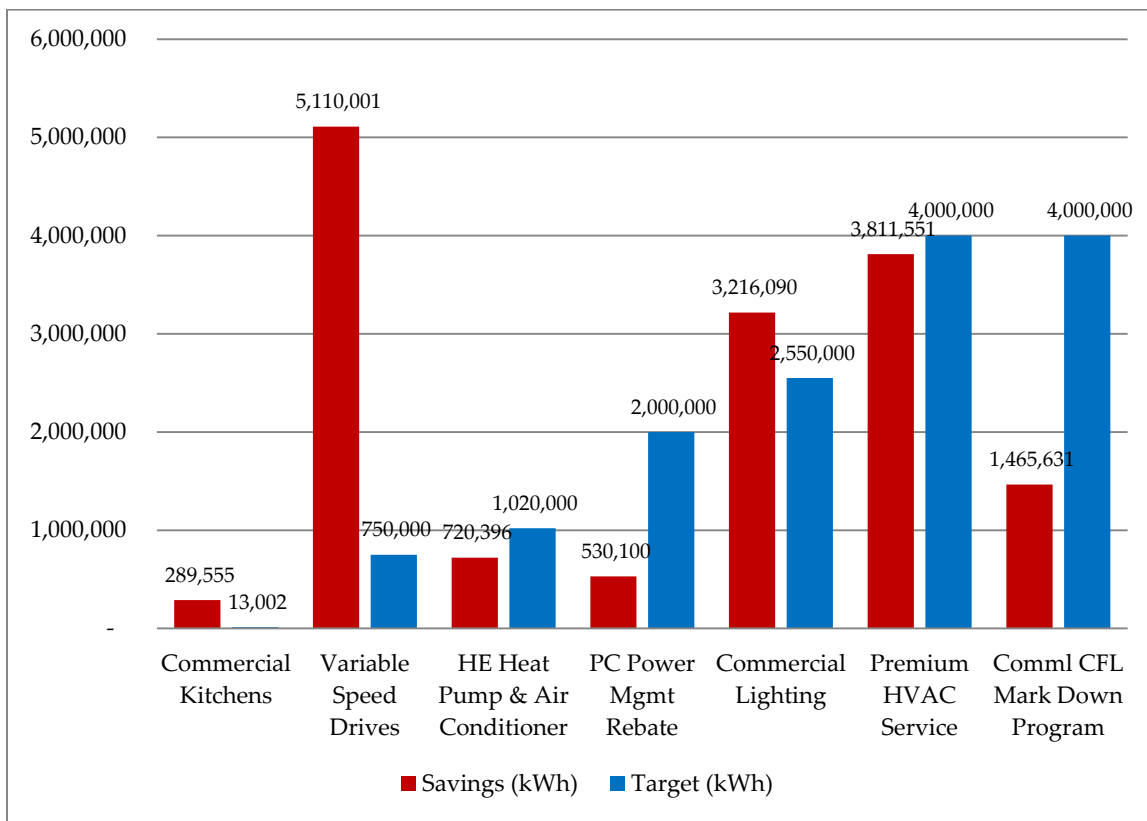
***Partner with financing organizations to shorten payback time for cash-strapped businesses.*** Energy efficiency financing is complex yet widely successful in a variety of contexts. The numerous caveats and considerations associated with offering financing packages to cover the upfront cost of efficiency are beyond the scope of this best practice review. However, many utilities have unlocked huge savings through the use of financial mechanisms. Several utilities Navigant interviewed suggested that financing a project so it is immediately cash flow positive for a business can substantially broaden the customer base and increase program appeal. Consider developing a simple cash flow analysis tool to aid trade allies in explaining the implications of EE investments and the use of financing on monthly cash flows to aid them in making a sale.

## 4.2.7 Adapting: Building in Program Agility and Flexibility

### 4.2.7.1 PSE Program Variability

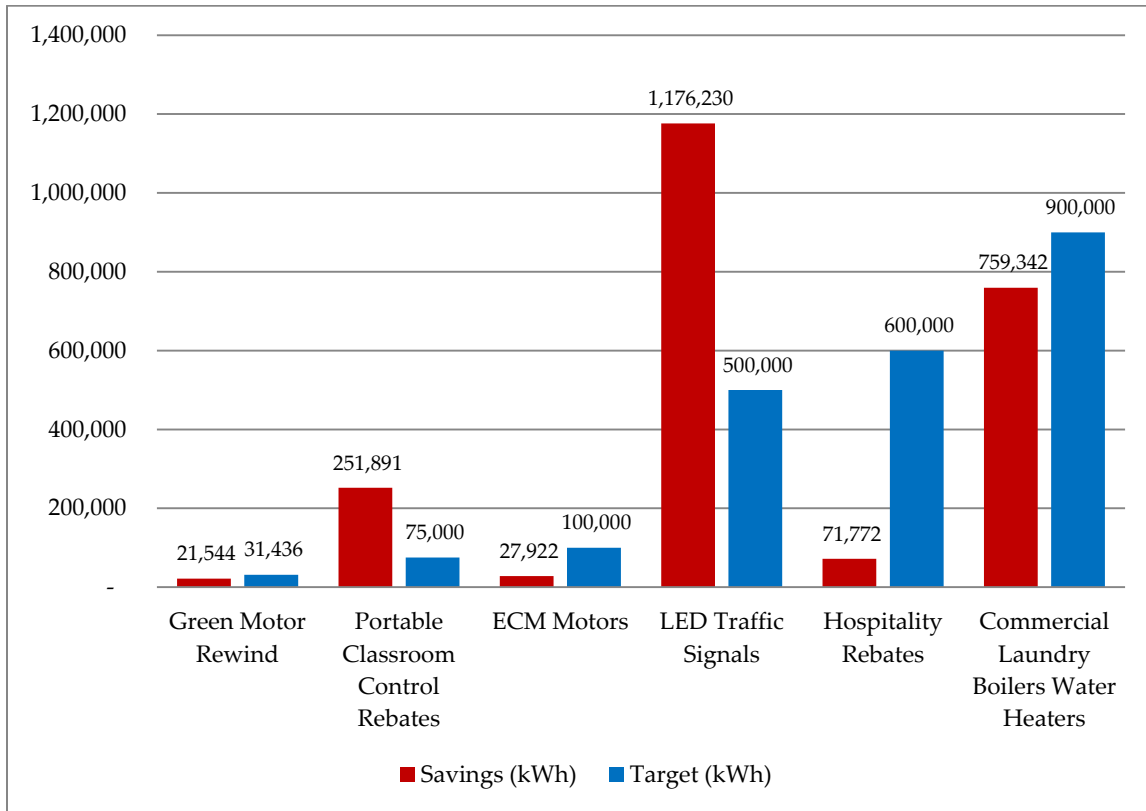
The Small Business Lighting and Commercial Rebates programs offered by PSE have shown high variability in achieving (or exceeding) targeted savings. Uncertainty in predictive capacity can be problematic for resource planning, fund allocation by program type, marketing efforts, targeted outreach, and predicting the impact of program adjustments. In 2011 among larger programs (with savings targets of greater than 1,000,000 kWh, see Figure 23), only two programs achieved the anticipated savings targets while the remaining programs underperformed. While PSE manages all programs as a portfolio, it is nevertheless useful to examine progress toward savings targets at the program and sub-program level.

**Figure 23. 2011 Savings vs. Target (Large Programs)**



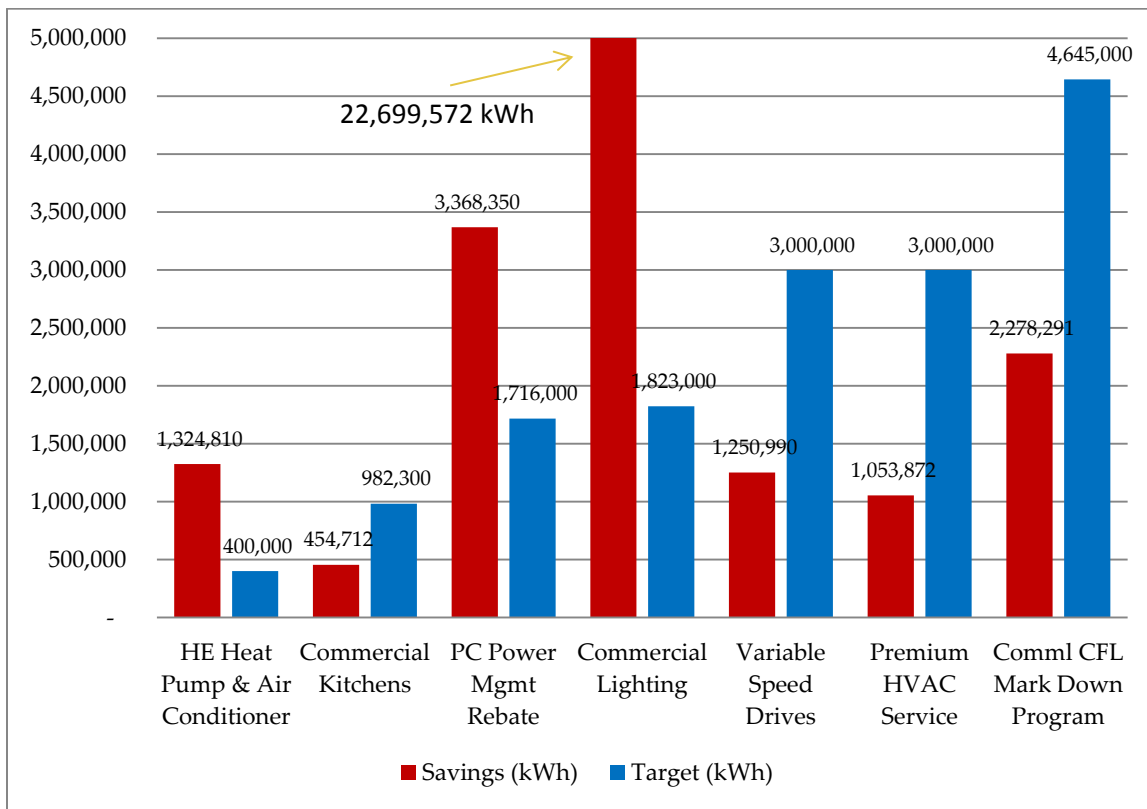
As shown in Figure 24, the results for small programs in 2011 were similarly unpredictable. Two-thirds of the small programs did not meet targeted savings. In contrast, the 2011 LED Traffic Signal Program over-performed by over 500,000 kWh, while the Hospitality Rebates Program underperformed by about 500,000 kWh for the year. These data suggest highly unpredictable savings levels for any given program type.

**Figure 24. 2011 Savings vs. Target (Small Programs)**



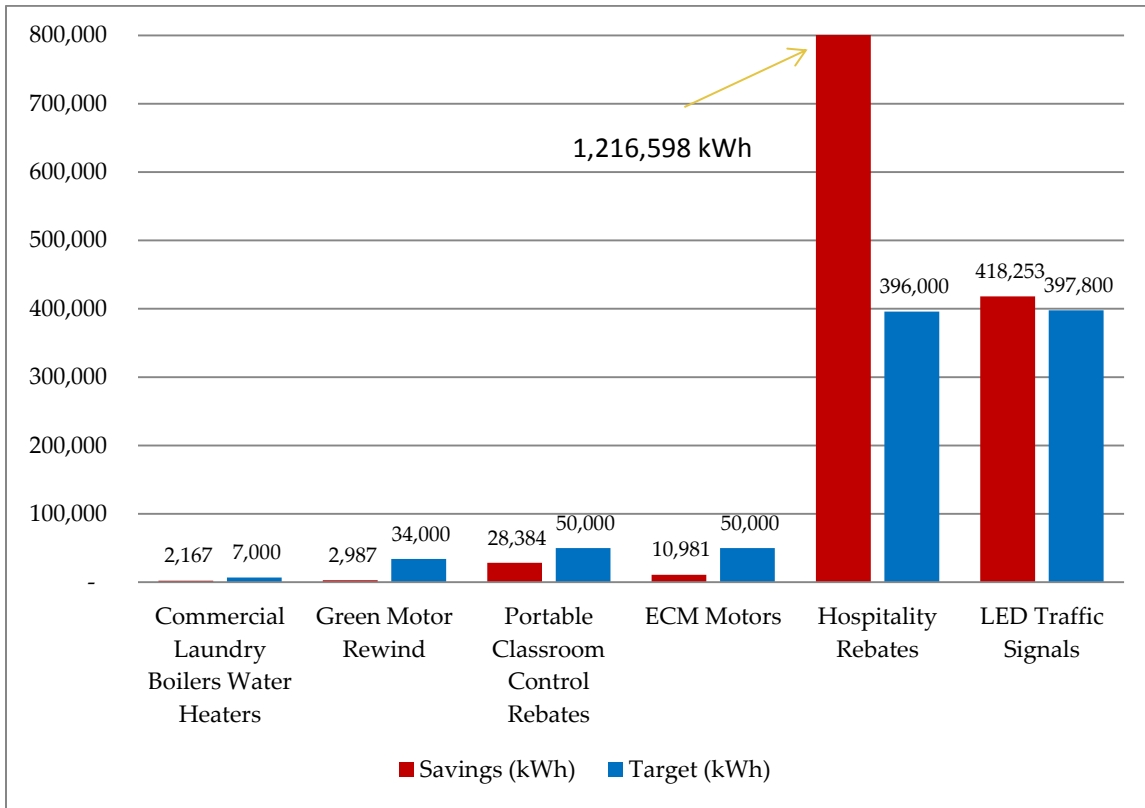
As Figure 25 illustrates, the results in 2012 were just as unpredictable as 2011. In addition, the results between years show high variability among each of the programs. For example, The Variable Speed Drives Program exceeded savings targets by over 500,000 kWh in 2011. However, in 2012 the same program missed the savings target by nearly 200,000 kWh. As another example, the Commercial Lighting Program exceeded targeted savings in excess of 20 million kWh—shown as off the scale in Figure 26. Similar findings were confirmed among smaller program types in 2012 with the Hospitality Rebates Program exceeding the scale in Figure 26 with over 1.2 million kWh in savings.

**Figure 25. 2012 Savings vs. Target (Large Programs)**





**Figure 26. 2012 Savings vs. Target (Small Programs)**



#### 4.2.8 Best Practice for Managing Program Variability

Unlike traditional business, where growth is (usually) unequivocally positive, DSM programs are constrained by savings and budget targets established by regulatory mandate or during internal program planning cycles. These targets are sometimes fungible, yet can be at odds with plans to expand the program. Ideally, a program will not be penalized for exceeding targets. However, in the case that a program is discouraged from both falling short of and exceeding targets, programs must develop plans to quickly ramp or curtail savings as necessary to meet changing goals. This is particularly important at the portfolio level, yet can still be of use to staff members at the program or sub-program level. Some programs use analysis of program history, market penetration, and customer energy use combined with predictive modeling to assess likelihood of participation among untapped or under-tapped customer segments. Tracking of potential customers is essential to developing detailed forecasts of yearly savings. After a forecast has been developed, program staff need to develop a plan of potential actions they can take to boost or curtail program savings before the end of the year.

##### 4.2.8.1 Adapting: Recommendations

**Collect additional data on program participants.** In the near-term, Navigant has suggestions for how to improve the reliability and predictability of program performance. Table 29 outlines the additional data for PSE’s consideration, in order to identify and capitalize on significant savings opportunities and to identify gaps in current program design. These suggestions would likely do the following:

- » Reduce the variability between energy savings targets and actual savings for each program type.
- » Quantify energy efficiency resources for system-wide planning.
- » Allow for accurate allocation of funding for each program type.
- » Allow for the quick adjustment of energy efficiency programs as conditions and resources change.

**Table 29. Recommended Supplemental Data**

Suggested Data	Format	Enabling Better Predictions Of...
Building Type	Business type, NAICS code, CBECS Categories	Market penetration by business sector and program type
Building Size	sqft., number of employees, number of occupants, usage pattern	EUIs and Market penetration by business size and program type
Project size	sqft of impacted area	Savings based on project size, program type, and business characteristics
Monthly building energy consumption	kWh/month	Savings impact for each project by business characteristics, program type, and project size
Program participation history	Number and type of prior participation	Likelihood to participate, market penetration potential, and anticipated savings
Building Type	Business type, NAICS code, CBECS Categories	Market penetration by business sector and program type

**Consider a comprehensive potential study.** In the long term, Navigant suggests a comprehensive energy efficiency potential study. The goal of such a study would be to provide the technical, economic, and market (achievable) potential for electric and gas energy savings in PSE’s service territories and to provide a range of possible outcomes considering uncertainties in key study inputs. Such a study would help PSE more precisely target its efficiency programs where the energy efficiency potential is greatest.

**Plan budgets on a longer term (three year) cycle to develop consistency for businesses that depend on the program.** If ramping or curtailing of program savings must occur, it is beneficial to plan budgets on a long term cycle. With longer term planning, the need to suspend programs that are delivering above savings targets, or spend excess marketing dollars on programs which are below targets, is rare. Infrequent ramping and curtailing of programs adds some consistency to the economic actors dependent on program incentives. Price certainty enables contractors in the CAN to make investments in training their personnel and using the correct equipment—both factors that lead to market transformation.

**Be transparent—do not hesitate to communicate budgetary constraints or program savings goals to trade allies, vendors, and customers.** Salt River Project developed a tool on their program website that clearly shows the remaining rebate funds for the year. Use the relationships that PSE has established with vendors, contractors, and customers to communicate program goals and budgetary constraints. Consistent communication will help to build trustworthy relationships with these program partners, and may result in alliances with PSE staff in order to meet targets to ensure the program continues in subsequent years.

***Develop and test a methodology for forecasting program participation.*** Use program data and supplemental data from third party sources to examine trends of electric and gas savings by participant type, time of year, or the effectiveness of past marketing efforts. Update the forecast on a monthly basis when new data is received from implementation contractors. Compare the ex ante forecast with the reality at the end of the year to refine and reiterate the forecasting methodology. Forecasts of program participation can also leverage efforts outlined in the marketing section—for instance, the forecast could be informed by the potential customers’ propensity-to-participate scores.

***Establish a “pipeline” of projects that can be tapped if programs are below targets.*** Track previous customers and determine if they are likely to participate again as part of PSE’s customer relationship management (CRM) strategy. Implement the marketing ideas mentioned in previous sections if the program is below targets. Use CRM to establish relationships with customers in the “pipeline” that may be willing to delay a project until the following year if the program is on track to exceed goals.

***Develop a list of actions to take based on the results of a forecast.*** Such a list can include the most dispatch able measures, communities or companies that are part of the project pipeline, pre-approved applications that can serve as leads for members of the CAN, and many other actions.

#### **4.2.9 Leading: Appropriate and Effective Technology Utilization**

The utilization of technology and social media is an effective way for utilities to communicate with customers and increase awareness of energy efficiency and DSM programs. Electronic communications offer many advantages to both utility companies and their customers, enabling utilities to tailor messages to targeted customers. Customer satisfaction has been shown to increase when utilities adopt and offer new technologies. Satisfaction is notably higher among customers who use electronic billing and payment; are provided outage information by email, text, or mobile applications; visit their electric utility company’s website; or recall a message sent to them via email, website, or social media platform (Perlman & Perryman, 2013). Satisfaction among customers that have smart meters installed is significantly higher than those without smart meters (JD Powers). Additionally, the awareness of utilities’ smart grid efforts is correlated with an increase in customer satisfaction.

##### **4.2.9.1 Leading: Recommendations**

***Implement a portal for real-time customer feedback.*** Implementation of a portal for real-time customer feedback can be achieved through social media or online chat assistance on the utility website. It is also important to obtain real-time feedback from customers through ongoing surveys.

*“Great programs create a ‘voice of the customer’ portal and transparently monitor real time customer feedback. Don’t wait for evaluation season to conduct a retroactive customer survey.”*

*- Roy Barnes, Blue Space Consulting*

***Increase utilization of social media.*** Social media is becoming an increasingly important means of communication among consumers. Consider expansion of the utility’s social media presence. Move communications away from mail to email, tweets, and text messages. Social media is an excellent platform to build program awareness and increase customer satisfaction. An effective strategy for social media is to create social media profiles of energy efficiency “characters” and monitor these accounts on a

continuous basis. Social media platforms may also be effectively utilized to obtain customer feedback in real time. PSE has been commended for its existing social media efforts, with positive responses for its Twitter and Facebook presence.

*Engage customers through creative measures.* Engaging customers through creative measures, such as online videos, contests, and promotions is an effective strategy to increase participation and awareness. PSE was commended for its “Rock the Bulb” social media contest to promote energy efficiency. PSE was also recognized for posting a short video documentary of its wind power development activities. Another example of success is from Southern California Edison, which developed an award-winning mini-video series to promote energy efficiency<sup>20</sup>

---

<sup>20</sup> Strother, N., and C. Wheelock. *Social Media in the Utility Industry*. Boulder, CO: Pike Research, 2011.

## Appendix A Survey and Interview Instruments

### A.1 Participant Customer Survey Questions

A1. How did you first hear about the [PROGRAM]? [USE THE APPROPRIATE LIST FOR THE PROGRAM] [MARK ALL THAT APPLY- PROMPT IF NECESSARY]

- *For Small Business Lighting Program*
  1. Small Business Lighting Brochure
  2. PSE Website
  3. Utility Bill Insert
  4. Case Study of Successful Project
  5. Advertisement [VERBATIM]
  6. Contractor
  7. Lighting Design Lab
  8. NEEA
  9. Northwest Light Network
  10. Other [VERBATIM]
  98. Don't Know
  99. Refused
  
- *Commercial Rebate Program*
  1. Retail Outlet Point-of-Sale Brochure
  2. PSE Website
  3. Retailer Sales Associate
  4. Contractor
  5. Small Business Lighting Brochure
  6. Utility Bill Insert
  7. Print Materials [VERBATIM]
  8. Other Web Materials [VERBATIM]
  9. Advertisement [VERBATIM]
  10. Case Study of Successful Project
  11. Trade Association
  12. RE-ENERGIZE Brand [for Commercial Kitchen Rebates only]
  13. Lighting Design Lab
  14. NEEA
  15. Northwest Light Network
  16. Other [VERBATIM]
  98. Don't Know

99. Refused

A2. **[FOR EACH TYPE OF MATERIAL MENTIONED IN A1]** Did it contain enough information about the program?

1. Yes
2. No

98. Don't Know  
99. Refused

**[IF = 2 or 98]** What information was missing? **[VERBATIM]**

A3. **[FOR EACH TYPE OF MATERIAL MENTIONED IN A1]** Did it explain the program clearly?

1. Yes
2. No

98. Don't Know  
99. Refused

**[IF = 2 or 98]** What do you feel could have been more clear? **[VERBATIM]**

A4. **[IF A1 = 2 FOR EITHER PROGRAM]** Did the website provide enough information for your program participation?

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

**[IF = 2 or 98]** What information was do you feel was missing? **[VERBATIM]**

### **Trade Ally Involvement**

T1. Did you self-install the measure, or did you have a contractor complete the work?

1. Self-install
  2. Contractor install
98. Don't Know **[SKIP to D1]**  
99. Refused **[SKIP to D1]**

**[IF =1]** Why did you decide to self-install and not have a contractor complete the work?  
**[VERBATIM]**

**[IF = 1 SKIP to D1]**

T2. How did you find the contractor who completed the installation? **[MARK ALL THAT APPLY. PROMPT IF NECESSARY]**

1. PSE Website

2. Web search
  3. PSE Contractor Alliance Network
  4. Contractor Found Us
  5. Phone Directory
  6. Trade Association Newsletter
  7. Trade Association Meeting
  8. Advertising [VERBATIM]
  9. Event [VERBATIM]
  10. Lighting Design Lab
  11. NEEA
  12. Northwest Light Network
  13. Other [VERBATIM]
- 
98. Don't Know
  99. Refused

[IF = 3] Did the PSE Contractor Alliance Network make your contractor search easier?

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

[IF = 2] How could the PSE Contractor Alliance Network have been more helpful?

T3. On a scale of 1-10, with one being very dissatisfied and ten being very satisfied, how would you rate your satisfaction with the contractor's work? [VERBATIM]

98. Don't Know
99. Refused

[IF <5] What was the reason of your dissatisfaction? [VERBATIM]

## **Driver and Barriers**

D1. Why did you participate in the program? [VERBATIM]

D2. Did you consider installing the energy efficient measure before you heard about the program?

1. Considered installing before I heard about the program
2. Considered installing after I heard about the program
98. Don't Know
99. Refused

D3. On a scale of 1-10, with 1 being not at all influential and ten being very influential, how influential was the financial incentive on your decision to install the measure? [VERBATIM]

- 98. Don't Know
- 99. Refused

D4. On a scale of 1-10, with 1 being not at all influential and ten being very influential, how influential were the program's marketing materials on your decision to participate? **[VERBATIM]**

- 98. Don't Know
- 99. Refused

D5. On a scale of 1-10, with 1 being not at all influential and ten being very influential, how influential was the contractor on your decision to participate? **[VERBATIM]**

- 98. Don't Know
- 99. Refused

### **Customer Experience with Program**

E1. What were your expectations of the program? **[VERBATIM]**

E2. Did the program meet these expectations?

- 1. Yes
- 2. No
- 3. Other **[VERBATIM]**
- 98. Don't Know
- 99. Refused

E3. What could have been done differently to ensure that the program met your expectations? **[VERBATIM]**

E4. Was there anything that made your program participation difficult?

- Did you fill out the program application?

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

**[IF = 1]** What made your participation difficult? **[VERBATIM]**

E5. On a scale of 1-10, with one being very dissatisfied and ten being very satisfied, how would you rate your satisfaction with the program application? **[VERBATIM]**

- 98. Don't Know
- 99. Refused

**[IF <5]** What was the reason of your dissatisfaction? **[VERBATIM]**



E6. How long did it take to complete the program processes, from application submission to rebate check receipt?

1. One to two weeks
2. Three to four weeks
3. Two months
4. Three months
5. Four months to five months
6. Over six months
7. Over a year
8. Other [VERBATIM]

E7. Were you satisfied with the length of time to process the application?

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

E8. Were there any problems with your application?

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

[IF = 1] What problems were there with your application? [VERBATIM]

E9. On a scale of 1-10, with one being very dissatisfied and ten being very satisfied, how would you rate your satisfaction overall with the program? [VERBATIM]

98. Don't Know
99. Refused

[IF <5 ] What was the reason of your dissatisfaction? [VERBATIM]

E10. On a scale of 1-10, with one being very dissatisfied and ten being very satisfied, how would you rate PSE on the Variety of energy efficiency programs offered? [VERBATIM]

98. Don't Know
99. Refused

[IF <5] What was the reason of your dissatisfaction? [VERBATIM]

E11. Would you participate in the program or other PSE programs in the future?

1. Yes
2. No

- 98. Don't know
- 99. Refused

E12. Why or why not? **[VERBATIM]**

E13. On a scale of 1 to 10, with 1 being very dissatisfied and ten being very satisfied, how satisfied are you with any communications/interactions you might have had with the contractor? **[VERBATIM]**

- 97. Did not have any interactions
- 98. Don't Know
- 99. Refused

**[IF <5]** What is the reason for your dissatisfaction? **[VERBATIM]**

E14. On a scale of 1 to 10, with 1 being very dissatisfied and ten being very satisfied, how satisfied are you with any communications/interactions you might have had with the vendor? **[VERBATIM]**

- 97. Did not have any interactions
- 98. Don't Know
- 99. Refused

**[IF <5]** What is the reason for your dissatisfaction? **[VERBATIM]**

E15. On a scale of 1 to 10, with 1 being very dissatisfied and ten being very satisfied, how satisfied are you with any communications/interactions you might have had with the PSE staff? **[VERBATIM]**

- 97. Did not have any interactions
- 98. Don't Know
- 99. Refused

**[IF <5]** What is the reason for your dissatisfaction? **[VERBATIM]**

E16. On a scale of 1-10, with one being very dissatisfied and ten being very satisfied, how would you rate your satisfaction with Puget Sound Energy overall? **[VERBATIM]**

- 98. Don't Know
- 99. Refused

**[IF <5]** What is the reason for your dissatisfaction? **[VERBATIM]**

E17. Has your experience with the program positively, negatively or neutrally affected your satisfaction with PSE?

- 1. Positively
- 2. Negatively
- 3. Neutrally

- 4. Other [VERBATIM]
- 98. Don't Know
- 99. Refused

E18. Do you have any other recommendations for improvements to the program? [VERBATIM]

END. Thank you for taking time to help with our survey and the helpful information you provided. Have a great day/evening. [RECORD AS COMPLETE]

## *A.2 Non-Participant Customer Survey Questions*

### Program Awareness

A1. Have you heard of the [PROGRAM]?

- 1. Yes [SKIP to A4]
- 2. No
- 98. Don't Know [SKIP to A4]
- 99. Refused [SKIP to A4]

A2. How do you receive information about energy efficiency? [VERBATIM]

A3. How do you make decisions about equipment upgrades in your business? [VERBATIM] [SKIP TO E2]

A4. Have you ever considered enrolling in the program?

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

A5. How did you first hear about the [PROGRAM]? [USE THE APPROPRIATE LIST FOR THE PROGRAMS][MARK ALL THAT APPLY- PROMPT IF NECESSARY]

- *For Small Business Program*
  - 1. Small Business Lighting Brochure
  - 2. PSE Website
  - 3. Utility Bill Insert
  - 4. Case Study of Successful Project
  - 5. Advertisement [VERBATIM]
  - 6. Contractor
  - 7. Lighting Design Lab

- 8. NEEA
- 9. Northwest Light Network
- 10. Other [VERBATIM]

- 98. Don't Know
- 99. Refused

o *Commercial Incentive Program*

- 1. Retail Outlet Point-of-Sale Brochure
- 2. Retailer Sales Associate
- 3. Contractor
- 4. Small Business Lighting Brochure
- 5. Utility Bill Insert
- 6. Print Materials [VERBATIM]
- 7. PSE Website
- 8. Other Web Materials [VERBATIM]
- 9. Advertisement [VERBATIM]
- 10. Case Study of Successful Project
- 11. Food Service Organizations [for Commercial Kitchen Rebates only]
- 12. RE-ENERGIZE Brand [for Commercial Kitchen Rebates only]
- 13. Light Design Lab
- 14. NEEA
- 15. Northwest Light Network
- 16. Other [VERBATIM]

- 98. Don't Know
- 99. Refused

A6. Have you seen any marketing materials regarding the program?

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

**[IF =1]** What marketing materials have you seen? [VERBATIM]

A7. Have you visited the program's website?

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

[IF = 1] What was your opinion of these materials? [VERBATIM]

**Drivers and Barriers**

D1. Have you ever participated in the program?

- 1. Yes [SKIP to D3]
- 2. No
- 98. Don't Know
- 99. Refused

D2. What is the reason for your lack of participation? [VERBATIM]

D3. Did you work with a contractor/vendor to purchase or install the equipment?

- 1. Yes
- 2. No [SKIP to E1]
- 98. Don't Know [SKIP to E1]
- 99. Refused [SKIP to E1]

D4. Did the contractor explain clearly how much savings the new equipment would bring?

- 1. Yes
- 2. No
- 3. Other [VERBATIM]
- 98. Don't Know
- 99. Refused

D5. Did the contractors explain how much of a rebate you would receive through the PSE program?

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

D6. How did the contractor/vendor help you with the program processes (paperwork, etc.)?  
[VERBATIM]

D7. How could the contractor/vendor have been of more assistance to you throughout the process?  
[VERBATIM]

D8. On a scale of 1 to 10, with 1 being very dissatisfied and ten being very satisfied, how satisfied are you with any communications/interactions you might have had with the contractor/vendor?  
[VERBATIM]

- 97. Did not have any communications/interactions with the contractor/vendor
- 98. Don't Know
- 99. Refused

[IF <5] What was the reason for your dissatisfaction? [VERBATIM]

**Customer Experience with the Program**

E1. What do you think could be improved in the PSE program? [VERBATIM]

E2. What would motivate you to participate in the PSE program? [VERBATIM]

E3. On a scale of 1 to 10, with 1 being very dissatisfied and ten being very satisfied, how satisfied are you with any communications/interactions you might have had with Puget Sound Energy staff? [VERBATIM]

97. Did not have any communications/interactions with PSE

98. Don't Know

99. Refused

[IF <5] What was the reason for your dissatisfaction? [VERBATIM]

E4. On a scale of 1 to 10, with 1 being very dissatisfied and ten being very satisfied, how satisfied are you with Puget Sound Energy overall? [VERBATIM]

98. Don't Know

99. Refused

[IF <5] What was the reason of your dissatisfaction? [VERBATIM]

***A.3 Participant Trade Ally Interview Questions***

**Program Experience**

P1. Do you recall participating in the PSE [PROGRAM NAME]?

P2. What do you recall about your experience?

P3. Is it easy for you to participate in the program?

P4. Is it easy to enroll customers in the program?

P4a. What do you recommend to make program participation easier for customers?

P5. On a scale of 1-10, with one being very dissatisfied and ten being very satisfied, how would you rate your satisfaction with the program overall? [VERBATIM]

[IF <5] What was the reason for your dissatisfaction? [VERBATIM]

**[IF >8] What was the reason for your satisfaction? [VERBATIM]**

P5. On a scale of 1-10, with one being very dissatisfied and ten being very satisfied, how would you rate your satisfaction with the time it takes for PSE to process the program paperwork?

**[IF <5] What was the reason for your dissatisfaction? [VERBATIM]**

**[IF >8] What was the reason for your satisfaction? [VERBATIM]**

P6. On a scale of 1-10, with one being very dissatisfied and ten being very satisfied, how would you rate your satisfaction with the time it takes you to manage your program participation (i.e., incremental time spent working with PSE, handling paperwork, etc.)?

**[IF <5] What was the reason for your dissatisfaction? [VERBATIM]**

**[IF >8] What was the reason for your satisfaction? [VERBATIM]**

P7. On a scale of 1-10, with one being very dissatisfied and ten being very satisfied, how would you rate your experience with PSE staff?

**[IF <5] What was the reason for your dissatisfaction? [VERBATIM]**

**[IF >8] What was the reason for your satisfaction? [VERBATIM]**

P8. What could PSE change about the program to make your participation easier?

P9. How did you hear about the program?

P10. What would motivate you recommend the program to other contractors?

### **Drivers and Barriers**

D1. How frequently do you promote the program to your customers?

D2. How do you decide whether to recommend the program to customers?

D3. What keeps you from recommending the program to your customers?

D4. What motivates you to recommend the program to your customers?

D5. What motivates your customers to participate in the program?

D6. What keeps customers from participating?

### **Information Channels**

I1. How do you provide information about services and opportunities to your customers?

I2. How do you promote the PSE program to your customers?

I3. Does PSE provide information materials about the program to you?

I3a. Does this information help you encourage customers to participate in the program?

I3b. What is your opinion of these materials?

I3c. Would you change anything in these materials?

I4. Have you ever heard of the PSE Contractor Alliance Network?

I4a. Do you participant in the network? Why or why not?

I4b. What is your experience with the PSE Contractor Alliance Network?

I4c. Has this network helped increase your business?

I4d. How could this network be enhanced?

I4e. How could it be better leveraged by the program?

#### ***A.4 Low-Frequency Participant Trade Ally Interview Questions***

##### **Drivers and Barriers**

D1. Are you aware of PSE's [Small Business Lighting / Commercial Rebate] program?

D2. Do you recall participating in the program?

**[IF = NO, SKIP TO D4]**

D3. What do you recall about your experience?

D4. How frequently do you promote the program to your customers?

D4a. If frequently, why do the customers not participate?

D4b. If never or rarely, what keeps you from recommending the program to your customers?

D5. What would motivate you to recommend the program to your customers more often?

D6. What could PSE change about the program to make your participation easier?

##### **Information Channels**

I1. How do you provide information about services and opportunities to your customers?

I2. **[SKIP IF D4 = NEVER]** How do you promote the PSE program to your customers?



I3. Has PSE reached out to you regarding promotion of the program?

I4. Does PSE provide information materials about the program to you?

**[IF = NO SKIP TO I5]**

I4a. Do you (ever) distribute these materials to customers?

I4b. Does this information help you encourage customers to participate in the program?

I4c. What is your opinion of these materials?

I4d. Would you change anything in these materials?

I5. Have you ever heard of the PSE Contractor Alliance Network?

**[IF = NO THANK AND COMPLETE]**

I5a. Do you participant in the network? Why or why not?

I5b. What is your experience with the PSE Contractor Alliance Network?

I5c. Has this network helped increase your business?

I5d. How could this network be enhanced?

I5e. How could it be better leveraged by the program?

## Appendix B Sub-Program Snapshots

### B.1 Small Business Lighting Program

This section summarizes the comments and responses from respondents who participated in the Small Business Lighting (SBL) program as well as non-participant customers who are candidates for the program. The section also discusses participant trade ally and low-frequency participant trade ally responses to interview questions. Table B-1 shows number of survey and interview completes.

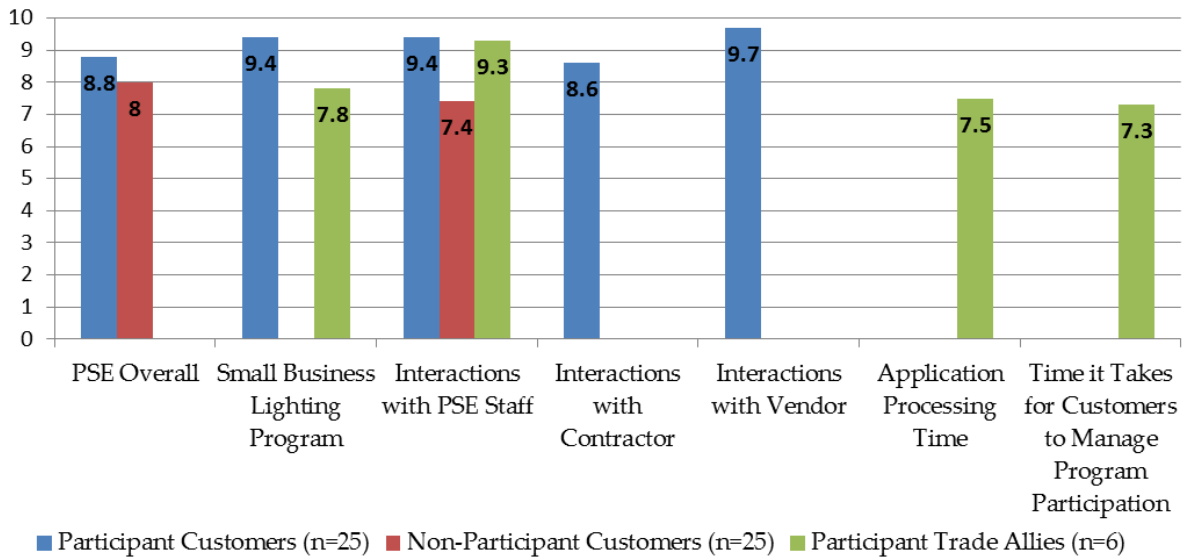
**Table B-1. Number of Survey/Interview Respondents for Small Business Lighting Respondents**

Participant Customers	Non-Participant Customers	Participant Trade Allies	Low-Frequency Participant Trade Allies
25	25	6	4

- » Participant customers reported being influenced to participate in the program by the financial incentive and contractors.
- » Customers participated in the program to achieve energy and cost savings, and to obtain better equipment. The program met those expectations for 84% of participant customers.
- » When asked how they found their contractors, one-third of SBL participant customer respondents said that the contractor approached them, 20% cited the PSE CAN, and one SBL participant cited the Lighting Design Lab. Customers also cited previous experience with the contractor as important in their selection.
- » Most SBL customer participants had not considered installing efficient equipment before they encountered the program.
- » Twenty percent of non-participant SBL candidates said they had heard about the program. Of these five respondents, one considered enrolling in the program, three did not, and one did not know.
- » Eighty percent of SBL customer respondents reported that the SBL program positively affected their perception of PSE.
- » Low-frequency participant trade allies promote the program as often they can. However, some shy away from promoting the program because they feel that the program takes too long to process the applications, and because many small businesses cannot afford up front capital, even with the incentive.
- » Low-frequency participant trade allies seem interested in the PSE CAN, but some do not participate in the network because they consider it too much of a hassle for a small business, or because participation only resulted in a few jobs.
- » The SBL program appears to be the most complicated for trade allies. Many participant trade allies mentioned that the program application changes frequently and it's gotten more complicated over the years. A few said the pre-approval process could be a deterrent for customers because it might delay the installation by a substantial amount of time.

Figure B-1 presents customer and trade ally satisfaction with various SBL program components, and with PSE overall.

**Figure B-1. How Satisfied Were Small Business Lighting Program Respondents with Program Components and PSE Overall?**



1= very dissatisfied, 10=very satisfied

Lack of data indicates that question was not applicable to respondent.

Source: Navigant analysis

*“They met the expectations by reducing electricity costs, however, the contractor completing the work took a very long time (at least 3-4 months). [I wish] that the contractor had been more efficient. Such as, if they had stayed on task and completed the work faster, because there were periods of times when no work was completed for several weeks and we had to remind them various time to do it.”*

- Small Business Lighting Participant Customer

*“We can’t find the right bulbs now to replace the nice bright bulbs that the contractor installed...Maybe if ACE Hardware had better selection of lights. Or an extended incentive to get the right light bulbs.”*

- Small Business Lighting Participant Customer

*“Some of contractors on your list were no longer doing upgrades; this meant making just a couple extra phone calls. We were living in kind of a remote area; the contractor had to come about 50 miles away.”*

- Small Business Lighting Participant Customer

*“They’ve recently changed the program so you have to sign up and pay a fee to be on their preferred contractor. They’ve never sent a customer to me in all the years I’ve participated. I’d like to see customers referred to me.”*

*- Small Business Lighting Participant TA*

---

*“Make the program easier. We used to do it on a single sheet, and now you’re writing War and Peace. It’s no longer efficient”*

*- Small Business Lighting Participant TA*

---

## B.2 Commercial Lighting Program

This section summarizes the comments and responses from respondents who participated in the Commercial Lighting Program as well as non-participant customers who are candidates for the program. The section also discusses participant trade ally and low-frequency participant trade ally responses to interview questions. Table B-2 shows number of survey and interview completes.

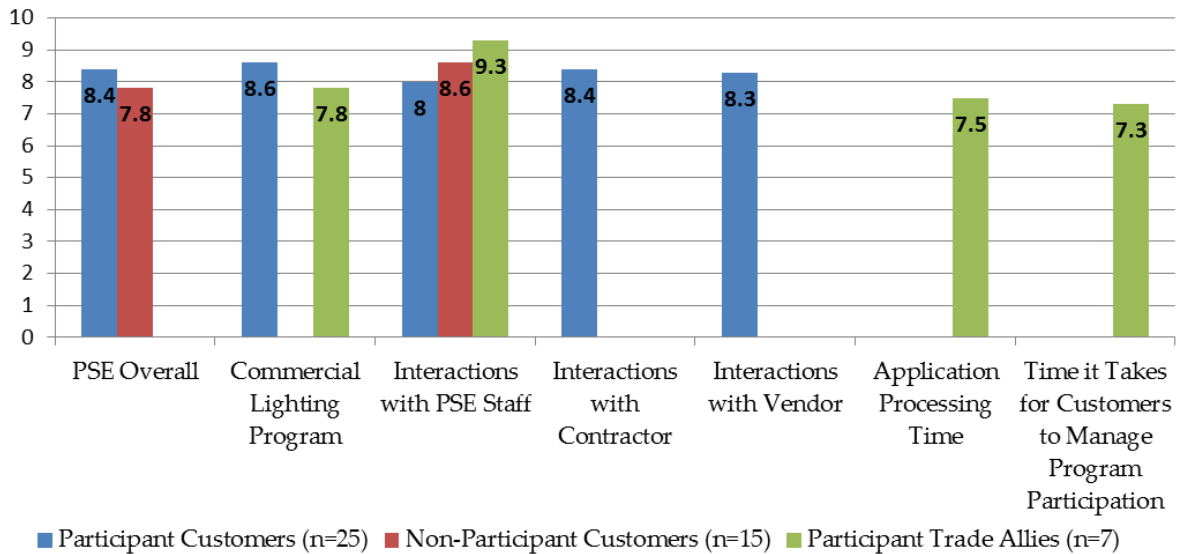
**Table B-2. Number of Survey/Interview Respondents for Commercial Lighting Respondents**

Participant Customers	Non-Participant Customers	Participant Trade Allies	Low-Frequency Participant Trade Allies
25	15	7	5

- » Customer participants reported being somewhat influenced by the financial incentive, the contractor and marketing materials.
- » Customers primarily participated in the Commercial Lighting Program to achieve energy and cost savings, and to obtain better equipment. The program met those expectations for 88% respondent customers.
- » When asked how they found their contractors, Commercial Lighting participant customer respondents said that the contractor approached them, and that they used the PSE CAN, and trade association meetings to locate a contractor. As with SBL, customers cited previous experience with the contractor as being an important factor in their selection process.
- » Fifty-three percent of non-participant Commercial Lighting candidates said they had heard about the program. Of these eight respondents, three considered enrolling in the program, four did not and one did not know.
- » Sixty-four percent of Commercial Lighting customer respondents reported that the program positively affected their perception of PSE.
- » Participant trade allies received PSE marketing materials, but said that they don't use them very often because they like to act as the main source of information for their customers.
- » Participant trade allies expressed a desire for a smoother feedback loop between PSE to customers and contractors.

Figure B-2 presents customer and trade ally satisfaction with various Commercial Lighting Program components, and with PSE overall.

**Figure B-2. How Satisfied Were Commercial Lighting Program Respondents with Program Components and PSE Overall?**



1= very dissatisfied, 10=very satisfied

Lack of data indicates that question was not applicable to respondent.

Source: Navigant analysis

*“I would have liked to know if the grant application had been accepted.”*

– Commercial Lighting Participant Customer

*“We could not get clear information when we needed it.”*

– Commercial Lighting Participant Customer

*“When we started the program, it was understood how it worked but during the process as we went through it, something happened with the PSE end. They got tighter with some guidelines the vendor had to use and this affected the program.”*

– Commercial Lighting Participant Customer

*“They’re very slow on response time getting projects approved. A lot of times we had to submit additional documentation for completed projects. We had to resubmit application multiple times in order for our customers to receive rebate checks.”*

– Commercial Lighting Participant Customer

*“Stop requiring so much info. They need to explain why they need all this info if they can’t pull it up themselves. Sometimes it’s 2 or 3 days of back and forth communication between me and my salesmen.”*

*– Commercial Lighting Participant Customer*

### **B.3 Premium HVAC Program**

This section summarizes the comments and responses from respondents who participated in the Premium HVAC program as well as non-participant customers who are candidates for the program. The section also discusses participant trade ally and low-frequency participant trade ally responses to interview questions. Table B-3 shows number of survey and interview completes.

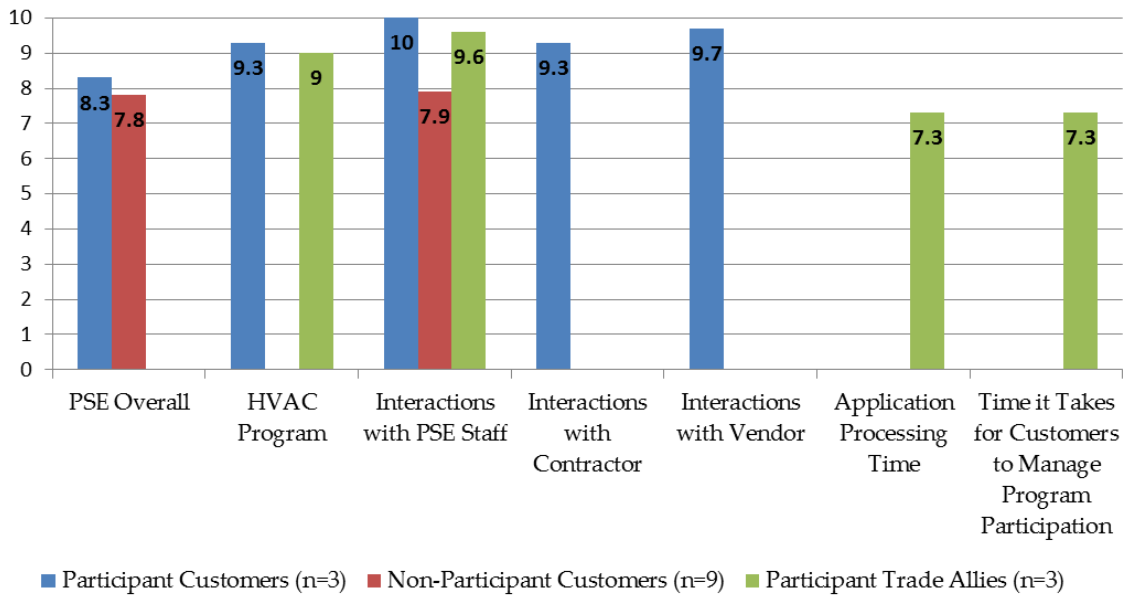
**Table B-3. Number of Survey/Interview Respondents for Premium HVAC Program**

Participant Customers	Non-Participant Customers	Participant Trade Allies	Low-Frequency Participant Trade Allies
3	9	3	1

- » Customers reported being highly influenced to participate in the program by the financial incentive and the contractor.
- » Customers participated in the Premium HVAC program to achieve energy and cost savings. The program met those expectations 100%.
- » When asked how they found their contractors, one-third of Premium HVAC participant customer respondents said that the contractor approached them and that previous experience with the contractor was important in their selection.
- » Twenty percent of non-participant Premium HVAC candidates said they had heard of the program. Of these two respondents, one considered enrolling in the program, the other one did not.
- » One hundred percent of customer participant respondents said that the program positively affected their perception of PSE.
- » Overall, trade allies felt their participation was easy, but some described the paperwork as a burden and felt that paperwork processing and payment take too long.
- » Trade allies would like to see more marketing materials to help them promote the program.

Figure B-3 presents customer and trade ally satisfaction with various Premium HVAC program components, and with PSE overall.

**Figure B-3. How Satisfied Were Premium HVAC Program Respondents with the Program Components and PSE Overall?**



1= very dissatisfied, 10=very satisfied

Lack of data indicates that question was not applicable to respondent.

*“I would love more marketing information on (the program). I’d love a simple message to provide to our technicians. They have a lot of customers that they could promote the program to, but marketing materials would be useful for them.”*

- Premium HVAC Low-Frequency TA

*“I think the rebates alone are a great deal for everybody. It would help me as a sales representative to know what the big picture is. It would help if PSE could educate me as to the big picture and also on the technical side. It could be a webinar or a conference.”*

- Premium HVAC Low-Frequency TA

*“If they could expand the program to cover more types of equipment, if they could add split systems, that would be good. A lot of buildings we service have split systems instead of rooftop units.”*

- Premium HVAC Participant Customer

*“It’s really hard to find people that are pleasant to deal with, and everyone over there was helpful and pleasant and that was really big for me.”*

- Premium HVAC Participant Customer



#### B.4 Commercial Laundry Program

This section summarizes the comments and responses from respondents who participated in the Commercial Laundry program as well as non-participant customers who are candidates for the program. The section also discusses participant trade ally and low-frequency participant trade ally responses to interview questions. Table B-4 shows number of survey and interview completes.

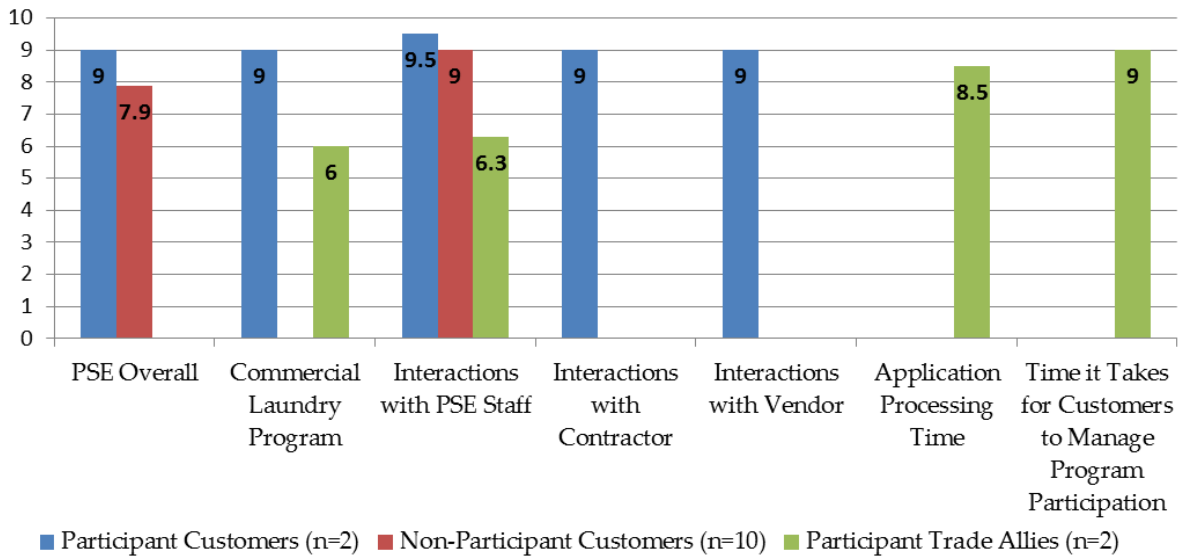
**Table B-4. Number of Survey/Interview Respondents for Commercial Laundry Respondents**

Participant Customers	Non-Participant Customers	Participant Trade Allies	Low-Frequency Participant Trade Allies
2	10	2	2

- » The financial incentive, the contractor, and the marketing materials were only somewhat influential in encouraging customers to participate in the Commercial Laundry program.
- » Customers participated in the program to achieve cost savings and the program met those expectations 100%. Both participant customer respondents considered installing the measure before enrolling in the program.
- » When asked how they found their contractors, one respondent said that he found the contractor on his own. The other said that their own maintenance department installed the equipment.
- » Sixty percent of non-participant Commercial Laundry candidates said they had heard about the program, 30 percent had not heard and 10 percent did not know. Of the seven respondents who either heard about the program or did not know, six considered enrolling in the program and one did not consider enrolling.
- » One hundred percent of customer participant respondents said that the program positively affected 100% their perception of PSE.
- » Trade allies expressed a desire for hard copy brochures about the program because they feel that the website is not easy to navigate.

Figure B-4 presents customer and trade ally satisfaction with various Commercial Laundry program components, and with PSE overall.

**Figure B-4. How Satisfied Were Commercial Laundry Program Respondents with Program Components and PSE Overall?**



1= very dissatisfied, 10=very satisfied

Lack of data indicates that question was not applicable to respondent.

Source: Navigant analysis

*“It would be really helpful if there was a way to get up-to-date information about when money it is available. It makes no sense to bring it up with a customer if it is not available.”*

- Commercial Laundry Low-Frequency TA

*“I would be motivated to participate again if they offered a greater variety of appliances.”*

- Commercial Laundry Participant Customer

*“They should have their list of models on the brochure, and it would be great if PSE could send us pre-printed brochures.”*

- Commercial Laundry Participant TA

## B.5 Commercial Kitchen Program

This section summarizes the comments and responses from respondents who participated in the Commercial Kitchen program as well as non-participant customers who are candidates for the program. The section also discusses participant trade ally and low-frequency participant trade ally responses to interview questions. Table B-5 shows number of survey and interview completes.

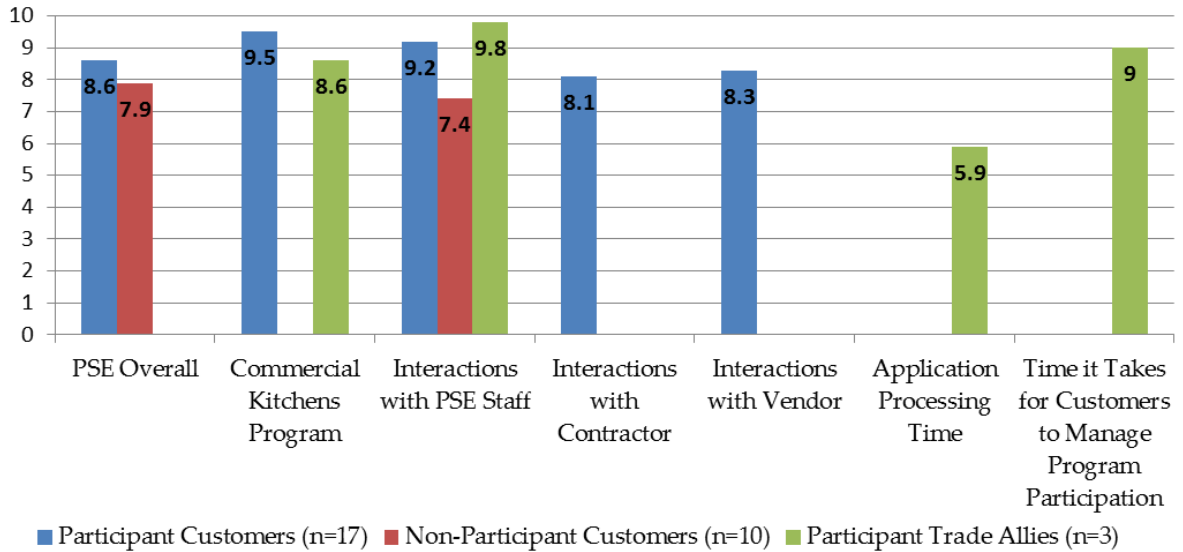
**Table B-5. Number of Survey/Interview Respondents for Commercial Kitchen Program**

Participant Customers	Non-Participant Customers	Participant Trade Allies	Low-Frequency Participant Trade Allies
17	10	3	2

- » The financial incentive, marketing materials and the contractor were somewhat influential in encouraging program participation for the Commercial Kitchen participant customer respondents.
- » Customers participated in the Commercial Kitchen program to achieve energy and cost savings and to obtain better equipment. The program met those expectations for 88% of respondent customers.
- » When asked how they found their contractors, Commercial Kitchen customer respondents said that the contractor approached them. Customers also said that previous experience with the contractor and referrals were all important factors in their selection.
- » Eighty percent of non-participant Commercial Kitchen candidates had not heard about the program. Of the two respondents who had heard about the program, one considered enrolling in the program and the other did not.
- » Seventy-six percent of customer participant respondents said that the program positively affected their perception of PSE.
- » Trade ally respondents reported high levels of satisfaction with the program overall. They said the rebates are a great sales tool and believe it is easy to participate. However, they also mentioned that the overall process takes too long (sometimes up to 6 months).
- » In general, trade allies consider PSE staff helpful and responsive; trade allies reported high levels of satisfaction with PSE staff. However, a few trade allies noted that communicating with PSE via is challenging, especially if an answer is needed right away. One trade ally expressed concerns about high staff turnover at PSE.
- » Similar to other sub-programs, Commercial Kitchen trade allies felt that the PSE website is not easy to navigate and that it is difficult find information about equipment qualification.

Figure B-5 presents customer and trade ally satisfaction with various Commercial Kitchen program components, and with PSE overall.

**Figure B-5. How Satisfied Were Commercial Kitchens Program Respondents with Program Components and PSE Overall?**



1= very dissatisfied, 10=very satisfied  
 Lack of data indicates that question was not applicable to respondent.  
 Source: Navigant analysis

*“We had challenges with making sure the equipment we were installing was eligible. It was hard to identify equipment that was eligible for the rebate, given the information we were provided.”*  
 - Commercial Kitchen Participant Customer

*“My contractor isn’t good about billing, and him getting the rebate & me taking advantage of it. The rebates should’ve gone to me instead of the contractor.”*  
 - Commercial Kitchen Participant

*Regarding the PSE Contractor Alliance Network: “I would like a better understanding of how the assessments are made and who are specific contacts and if there is a way to connect with other contractors participating in the alliance.”*  
 - Commercial Kitchen Participant TA