Puget Sound Energy

2017

Annual Report of Energy Conservation Accomplishments

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PUGET SOUND ENERGY

2017

Annual Report of

Energy Conservation Accomplishments

April 2, 2018

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I. EXECUTIVE SUMMARY

A. Puget Sound Energy's Annual Report of 2017 Conservation Accomplishments

Puget Sound Energy's (PSE's or The Company's) Energy Efficiency department presents this 2017 Annual Report of Energy Conservation Accomplishments (Annual Report or Report), satisfying WAC 480-109-130(3). The Report provides details of initiatives, activities, and adaptive management steps employed to be responsive to the expectations of PSE customers and meet savings goals of Energy Efficiency programs funded by the Electric and Natural Gas Conservation Riders. Table I-1 presents 2017 Portfolio-level savings, expenditure results, Total Resource Cost (TRC), and Utility Cost (UC) benefit-to-cost (B/C) ratios for electric and natural gas conservation programs.

Table I-1: Energy Efficiency 2017 Electric Savings and Cost-Effectiveness Results

2017	Savings	Expenditures	Total Resource Cost	Utility Cost
Electric (MWh)	318,300 36.3 aMW	$101,006,000	2.13	2.70
Goal/Budget	309,900 (35.3 aMW)	$103,453,000		
Percent	*102.7%*	*97.6%*		
Gas (Therm)	3,614,000	$14,722,000	1.55	1.71
Goal/Budget	3,527,000	$14,688,000		
Percent	*102.5%*	*100.2%*		

318,300 MWh divided by 8,760 hours = 36.3 aMW
Savings are stated in terms of first-year annual figures, at the customer meter, without line loss.

1) 2017 Results

In 2017, PSE's Energy Efficiency department continued its exemplary standard of meeting energy savings goals and customer expectations for energy efficiency programs, while effectively and prudently managing costs for its customers.

Overall, electric conservation exceeded the savings goal of 309,900 MegaWatt-hours (MWh) or 35.3 average MegaWatts (aMW) by 3 percent, achieving 318,300 MWh, or 36.3 aMW.

Electric expenditures finished the year 2 percent lower than planned: $101.01 million, compared to a budget of $103.45 million.

Natural gas programs exceeded savings goals for the year by 2 percent: 3.61 million therms against a goal of 3.53 million therms, while natural gas expenditures were in line with planned spending, finishing the year at $14.72 million, compared to a budget of $14.69 million. PSE provides detailed savings and expenditure information by program in Exhibit 1: *Savings and Expenditures.*

Portfolio results include Pilots and the Northwest Energy Efficiency Alliance (NEEA) savings, which PSE excludes from its EIA Penalty Target per agreements reached with PSE's Conservation Resource Advisory Group (CRAG) and the Washington Utilities and Transportation Commission (UTC or Commission). NEEA will report its verified savings in May 2018. PSE will include those savings in its 2016-2017 Biennial Electric Achievement Report, submitted in compliance with WAC 480-109-120(4) on or before June 1, 2018. PSE includes complete discussions of Pilots in Chapter 8. PSE provides a summary of NEEA's 2017 savings and expense metrics in Chapter 9: *Regional Initiatives.* NEEA provides additional 2017 accomplishment details in Exhibit 10: *NEEA 2017 Report of Activities and Initiatives*.

Energy Efficiency's 2017 Portfolio electric TRC B/C ratio was 2.13, and its electric UC B/C ratio was 2.70. PSE finished the year with a natural gas TRC of 1.55, and a natural gas UC of 1.71. Both TRC figures include a 10 percent conservation credit. Although this is not standard for natural gas cost-effectiveness reporting, it is a useful representation in light of the UTC workshops on the considerations of natural gas cost-effectiveness calculations.[1]

a. Key Results Drivers

Program reviews in Chapters 5 and 7, and 10 through 14 contain extensive discussions on the key drivers of programs' savings and expenditure results. PSE provides high-level summaries here, and in Chapter 2: *Introduction*.

[1] In a Docket UG-121703 April 2013 workshop, participants discussed the merits of applying a conservation credit, similar to the 10 percent value applied for electric cost-effectiveness calculations. For consistency, PSE chose 10 percent for this representational value.

i. Savings

One of the primary contributors to Energy Efficiency's notable 2017 electric savings results in both the Residential Energy Management and Business Energy Management (REM and BEM, respectively) Sectors was customers' enthusiastic acceptance of LED lamps, including "value LEDs".[2] Sales of multipack LEDs were robust, and in 2017, average lighting grant projects' size increased by 15 percent over similar projects in 2016. PSE stopped offering CFL rebates in 2017. Additionally, REM's web-enabled thermostats measure substantially exceeded PSE's projections, and the Multifamily air sealing measure was also noteworthy.

Energy Efficiency program staff adaptively managed their customer offerings and expanded services, including bundling of associated measures, providing "hybrid" custom-grant/prescriptive measure types in some of BEM's Direct Install programs, and incenting contractors to maximize directly-installed measures. Staff also pursued several measures and program innovations that are classified as pilot-analogous. Staff designed these initiatives to ensure that all customer segments had access to PSE's programs.

The work performed by Energy Efficiency's support organizations, including Marketing and Energy Efficient Communities, also contributed to conservation savings in 2017. Several successful promotions and energy-efficiency campaigns, including Energy Upgrades, Cross-Sell, community blitzes, and social media initiatives. These resulted in expanded customer exposure, awareness, and conservation savings.

In BEM, new commercial construction projects are sometimes subject to delays. In 2017, projects originally slated for 2016 completion were instead finished in 2017, thus propelling Commercial/Industrial New Construction electric savings to exceed its goal by over 140 percent. BEM's Lighting To Go program also saw strong participation in retail establishments that service lighting contractors.

[2] Value LEDs are those that meet PSE programmatic criteria, but are not certified as Energy Star®. Value LEDs tend to be less expensive that Energy Star-rated lamps.

Market saturation in the retail appliance segment contributed to an electric savings shortfall, and the weak market adoption and impact evaluation of advanced power strips adversely impacted savings in Home Appliances. BEM's Urban Smart Bellevue pilot, while producing plentiful customer insight, also finished the year below its electric savings goal.

Similar to the circumstance experienced in the electric Commercial/Industrial (C/I) New Construction program, the Multifamily New Construction program recorded the completion of a natural gas project originally slated for 2016. This resulted in a substantial windfall of therm savings. Residential web-enabled thermostats were also quite successful in the natural gas sector. The Low Income Weatherization program exceeded its natural gas savings goal by an impressive 40 percent, due to a large multifamily furnace project brought in at the end of 2017. Customers also engaged in an increased number of weatherization natural gas measures: insulation, structure sealing, and windows, in particular.

Several large HVAC controls projects in the C/I Retrofit program resulted in higher-than-planned natural gas savings, and RCM's Operations & Maintenance (O&M) and behavior-based improvements contributed to natural gas conservation in customers' sites.

Some circumstances that drove lower-than-expected natural gas savings results included lower demand for residential clothes washer replacements, the high cost of commercial kitchen equipment, and revised UES values of aerators, which particularly affected the Lodging Direct Install natural gas program. The C/I New Construction natural gas program was again affected by construction schedule delays: a single large project, originally scheduled for completion in 2017 was delayed into 2018, causing a substantial reduction in planned savings.

ii. Expenditures

The majority of REM and BEM 2017 electric and natural gas expenditures finished the year well within expectations. Exhibit 1, Supplement 1: *2017 Actual Expenditures Compared to Anticipated Spends*, provides a program-level comparison of costs incurred by budget category. Readers will recognize figures in the Supplement's tables indicated in the following discussions. It is important to note that although some budget variances appear proportionately significant—as compared to their budgeted amounts—the overall impact was negligible, as PSE finished 2017 under-budget it both electric and natural gas portfolios.

Nearly all savings programs that varied from their anticipated expenditures also realized a commensurate increase (or reduction) in their planned savings.[3] Program staff continuously improved efficiencies and proactively managed expenses, resulting in lower-than-expected ancillary costs, such as the Employee Expenses, Materials, and Miscellaneous categories. The majority of Outside Services costs were below their anticipated spending levels.

Some causes included partner invoice timing issues, order number mis-assignments,[4] and the completion of Energy Efficiency's transition to the Demand Side Management Central (DSMc) program-management system, which resulted in higher-than-planned costs. In BEM's Direct Install programs, the shift to a performance-based contractor reimbursement approach resulted in lower-than-expected spending. Staffing levels throughout the year impacted several Sector organizations, with some groups sustaining vacancies for the majority of 2017 in both the electric and natural gas segments.

Additionally, programs susceptible to customer planning variables—New Construction, in particular—saw variances in their actual savings (and thus, expenditures) versus planned. On the BEM side, completed C/I New Construction electric projects achieved almost 200 percent of savings goals, while in the natural gas area, Multifamily New Construction projects achieved almost 250 percent of goal. These savings achievements drove commensurate spending. Direct Benefit to Customer (DBtC) expenses exceeded expectations in the REM and BEM Sectors.

b. Enhancing Customer Participation in Conservation Efforts

Building on past years' achievements in encouraging customer participation, Energy Efficiency program staff consistently demonstrated their commitment to exceeding customer expectations of their programs throughout 2017. PSE continued to engage customers with innovative and expanded outreach campaigns, reaching customers in their communities, at sporting events, energy fairs, trade shows, and in their businesses.

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[3] One notable exception is the Residential Web-Enabled Thermostat program. PSE discusses the drivers of this program's variances in Chapter 5: Residential Energy Management Program Details.

[4] Invoices from a specific vendor that provides three reporting services were inadvertently mis-assigned to incorrect order numbers. PSE paid the full totals owed to the vendor in a timely fashion, however.

Pop-up events increased from 85 in 2016 to 93 in 2017, with an estimated 100,000 customers being made aware of Energy Efficiency programs. The Energy Efficient Communities team conducted six Small Business Direct Install blitzes, serving more than 325 small business customers. Energy Efficiency's award-winning Energy Upgrades campaign resulted in over 42,000 door knocks in over 11 PSE communities, and almost 1,300 prizes and 2,000 golden tickets distributed in Spanish-speaking community events.

The Cross-Sell campaign, which targets both Direct to Consumer and Dealer Channel customers, distributed 5.3 million emails to customers—an increase of 200,000 from 2016. PSE continued its initiatives to encourage multifamily tenant participation by awarding building owner/developer "Strive for Five" plaques, and participating in energy fairs.

Energy Efficiency's initiatives also resulted in a sizeable increase in customer awareness in retail locations. Program staff conducted an extensive and comprehensive effort to ensure retailers provide customers plenty of PSE energy-efficiency information, with over 3,900 field visits to over 400 stores in 2017.

PSE's digital media initiatives included award-winning television advertisements, featuring "Nita" and "Sanjay" and "Debbie" and "Sally". The ads received more than 28 million impressions. PSE also expanded its Energy Efficiency Awareness Tools, reaching between 200,000 and 375,000 customers through direct mail and email. The tools delivers energy-efficiency email messaging to customers when they are most likely to be thinking about their energy use. PSE's "Savings & Energy Center" web presence also provides a strong customer engagement.

Another focus for making engagement in Energy Efficiency's offerings easier for customers are its continuous adaptation of its services and programs. Initiatives included an emphasis on its Contractor Alliance Network (CAN), consisting of 198 members, and RCM trainings, which included thee in-person and five webinar-based sessions. ShopPSE, Energy Efficiency's E-commerce website also provided customers with easily-accessible services.

PSE also continued its efforts to reach its English-as-a-second-language and low-income customers, and expanded its points of engagement with its agricultural, small-to-medium lodging, and commercial kitchen customers. These, and other initiatives to target the hard-to-reach and proportionately underserved segments are discussed in Chapters 3, 4, and 6.

c. Adaptation Through Continuous Improvement

Energy Efficiency program staff continued their ongoing work to enhance processes and program offerings—especially those affecting PSE customers—through its consistent application of continuous improvement principles. The men and women of Energy Efficiency focused on removing barriers to effectiveness, improving productivity, optimizing their measure offerings, and creating experiences that enrich customers' lives.

Through its commitment to adaptively managing its business, PSE continued its progression toward operational excellence. The following list highlights some key improvements and adaptation Energy Efficiency implemented. In 2017, program staff:

- Implemented DSMc's Public User Interface (PUI), which allows customers to submit and track their rebate application status online;
- Employed Net Metering's online interconnection tool, PowerClerk®, to serve all 6,000 of PSE's net metered customers;
- Developed a Market Research dashboard that provides program staff with standardized satisfaction and performance indicators;
- Improved retail in-store customer awareness by engaging customers in shopping aisles as they're making energy-efficiency purchasing decisions;
- Enhanced Energy Management Engineer (EME) New Construction program guidelines, that clearly document processes, incentive structures, and lessons learned;
- Created an easier-to-use New Construction Lighting Power Density (LPD) worksheet;
- Completed simplified and streamlined rebate application forms.

d. Notable Energy Efficiency Accomplishments

Highlights of notable 2017 accomplishments, detailed in the following program-specific discussions include:

- Energy Efficiency completed the implementation of DSMc, which program staff used to manage over 200,000 projects across 32 programs; (page 196)
- PSE's two new energy-efficiency television advertisements received three prestigious industry and professional awards for excellence; (page 191)

- Business Rebates program staff implemented a performance-based contractor compensation methodology, which incents maximized savings per project; (page 139)
- The average size of projects for business lighting grants increased 15 percent from 2016, to almost 75,000 kWh per project; (page 111)
- As measured at the program level, the electric Direct Benefit to Customer (DBtC) ratio was an impressive 79 percent. The natural gas DBtC ratio was also strong: 68 percent; (page 25)
- PSE's Energy Efficient Communities team delivered 8 multifamily energy fairs, 6 Small Business Direct Install blitzes, and achieved a sign-up rate of over 40 percent in its Home Energy Assessment blitzes in 11 communities. (page 200)

Provided as a courtesy to readers to make referencing more straightforward, page numbers in parentheses indicate the location of the more detailed accomplishment discussion in the specific program overview.

2) Compliance

By the end of 2017, the Company had completed all 2016-2017 compliance requirements.[5] In each biennium, the majority of requirements are considered completed concurrent with the filing of the following biennium's Conservation Plan. Exhibit 9: *Requirement Compliance Checklist* provides specific condition compliance status, and Chapter 14, *Compliance* includes additional compliance discussions.

The below list outlines the primary conservation-related requirement documents that govern Energy Efficiency's operations:

A. RCW 19.285 and WAC 480-109;
B. Exhibit F, the 2002 Stipulation Agreement, Docket UG-011571;[6]
C. The 2010 Electric Settlement Agreement, Docket UE-100177; and
D. Order 01, Attachment A of Dockets UE-152058 and UG-158075.

[5] Notable exceptions are only those 11 that have a deliverable date of 2018; particularly those related to the reporting and Commission review of PSE's 2016-2017 conservation achievements.

[6] The electric Stipulation Agreement, Docket UE-011570, was vacated by Order 05 in Docket UE-100177.

3) Report Organization

In Chapter 2: *Introduction*, Energy Efficiency provides expanded discussions of overall 2017 accomplishments, key drivers, cost-effectiveness, and PSE's progress toward its 2016-2017 goals. Sector-level overview tables provide a brief snapshot of each Sector's results.[7]

Chapter 3: *Energy Efficiency's Key 2017 Initiatives* delves more deeply into the department's important areas of focus that while not program-specific, impact the majority of its operations.

The subsequent chapters provide program-detail discussions. These are Residential, Business, Regional, Measurement & Verification, Portfolio Support, Research & Compliance, and Other Electric Programs. Each provides a business-unit and program-level reviews of adaptive steps implemented, and achievements reached in 2017. PSE provides a brief, introductory overview for each.

PSE presents Exhibits 1 through 10 and their associated Supplements, listed on page vii of this Report, at the conclusion of the Report. These contain a significant amount of additional Energy Efficiency detail. Consistent with WAC 480-109-120(3)(v), Exhibit 5, Supplement 1 provides copies of all 2017 evaluation studies conducted in 2017.

[7] The order of these discussions correspond with Sector headings outlined in Exhibit 1: *Savings and Budgets.*

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II. INTRODUCTION

The discussions in Chapter 2 provide Portfolio highlights of key performance areas for the Energy Efficiency Sectors: savings and expenditures; 2016-2017 biennial progress; five-year trends; cost-effectiveness ratios; Direct Benefit to Customer (DBtC) results; measure counts overview; memberships and sponsorships; and compliance.

A. Key Portfolio Results

PSE maximized electric and natural gas conservation savings while prudently and effectively putting its customers' Conservation Rider funding to work in 2017. Table II-1 provides Sector-level views of 2017 electric and natural gas savings results.

Table II-1: Energy Efficiency 2017 Savings Results by Sector

2017	Residential	Business	Pilots	Regional	Total
Electric (MWh)	125,500	171,900	5,300	15,600	318,300
Goal	120,800	166,800	5,300	17,100	310,000
Percent	103.9%	103.1%	100.0%	91.2%	102.7%
Natural Gas (Therm)	1,832,000	1,465,000	317,000	na	3,614,000
Goal	1,559,000	1,652,000	317,000		3,528,000
Percent	117.5%	88.7%	100.0%		102.4%

In 2017, Energy Efficiency achieved Portfolio electric savings of 318,300 MegaWatt-hours (MWh), versus a goal of 309,900 MWh, and natural gas savings of 3.614 million therms, as compared to a goal of 3.527 million therms. Portfolio electric expenses were $101.01 million, versus a budget of $103.45 million. Natural gas expenses were $14.72 million, as compared to a budget of $14.69 million.

PSE presents electric and natural gas expenditures figures for each Sector in Table II-2.

Table II-2: Energy Efficiency 2017 Expenditures by Sector

2017	Residential	Business	Pilots	Regional	Portfolio Support	Research & Compliance	Other Electric	Total
Electric	$42,659,000	$40,428,000	$2,169,000	$4,033,000	$5,816,000	$4,108,000	$1,792,000	$101,005,000
Budget	$43,032,000	$42,546,000	$978,000	$5,200,000	$6,471,000	$3,657,000	$1,567,800	$103,451,800
Percent	99.1%	95.0%	221.8%	77.6%	89.9%	112.3%	114.3%	97.6%
Natural Gas	$8,048,000	$2,950,000	$404,000	$1,749,000	$795,300	$775,200	na	$14,721,500
Budget	$6,831,000	$4,775,000	$190,000	$1,389,000	$921,600	$580,000		$14,686,600
Percent	117.8%	61.8%	212.6%	125.9%	86.3%	133.7%		100.2%

Overall total amounts may vary from those presented in Table I-1 and Exhibit 1 due to multiple rounding.

1) Conservation Savings

Each Energy Efficiency Sector achieved strong results, exceeding their savings goals for electric and most natural gas portfolios. Savings achievements reflect PSE's commitment and diligence in delivering quality energy-efficiency programs that provide customers with participation options and are easy for customers to engage in. These efforts yielded notable conservation savings and are illustrative of the forward-thinking adaptive management steps program staff developed in 2017.

The overall Portfolio achievement of 103 percent of its 2017 electric target and 102 percent of its natural gas target is noteworthy, considering challenges that program staff encounter each year, such as ever-increasing marketplace barriers, increasing efficiency code standards, regulatory requirements, and the consistent reduction of prescriptive savings value.

a. Key Drivers of Electric Savings

All Residential Energy Management (REM) electric programs exceeded, or achieved near-goal electric savings results, as did Business Energy Management's (BEM's) Commercial/Industrial (C/I) Retrofit, C/I New Construction, and Lighting To Go programs, with Small Business and Agriculture Direct Install program finishing the year near their savings goals.

In the following sections, Energy Efficiency discusses highlights of several drivers to achieving 318,300 MWh versus a 2017 goal of 309,900 MWh.

i. Contributors to Surpassing Electric Savings Goals

As discussed in the program-specific chapters to follow, one of the key drivers of Energy Efficiency's positive results include the rapid evolution of LED technology and reduced costs. LED multipacks continued to be popular, and the retail price of LEDs was low enough to encourage customer adoption. PSE attributes sustained customer demand to its effective focus on retail store awareness training. Additionally, PSE offered LED T8 shop lights, LED T8 retrofits, and LED string lights as eligible measures after success trial runs in 2016.

New technologies, such as web-enabled thermostats, saw a remarkable customer adoption in 2017, and the multifamily air sealing measure was also a standout, generating growing interest from regional utility stakeholders. PSE also adaptively managed its suite of measures, recognizing the need to retire the refrigerator replacement program and incentives for CFLs.

Staff adapted their suite of measure offerings to provide expanded services to customers, and staff proactively adjusted certain incentives to ensure optimal customer participation. Other examples include co-pay options for LED fixtures[8] in the Direct Install programs, and the development of a performance-based incentive structure for Direct-Install contractors.

As part of its outreach efforts, PSE added a number of community "blitzes" and focused on combining geographically nearby communities. They also incorporated more rural and English-as-a-second-language customers, which resulted in additional savings opportunities. Customer-centric campaigns, made significant contributions to making engaging with Energy Efficiency programs easy for customers. Each targeted different customer constituencies, and included the Energy Upgrades, the Cross-Sell, Energy Efficiency Awareness Tools, and pop-up events. Energy Efficiency's ShopPSE online store had more than 60,000 customer visits, producing 4,000 measure orders.

[8] Although LED lamps can be cost-effectively installed at no cost to eligible customers, LED fixtures require more labor and have higher product costs.

Several programs worked with their contractor and Contractor Alliance Network (CAN) members, other utilities, and trade allies to maximize savings in key market segments, such as customers who are tenants rather than property owners, manufactured and mobile-home residents, and low-to-medium income customers. These engagements resulted in earlier involvement in new construction projects, a higher degree of collaboration, and enhanced expectations for savings delivery.

Program staff pursued initiatives that are innovative and are considered analogous to pilots. These include, but are not limited to, Multifamily Retrofit's expansion of the Strategic Energy Management (SEM) approach and the installation of 1,400 line-voltage thermostats in 25 multifamily buildings. Multifamily Retrofit also piloted a bundled appliance recycling concept, and the Direct To Consumer Channel piloted a shower kit in partnership with Watersense®.

The Industrial Systems Optimization Program (ISOP) also piloted an SEM (Strategic Energy Management, first pursued by the Resource Conservation Management program) approach in four customer sites, and Commercial/Industrial New Construction program piloted a project early-design service, which facilitated design charrettes and "shoe-box" modeling. Another high-profile pilot, Urban Smart Bellevue, tested the concept of blending two of Energy Efficiency's most successful programs: RCM and Small Business Direct Install, while the Lodging Direct Install program blended the custom grant with prescriptive rebates approach to offer that customer segment more comprehensive rebates.

New Construction projects—both in the Multifamily and Commercial/Industrial segments—impacted Energy Efficiency savings. BEM continued to see an expansion in new construction projects throughout the region. 2017 savings were positively affected by projects expected to be completed in 2016, and conversely, projects that had an expected 2017 completion date, but were delayed for a variety of reasons. Lower-cost LEDs contributed to small business grants in both Business Lighting and New Construction increasing in 2017, while street lighting projects continued their robust performance.

ii. Contributors to Lower-Than Expected Savings Goals

While the majority of Residential programs and key Business programs completed 2017 with savings that exceeded goals, lower-than-expected savings in a limited number of programs often resulted from the continuous reduction of UES values.

Market saturation was another contributor in some sectors: retail clothes washers advanced power strips, and the Home Appliance replacement and decommissioning measures, for instance. Stringent new construction codes affected the Residential and Commercial New Construction programs, and evaluation study results impacted measures such as advanced power strips, where two programs stopped rebates for that measure.

The Urban Smart Bellevue savings fell short of the original savings goal, and the number of completed projects in the Large Power User/Self-Directed program was lower than planned. Direct Install programs were impacted by the limited number of lighting technician resources and HVAC contractor participation.

b. Key Drivers of Natural Gas Savings

Commensurate with program staff's active and adaptive management of their suite of electric measures, they exercised great care to ensure that natural gas incentives were proactively managed, contractors and trade allies remained closely engaged, and measure offerings were adjusted to compensate for market conditions (for instance, in residential ductless heat pumps). Staff's performance resulted in the overall natural gas portfolio exceeding its 2017 goal by 2 percent: 3.614 million therms, as compared to a goal of 3.527 million therms.

i. Contributors to Surpassing Savings Goals

REM's Multifamily New Construction finished 2017 more than 150 percent above its natural gas savings goal as a result of projects that were originally slated for completion in 2016. As discussed in the above Residential electric savings drivers, customer acceptance of web-enabled thermostats controlling natural gas equipment far surpassed staff expectations. Completing 2017 at 40 percent above its natural gas savings goal, the Low Income Weatherization (LIW) program collaborated with a low-income agency that brought a substantial savings opportunity for furnace measures in a multifamily project in the fourth quarter of 2017. Program staff also hypothesize that low-income agency management stability[9] contributed to additional natural gas savings.

[9] In 2016, some low-income agencies experienced management turnover.

C/I Retrofit attributes much of its natural gas savings results (46 percent above goal) to HVAC controls projects. And RCM's O&M and behavior-based improvements also resulted in reduced use of natural gas. This result, along with program incentives designed to recognize savings persistence, contributed to a higher-than-expected program therm savings.

Marketing, outreach initiatives, and social media campaigns that generated increased customer awareness also contributed to several programs' success, including the Direct To Consumer Showerheads program and the LIW program. A 2017 campaign promoting PSE Assistance programs reached approximately 63,000 people, with a higher-than-average number of them taking follow-up action.

ii. Contributors to Lower-Than-Planned Natural Gas Savings Goals

In Energy Efficiency's Multifamily sector, it has become increasingly difficult to offer comprehensive natural gas measures, as there are fewer multifamily structures that have not already participated in the program, and there are limited opportunities for natural gas space and water heating measures. Additionally, similar to C/I Retrofit and New Construction programs, the Multifamily Retrofit program is subject to potential construction delays. One such delay represented approximately 25 percent of the program's 2017 natural gas savings plan. As a result, the Multifamily Retrofit program finished 2017 at less than 50 percent of its natural gas savings goal.

Construction project schedules also can have a substantial impact on New Construction program results. This was the case for C/I New Construction, which in 2017, a single large project was delayed into 2018, resulting in an approximate 90 percent shortfall. The Home Appliances natural gas savings was affected by reduced demand for consumer clothes washer replacement and their associated leave-behind kits.

Fluctuating market conditions and the high cost of equipment negatively impacted the Commercial Kitchen & Laundry's natural gas savings results. The Lodging Direct Install program was particularly affected by the UES value reduction on aerators, which had previously comprised a large proportion of its natural gas savings. The Direct Install programs are also challenged by natural gas prescriptive measures that aren't available for direct installation.

2) Expenditures

The majority of Energy Efficiency programs finished the year consistent with anticipated spending, achieving an overall Portfolio electric result of 2 percent lower than anticipated spending levels, while natural gas spending met planned expenditures for 2017. There were few notable variances in any particular expense category, reflecting the exceptional precision with which Energy Efficiency staff manage their programs to ensure the prudent use of PSE customer funds.

Expenditures in savings-generating programs in REM and BEM were, to a large degree, proportionate with their electric and natural gas savings. Actual expenditures in other Sectors finished the year well within expected parameters. PSE discusses notable key expenditure drivers in the following sections.

Exhibit 1, Supplement 1: *2017 Actual Expenditures Compared to Anticipated Spends* provides a comprehensive review of program budgets compared to actual expenditures. Readers will note some apparent variances in budget categories, such as Labor, Outside Services, Direct Benefit to Customer (DBtC), etc. It is important to note that despite these specific apparent variances—PSE discusses highlights of notable instances in the following paragraphs—Energy Efficiency staff effectively managed all programs and support functional costs, completing 2017 at or below the department's electric and natural gas anticipated spending levels.

a. Key Drivers of Electric Expenditures

In considering Energy Efficiency's electric spending of $101.01 million against a budget of $103.45 million, there were very few substantial electric expenditure variances. In REM, several programs exceeded their Direct Benefit to Customer (DBtC) anticipated spending while finishing the year at or below their overall budget. With the exception of Single Family New Construction, all REM programs' labor costs were well below the 2017 Plan, attributable to some staffing positions remaining unfilled for a part of the year.

In BEM, labor costs were more in line with expectations, although Marketing costs were noticeably below 2017 projections. A key driver was that there were minimal changes to BEM's programs in 2017; program brochures were reused from 2016 and there were minimal website changes required. Additionally, some marketing budget was allocated to produce table displays and banners for events, but this budget was not utilized in 2017.

BEM's Direct Install programs continued to evaluate more comprehensive strategies for reaching small-to-medium business, and therefore, minimized development of new marketing materials and outreach methods until that work is completed.

Program and Portfolio Support staff actively managed ancillary costs, including Employee Expenses, Materials, and Miscellaneous categories, which ended 2017 below their planned spending. The majority of Outside Services costs were below their anticipated spending levels; the majority of lower-than-planned spending instances were the result of program staff management efficiencies. Some notable Outside Services apparent variances that readers may also note are in the following programs:

- Northwest Energy Efficiency Alliance (NEEA), which was caused by invoice coding, where certain NEEA invoices mis-assigned the Outside Services and DBtC cost elements.
- The Residential Energy Report Expansion Pilot, which finished the year approximately $1 million over its anticipated spend. This was due to a mix-up between Home Energy Reports, Individual Energy Reports pilot, and Customer Awareness Tools' invoice payment accounting. Although the three programs' expenditures were assigned to incorrect order numbers, PSE facilitated the overall payments to the single vendor supplying those services correctly and in a timely fashion.
- Data & Systems Services, which managed the complete implementation of the DSMc reporting system, incurred higher-than-anticipated implementation costs.

One notable driver of REM expenditures was its Web-Enabled Thermostat program, which exceeded its spending target by 200 percent. This was due to a higher incentive payment[10] to customers during Energy Efficiency's "Energy Upgrades" campaign. Key variances in the BEM program spending include the Commercial/Industrial (C/I) New Construction program's expenses that were 90 percent higher than planned. It is important to note that C/I New Construction also finished 2017 more than 140 percent above its savings goal, while providing more than twice the planned DBtC. The Lighting To Go (Business Lighting Markdowns) also provided strong results, with additional savings driving commensurate costs.

[10] The bulk of the expenditure variance is in the DBtC budget category.

The Agriculture and Lodging Direct Install programs finished the year noticeably below their anticipated spending amounts. Key to this result was PSE's transition to a performance-based vendor payment system, in which PSE paid vendors based on savings that were achieved. The Large Power User/Self-Directed program was well below its planned expenditures, which was the result of lower-than-anticipated project completion. The costs of new efficient equipment in the Commercial Kitchen program continues to impact savings (and thus, the program's resultant costs), and contractor engagement issues led to the Commercial HVAC program falling short of its 2017 electric budget.

The majority of Portfolio Support and Research & Compliance organizations completed 2017 below their anticipated spending amounts. Exceptions include Data and Systems Services (Reviewed in the Outside Services discussion above) and the Contractor Alliance Network (CAN), which collected less-than-expected revenue, and had much lower operating expenses, resulting in the program finishing 2017 with a revenue balance that was ten-fold the expected amount.

Other notable variances were in the Program Evaluation and Conservation Supply Curves organizations. The latter incurred a higher-than-expected Outside Services charge for work performed by the consultant in 2016 that was not invoiced to PSE until 2017. Another relatively sizeable charge was attributable to the Net Metering program. Distribution system charges (associated with net metered customers' use of PSE's infrastructure, as outlined in the Commission's Accounting Order in Docket UE-990016) are entered as Miscellaneous charges.

b. Key Drivers of Natural Gas Expenditures

Energy Efficiency finished the year meeting its anticipated expenditures while achieving savings that were 2 percent above goal: actual 2017 natural gas expenses of $14.72 million, versus a budget of $14.69 million.

As was the case in REM's electric suite of programs, the Web-Enabled Thermostat program saw a dramatic customer uptake, with the program's DBtC exceeding the 2017 plan by almost $900,000. Several other REM programs exceeded their original DBtC forecasts, including Multifamily New Construction, which also completed the year with a three-fold DBtC increase over plan. As they did in REM's electric suite, program staff demonstrated skill in prudently managing ratepayer funds by controlling Employee Expense, Outside Services, Materials, and Miscellaneous charges.

Only three programs: Low Income Weatherization (LIW); Web-Enabled Thermostats; and Multifamily New Construction finished 2017 at more than 30 percent above anticipated spending.

It is particularly noteworthy that LIW's incurred expenses were proportionately matched by its achieved savings, as was Multifamily New Construction's. Similar to commercial new construction projects, there were some Multifamily New Construction projects that missed their 2016 completion target, thus impacting the 2017 spending and savings figures.

In the BEM suite of programs, the C/I New Construction natural gas program missed its anticipated spending figure by approximately 60 percent, primarily due to the new construction scheduling issues that also affect the Residential Multifamily programs. Most of the Business Rebates programs (Commercial Kitchen & Laundry, Commercial HVAC, and the Direct Install programs) fell short of their spending plans. Agriculture and Lodging Direct Installs in particular were over 90 percent below their anticipated spends (with a corresponding shortfall of natural gas savings, as compared to plan).

The Residential Energy Report Expansion Pilot's overall spending was quite a bit higher than planned. This was the result of the incorrect assignment of invoices to the correct order numbers, discussed in the electric expenditures section above.[11] And, similar to the electric NEEA program, invoice and payment cycles led to an expenditure variance in its Natural Gas Market Transformation expenditures as well.

The majority of Portfolio Support programs finished 2017 well within their spending plans, with Data and Systems Services slighting exceeding its budget, due to the final DSMc implementation effort. Outside Services costs in Conservation Supply Curves and Program Evaluation caused the Research & Compliance Sector to end 2017 slightly over budget. And, as was the case on the electric side, the Contractor Alliance Network's (CAN's) careful cost management offset a shortfall of planned revenue, resulting in the program completing the year with a ten-fold increase in revenue balance.

[11] It is essential to emphasize that all invoices were correctly paid in a timely fashion. The mis-assignments of order numbers did not result in any over-payments or over-spending.

c. Revenue Balances

It is notable that some programs other than CAN finished 2017 with a revenue balance:[12] LIW (electric) and C/I Retrofit (natural gas). In LIW, an revenue balance occurred when a low-income agency reimbursed PSE for a project overpayment. In the C/I Retrofit natural gas program, a large revenue balance resulted from a customers' repayment of pro-rated custom grant.[13] These revenue balances help to offset conservation expenditures, and are listed in Exhibit 1, Supplement 1: *Actual Expenditures Compared to Anticipated Spends.*

3) 2017-2017 Biennial Target Progress

Table I-1 in Chapter 1: *Executive Summary* presents the 2017-specific overall Portfolio electric savings achievement-versus-goal (318,316 MWh vs 309,934 MWh) and natural gas savings (3,613,600 million therms vs 3,527,458 million therms) figures.

Table II-3 provides a preliminary 2016-2017 Portfolio view of PSE's key electric and natural gas savings and expenditure performance. It is important to note that the electric savings figures do not represent: final NEEA-reported savings; any Biennial Electric Conservation Achievement Review (BECAR) potential adjustment; or verified and updated Home Energy Report (HER) 2017 savings.

Table II-3: 2016-2017 Biennial Progress

	Electric			Natural Gas		
PTD	**MWh Savings Actuals:**		**632,842**	**Therms Savings Actuals:**		**8,093,741**
	MWh Savings Target:		*605,194*	*Therms Savings Target:*		*7,426,495*
	% of Savings Target:		*105%*	*% of Savings Target:*		109%
	Actual PTD Spending:	**$**	**201,939,446**	**Actual PTD Spending:**	**$**	**28,365,488**
	EOP Budget:	*$*	*198,984,817*	*EOP Budget:*	$	29,481,162
	% of EOP Budget:		*101%*	*% of EOP Budget:*		96%

*Gas Actual Spending excludes BTL

PTD = (Biennial) Period-to-Date
EOP = (Biennial) End-of-Period

2016-2017 Targets and Budgets reflect filed Exhibit 1 in UE-152058.

[12] A revenue balance is indicated in Exhibit 1, Supplement 1 as a negative value, since all other noted figures indicate expenses.

[13] Per Schedule 183, when a customer switches from a PSE natural gas rate Schedule to a transportation Schedule after receiving a custom grant, they must repay the portion of the grant that corresponds to the remaining measure lives of those noted in the grant.

PSE will present the final 2016-2017 electric savings and expenditure figures in its Biennial Electric Conservation Report, which will be filed in Docket UE-152058 on or before June 1, 2018, consistent with WAC 480-109-120(4).

4) Five–Year Trends

As represented in Figure II-1, the Portfolio's electric savings have decreased an overall 13 percent from 2013 to 2017. However, 2017 continued the savings movement of the previous year, with electric savings increasing 1 percent from 2016. The electric expenses increased an overall 2 percent from 2013 to 2017, with a 2017 increase of less than 1 percent from 2016 expenditures. This trend reflects conditions indicated in the Conservation Potential Assessments (CPAs) in the most recent of PSE's IRP, including but not limited to: the market saturation of several key measures; annual revisions to measure UES values; updated energy codes; increasing costs associated with data management and reporting requirements; and evolving customer demand. These and other ancillary contributors drive increased costs to acquire savings.

Figure II-1: Energy Efficiency Electric Programs; Savings and Expenditures – Five-Year Trends

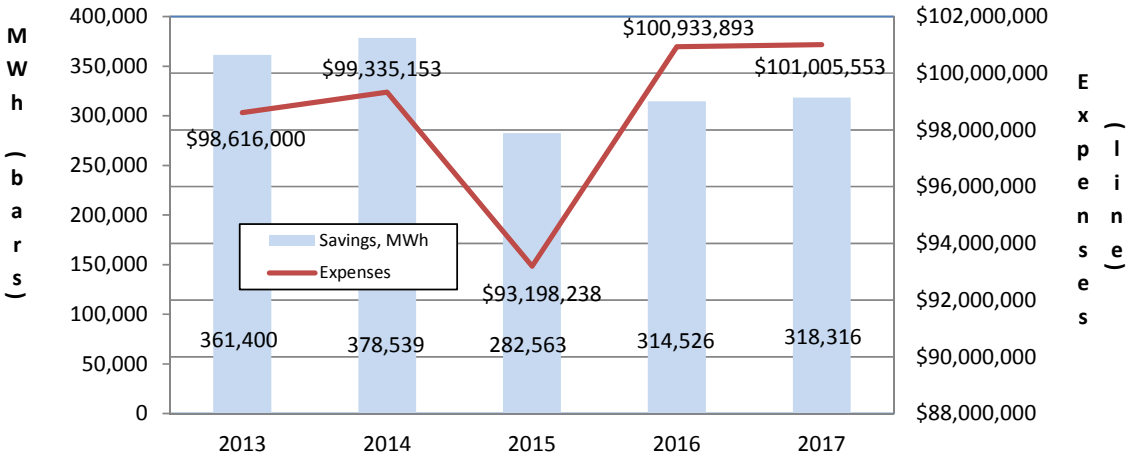
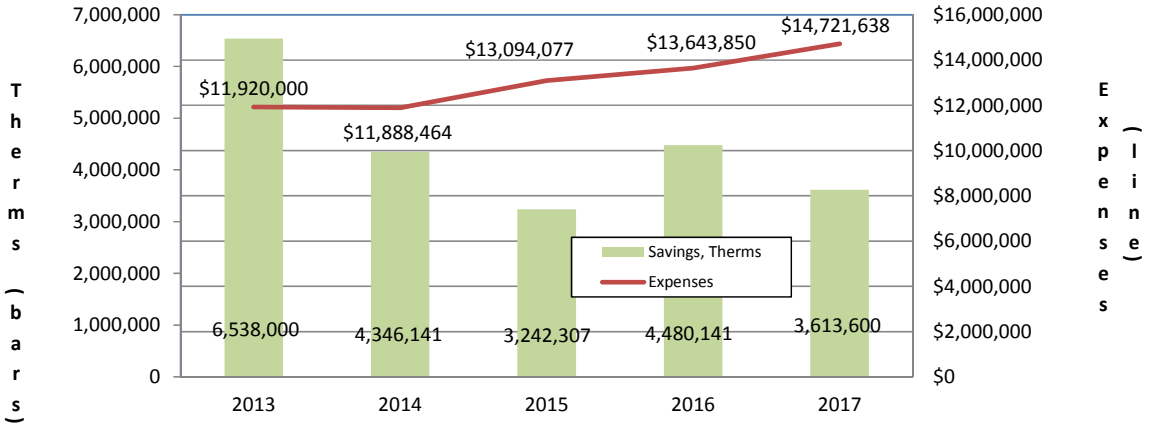


Figure II-2 shows that natural gas savings have decreased an overall 11 percent from 2013 to 2017. 2017 natural gas savings were 19 percent lower than 2016. The natural gas expenses for the 5-year timeframe have increased 19 percent from 2013 to 2017, while natural gas expenses increased 8 percent from 2016 to 2017.

These figures reflect the significant impact of lower natural gas avoided costs and consolidation over time of higher-cost measures within Energy Efficiency programs: more high-cost measure make up a larger proportion of the overall Portfolio.

Figure II-2: Energy Efficiency Natural Gas Programs: Savings and Expenditures - Five-Year Trends



5) Cost-Effectiveness Ratios

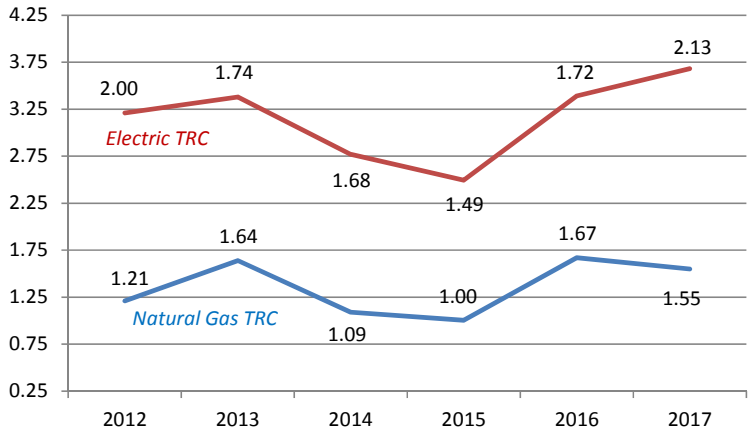
Table II-4 provides the Portfolio view of the Total Resource Cost (TRC) and Utility Cost (UC) Benefit to Cost (B/C) results for 2017.

Table II-4: 2017 Energy Efficiency Cost-Effectiveness Ratios

Benefit to Cost Ratios Portfolio		
	Utility Cost	**Total Resource Cost**
Electric	2.70	2.13
Gas	1.71	1.55

Figure II-3 represents PSE's five-year Portfolio TRC results. All TRC figures are indicated with a 10 percent conservation credit adder included.

Figure II-3: Energy Efficiency Five-Year TRC Trend



Although such an adder is not a generally-accepted attribute of natural gas cost-effectiveness, some type of a conservation credit or risk adder was discussed between 2012 and 2013,[14] when the UTC conducted workshops to develop their Policy on natural gas programs' cost-effectiveness analyses. Intended merely as a comparison to a TRC value without any conservation credit, PSE has also included this figure in past Conservation Plans and Reports.

a. Portfolio Results

The electric Portfolio's TRC B/C ratio was 2.13, and its natural gas TRC B/C ratio was 1.55. The Energy Efficiency Portfolio finished 2017 with an overall electric UC B/C ratio of 2.70, and a natural gas UC of 1.71.

[14] ¶ 29, page 12 of Docket No. UG-121207, Policy Statement on the Evaluation of the Cost-Effectiveness of Natural Gas Conservation Programs: *"(…) Stakeholders discussed the use of an across-the-board adder to the quantified benefits of conservation activities. (…)"*

6) Direct Benefit to Customer as a Percent of Energy Efficiency Expenditures

In Exhibit 1, Supplement 1: *Actual Expenditures Compared to Budgets*, PSE indicates incentives paid to customers in the Direct Benefit to Customer (DBtC) category. Customers also directly benefit from a number of services PSE provides in addition to incentive payments. Where it is possible to clearly distinguish these functions and activities, PSE denotes these expenditures as "Direct Benefit to Customer" (DBtC). This nomenclature, established by PSE during the 2012-2013 BCP development period, is specific to PSE programs, and isn't intended to be used for comparison with other utilities. PSE maintains this metric to track the performance of its programs year-over-year.

Certain expenditures related to customer benefits that are difficult or administratively onerous to quantify are not specifically classified as "incentives," but clearly also carry an intrinsic value to the customer, beyond simply remuneration. For instance, if a customer participates in PSE's Refrigerator Decommissioning program, they derive the benefit of avoiding the need to take their old refrigerator to the transfer station—in addition to the rebate they receive.

The DBtC ratio is affected by a number of factors, including one-time expenditures, regulatory requirements, marketplace conditions, and expenses related to influencing hard-to-reach/proportionately underserved market segments. It is therefore inaccurate to conclude that the higher the DBtC ratio, the better-managed the program.

PSE discusses the theory of how it established the DBtC metric in detail in several documents, including the 2016 Annual Report of Energy Conservation Accomplishments.[15]

a. PSE's DBtC Calculation

PSE's returned 79 cents out of every dollar collected through the Conservation Rider for REM, BEM, Pilots, and Regional Programs to customers in the form of a direct benefit. This Sector-Level DBtC (comparing the DBtC of the savings-generating Sectors that provide customer incentives to the expenditures of those same Sectors) of 79 percent is notable.

[15] Filed into Docket UE-152058 on March 31, 2017.

Similarly, the Sector-level natural gas DBtC—using the same calculation methodology—was 68 percent.[16] These figures are impressive, and reflect program staff's substantial efforts to continuously improve business operations, maximize value for PSE customers, and drive customer participation.

The Portfolio-Level DBtC is one that is more subjected to single-time charges, regulatory requirements, and outside influences. In addition to savings-generating programs, this ratio accounts for programs and functions in the Portfolio Support and Research & Compliance Sectors. This ratio excludes Other Electric Programs. Many of these functions contribute some level of DBtC, however intrinsic their value.

Using this method reveals DBtC ratios that are, in spite of mitigating factors, noteworthy: the overall electric Portfolio DBtC was 70 percent in 2017, while the overall natural gas Portfolio DBtC was 61 percent.[17]

Readers will also note there is a wide range of DBtC among the programs when reviewing the budget-versus-actual expenditures listed in Exhibit 1 Supplement 1: some programs operate with a DBtC ratio of well over 100 percent, while others operate with a ratio or 90 to 35 percent.

b. Proactive and Consistent Program Management

PSE accomplished this sustained level of DBtC through its continued focus on process maximization, and careful attention to continuous improvement and customer satisfaction throughout the organization, as discussed in the program-specific following chapters. In order to sustain this consistent level of DBtC year after year, significant effort is required on the part of every Energy Efficiency staff member to balance customer expectations with prudently and effectively applying Rider funding.

[16] If PSE discounted the $1.75 million expended on the NEEA natural gas collaborative, which resulted in no natural gas savings, the *Sector-level* ratio would have been 78 percent.

[17] Energy Efficiency's natural gas *Portfolio-level ratio* would finish 2017 with an overall DBtC of 69 percent by excluding the NEEA natural gas collaborative expenses.

In 2017, program staff cost-effectively:

- Managed increasingly complex programs, often consisting of hundreds of measures;
- Developed Conservation Plans one or more years in advance;
- Created and maintained extensive measure research and documentation;
- Responded to third party and evaluation data requests;
- Met evolving regulatory requirements; and
- Reviewed and validated third-party reporting.

7) Measures

Energy Efficiency discusses its Measure Metrics archival system in Chapter 10: *Measurement & Verification*, starting on page 163. Exhibit 5 presents prescriptive measures[18] that Energy Efficiency programs used in 2017.

a. Measure Counts by Program

Exhibit 1, Supplement 4: *Portfolio Measure Category Counts* provides a condensed view of measure counts; typically, only one or two key measures per program. This Supplement is intended to provide a high-level impression of measures that were key in driving Energy Efficiency savings accomplishments.

PSE includes more expanded, program-specific measure overview tables in each program discussion, and provide more refined views—albeit general summarizations—of a program's projects or measure installations. Program measure tables aren't comprehensive lists of measures installed, and are not intended to be used as audit tools or to reconcile actual tracking records. It is important to note that PSE provides these high-level figures to afford a sense of program scale, customer demand, key savings contributors, and interesting measure types in each program.

[18] Only measures that were originally included in the Source of Savings database at the time of the measure's creation, or measures that have a deemed savings value are archived. For instance, LED Candelabra lamps in the Low Income Weatherization program. Their 2017 deemed value was a fixed kWh/yr. In commercial applications, though, that value is modified by the number of operating hours within a certain building. Those measures are therefore classified as "calculated". 2017 is the first year that Exhibit 5 was produced from an extract from DSMc.

8) Memberships and Sponsorships

Energy Efficiency staff derives value for customers by engaging in memberships and sponsorships. For instance, PSE is a major funder of the Regional Technical Forum (RTF). Exhibit 1, Supplement 3: *Sponsorships and Memberships* lists those paid in 2017.

9) Compliance

Chapter 14: *Compliance*, provides a complete discussion of Energy Efficiency regulatory compliance, beginning on page 229. This 2017 PSE Annual Report of Conservation Accomplishments is consistent with WAC 480-109-120(3). The Report will also reflect PSE's compliance with requirements outlined in WAC 480-109-100(1): Process for pursuing all conservation [sic].

It is noteworthy that in the interest of brevity and to avoid repetition, PSE will use the terms "condition (N)(x)" or "Section M(z)" when referencing deliverables outlined in Exhibit F to Stipulation Agreement, Docket UG-011571,[19] the 2010 Electric Settlement Terms, Docket UE-100177,[20] and Order 01 of Docket UE-152058.

In addition to these three requirement documents, PSE also addresses additional deliverables outlined in other pertinent documents in applicable sections of the Report.

[19] Commission Order 05 in Docket UE-100177 vacated specific electric deliverables outlined in Docket No. UE-011570.

[20] Within the 2010 Electric Settlement Terms, "Conditions" apply specifically to Section K. There are also specific PSE deliverables in applicable sections of the Settlement Terms.

III. ENERGY EFFICIENCY'S KEY 2017 INITIATIVES

Clearly, Energy Efficiency's ultimate year-end objective was to achieve its 2017 conservation savings targets while prudently managing customer Rider funding. Program staff focused on adaptively managing against plans put in place in 2015 and 2016 they designed to complete PSE's overall 2016-2017 biennial electric and natural gas targets. PSE discusses specific program initiatives to attain those savings and financial objectives in chapters 5 through 13 of this Report.

This chapter will highlight several initiatives—not specific to any one program or Sector organization—that are critical in driving Energy Efficiency's ongoing success in the just-completed biennium and well into the future. Among those focus areas are a continuous attention to customer needs and expectations, constantly improving and adaptively managing its customer-driven business processes, completing the transition to its new project management system, DSMc, and sustaining its commitment to exceeding Regulatory Stakeholder engagement expectations.

A. Energy Efficiency's Focus on the Customer

PSE customers are the key determinant of the success of Energy Efficiency's conservation programs, and a top priority for program staff. Throughout 2017, the dedicated men and women in the department continued their long-standing commitment to maximize customer participation in PSE energy-efficiency programs while surpassing customers' expectations at each point of customer contact.

A key element of meeting customer expectations is the adaptive management of residential and business program offerings, including tailoring specific measures to customer needs, managing the scope of measure offerings, and dynamically adjusting measure incentives to motivate customer participation.

As a part of the specific program activities, customers expect PSE to provide pioneering conservation products and flexible avenues of accessing energy efficiency programs. Today's customers want fun and engaging information and outreach, easier rebate and grant processing with simple applications, and online tools that help them manage their energy use. Customers comprising hard-to-reach or proportionately underserved segments also must have access to Energy Efficiency's program offerings.

1) Maximizing the Ease of Participation for Customers

Energy Efficiency teams focused on creating programs that were easy for customer to participate in, with expanded participation options. PSE provided detailed discussions of these initiatives in the program-specific discussions in Chapters 5 through 13. PSE provides some highlights of those efforts here. Efforts to augment the ease with which customers can participate in conservation programs included broad outreach strategies and tactics, including community activities and small business blitzes, which enabled small business owners to immediately register for conservation measures.

Energy Efficiency's implementation of the Demand Side Management-central's (DSMc's) Public User Interface (PUI) was a significant factor in making participation easier and more effective for customers. PSE discusses the DSMc implementation in further detail in section III.B.2.

PSE's conducted its award-winning Energy Upgrades campaign for the fourth year, engaging almost half a million residential customers[21] The campaign was very successful and provided new participation avenues for customers. Retailer point-of-purchase rebates, and better training for PSE partners and contractors also enhanced customer participation opportunities.

Joint utility programs, exemplified by BEM's Commercial Kitchen & Laundry program's incentive process significantly improved consistency between utilities and simplified customers' incentive application process. The program's midstream aspect also provided this customer segments with instant rebates in locations where the customer is actively making a purchasing decision. PSE also maximized the impact of Contractor Alliance Network (CAN) members,[22] which also provide new customer participation avenues.

Program staff simplified Lighting Power Density (LPD) applications and the Energy Efficient Communities organization expanded their Home Energy Assessment "blitzes", where customers learned about the no-and low-cost elements of Energy Efficiency services.

[21] PSE provides a detailed discussion of the Energy Upgrades campaign on page 57.

[22] Although the number of member contractors fell slightly in 2017, the amount of customer incentives increased.

2) Expanding Energy Efficiency Awareness

Another key area of emphasis for program staff was implementing solutions to increase customer awareness of Energy Efficiency programs throughout the year. Staff employed propensity modelling, spatial analyses, customer surveys, promotions, advertising, and outreach to expand the communication and information available to customers. Program staff incorporated findings into their program services and offerings to meet evolving customer expectations in 2017. Highlights of significant Energy Efficiency awareness initiatives that are discussed in the coming chapters include:

- Now in its third year, PSE's Customer Awareness Tools provided customers with more targeted and timely seasonal energy-efficiency information and bill alerts, which are generated at times when customers tend to think most about their energy use. Eligible customers received alerts when their equipment was due for a check-up or service, when their e-bill was ready, or if there was a potential for a higher-than-usual bill. Between 200,000 to 375,000 customers received applicable notices.
- Quality Assurance (QA) verification inspectors provide customers with applicable energy-efficiency information when they're in customers' homes performing verifications.
- The Multifamily Retrofit program distributed more than 30 "Strive for Five" plaques—which are prominently displayed to maximize tenant awareness—to multifamily properties throughout the PSE service territory. The program also partners with housing authorities, property management companies, and condominium Home Owners Associations (HOAs) to maximize energy-efficiency awareness.
- The Direct to Consumer Channel expanded its "pop-up" events to eight more events than it conducted in 2016, where it is estimated that over one hundred thousand customers were made aware of energy-efficiency offerings.
- New award-winning television commercials, featuring energy-efficiency messaging from "Nita and Sanjay" and "Debbie and Sally" resulted in customers who saw the advertisements indicated that they are more likely to use PSE's energy-efficiency information and tools.

- Over the course of eight months, the Energy Upgrades campaign sent more than 270,000 direct mail and over 340,000 email offers for a free LED, there were 48 different in-store retail blitz events, and over 42,000 door knocks in more than 11 PSE communities.
- As a part of its retail store awareness efforts, PSE implemented field services in over 400 retailer locations, with approximately 3,900 store visits. These efforts provide a connection between PSE, the retailer, and the PSE customer. Program staff expanded the services to now range from lighting to thermostats.
- Energy Efficiency staff also provided program information to a variety of PSE staff in other departments that interact with customers to help them discuss Energy Efficiency programs in their own customer interactions.

3) Focus on Hard-to-Reach and Proportionately Underserved Market Segments

As indicated in The Regional Power and Conservation Planning Council's (the Council) 7th Power Plan's Chapter 4: *Model Conservation Standard (MCS)-1,* low-income customers are often classified as underserved. Other customer segments may include: moderate-income customers, rural customers, small business owners who may or may not lease their offices, multifamily tenants, manufactured home owners or tenants, and industrial customers. The Plan also says:

> "Ideally, the customers in the HTR ***[ed.- Hard To Reach]*** segment should participate in similar proportion to non-HTR customers, assuming similar savings potential."[23]

PSE also believes that there may be other potential proportionately underserved segments, including English-as-a-second-language customers, and commercial kitchen owners, for instance.[24]

Throughout 2017, Energy Efficiency staff assumed the lead role among regional utilities and the Council in driving the region's first actions associated with MCS-1: understanding and defining each of the Hard-To-Reach/Proportionately Underserved segments. Staff also provided key contributions to initiating the second step: determination of the composition of each segment in PSE's service territory.

[23] Chapter 4, page 4-10, Seventh Power Plan: https://www.nwcouncil.org/energy/powerplan/7/home/

[24] These, of course, may also be considered as sub-sets of the main eight HTR classifications.

PSE will continue to collaborate with the regional working group on the second and subsequent steps: determination of how each segment is served by Energy Efficiency; and development of plans to address any access gaps. PSE will base future actions and program design on the results of these steps.

It is important to point out that PSE has been serving the majority of these customer segments for several years prior to the Power Plan's publication of the potential HTR segments. In fact, rules and conditions have required that PSE ensure that programs are designed to reach all customer segments since 2002. Even before that, the Low Income Weatherization (LIW), has been successfully serving the low-income and low-income multifamily segments for more than two decades. Energy Efficiency program staff consistently and carefully consider the full range of their constituents when developing their residential and commercial offerings.

Quite often, a specific program addresses more than one HTR segment. For example, the Agriculture Direct Install program was designed to reach farms and other agricultural customers who operate as small businesses, may be commercial tenants, and potentially qualify as rural customers. PSE discusses how its programs served each segment in 2017 through its residential and business programs in sections III.A.3.b.i through viii on pages 35 through 39.

a. Regional Segment Data: Define→Accumulate→Analyze→Implement

In collaboration with regional utilities, BPA, the Council, and NEEA, PSE started the process of defining and measuring each of the segments. PSE analyzed the collective data, and worked with the committee partners to identify similarities and differences in population and savings potential. Concurrently, PSE's Market Research department, in concert with Energy Efficiency staff, developed methodologies to measure and report on (for each applicable segment):

- The percentage of PSE's customer population;
- The percentage of electric or natural gas usage and the segment's savings potential;
- The percentage of program participation and conservation dollars spent.

There are two important considerations in the hard-to-reach/proportionately underserved segment discussion of data analysis, relative to PSE data accumulation and analyses:

1) The Hard-To-Reach segments were still being defined throughout 2017. The 7th Power Plan also clarifies that analyses should occur ***where data are readily available***.[25]
2) The list of Hard-To-Reach segments may not be comprehensive; MSC-1 states that segments ***may*** include those indicated. An analysis of regional data may reveal that one or more of these segment already has proportional access to conservation programs.

Following the completion of the customer segmentation data analyses and Council report, Energy Efficiency will, in consultation with the Conservation Resource Advisory Group (CRAG), develop specific plans to address any potential service gaps.

b. Energy Efficiency Program Design Currently Address Many HTR Segments

While the Conservation Resource Advisory Committee (CRAC) plans were being developed, program staff continue to manage programs and strategies to engage all customer segments and encourage their participation. This is also in compliance with WAC 480-109-100(7), which states:

> "A utility must offer a mix of conservation programs to ensure it is serving each customer sector, including program targeted to the low-income subset of residential customers."

Prior to regulatory requirements and regional recommendations, PSE recognized that there was a need to focus on hard-to-reach and potentially underserved customers, and develop solutions that would help them conserve energy, saving on their energy costs. This focus has been integrated with PSE's emphasis on meeting challenging savings goals each year.

[25] Northwest Power and Conservation Council's 7th Power Plan, MCS-1, page 4-10, ¶ 2: "To accomplish this goal, Bonneville and the utilities in their overall data collection should include, to the extent it is readily available, demographic and business characteristic data that helps identify the existence of any HTR segments. […]" (emphasis added)

To ensure that its messaging reaches all of its customers and provides them opportunities, services, and measures that enable participation, Energy Efficiency utilizes a broad variety of customer survey data, spatial analyses, feedback from trade allies, historical performance, industry studies and evaluations. The following discussions of key customer segments highlight details that PSE provides in the program and organizational review chapters 5 through 13.

It is noteworthy that:

1) With the exception of Low Income Weatherization, Industrial Systems Optimization Program (ISOP), and its commercial Direct Install programs, it isn't possible for Energy Efficiency to design its programs to address specific HTR/Proportionately Underserved customer segments.

   PSE designs some programs (Home Appliances, Retail Lighting, Residential Showerheads, Commercial HVAC, for instance) on a range of efficient products that serve a broad constituency. Others, such as Commercial/Industrial Retrofit, Multifamily New Construction, Single Family Weatherization, consist of an extensive range of services that—while inclusive of potential HTR segments—are designed around structure classifications.

2) As PSE discusses in the following sections, several Portfolio Support groups play a part in bringing awareness to a range of customer segments. Energy Efficient Communities, Energy Advisors, and the Energy Efficiency Events staff are critical in conveying the availability of Energy Efficiency services across the spectrum of PSE customer segments.

3) The following discussions provide information related to Energy Efficiency's 2017 program implementation. Although program staff considered the HTR-related data as it was assembled, it would be inaccurate for readers to infer that the discussions are in response to HTR data findings. As noted earlier, Energy Efficiency has incorporated potentially hard-to-reach customer segments into its program design considerations for several years.

i. Low-Income Customers

One of PSE's predominantly visible programs is its residential Low Income Weatherization (LIW) program, which targets customers with a defined circumstance.

In order to maximize the availability of energy-efficiency measures, there are several strategies that the program employed, including but not limited to:

- Working closely with nine Puget Sound low-income agencies, throughout the PSE service territory.
- Project funding is not limited to the budgeted conservation funding for cost-effective projects.
- Conducting outreach at food banks, senior and community centers, and tribes.
- Partnering with community organizations, including presentations, workshops, and event presence.
- The LIW program funds projects that result in a programmatic TRC of 0.667, in accordance with Schedules 83 and 183.
- LIW provides funding for certain repairs needed to facilitate the installation of energy-efficiency measures.
- Identifying ways to increase program participation by privately-owned multifamily properties, as identified through the application of a PSE segmentation tool.
- Consistent with WAC 480-109-100(10), the LIW program processed electric projects submitted by agencies that passed the Savings-to Investment Ratio (SIR) of 1.0 in 2017.

PSE also offers services for customers that may be income-qualified through other Energy Efficiency programs, as discussed in the following sub-sections.

ii. Moderate-Income Customers

Another residential program that also made services available to a portion of the low-income, as well as moderate-income segment was the Multifamily Retrofit program.

Although PSE did not report this customer segment as a separate classification for 2017, many low-income and working-class customers with moderate incomes living in multifamily dwellings obtain energy-efficiency measures through the Multifamily Retrofit program, rather than the Low Income Weatherization program.

Reasons were varied and numerous, including a sometimes onerous income eligibility process needed to qualify multifamily structures, more time-consuming application processes, measure availability differences, and measure installation costs incurred by customers.

Energy Efficiency's Home Energy Assessment program was also effective in identifying and engaging this potentially hard-to-reach segment. The door-to-door approach was especially useful when staff can operate in older-home neighborhoods and military communities.

iii. Rural Customers

Energy Efficiency's Agriculture Direct Install and Small Business Direct Install programs fulfilled a need for conservation measure access in many rural communities. The Energy Efficient Communities team expanded its reach to several rural cities and towns, often combining small business, agriculture, and small lodging visit "blitzes" in 2017.

Many small-to-medium agricultural operations are often located in remote, rural locations. Unique to this customer classification is that their access to conservation program services is limited to participating between planting, growing, and harvest periods. Energy Efficiency designed its Agriculture Direct Install program to specifically address this customer segment.

The Home Energy Assessment program was another effective method of reaching this segment, and Energy Efficiency considers that its Customer Awareness Tools also communicates the conservation message well.

Additionally, as noted in other HTR segment discussions, PSE's Energy Efficient Communities team coordinated participation in energy fairs, community groups, civic clubs, retirees, colleges, and libraries, etc.

iv. Small Business Customers

Small businesses are sometimes limited in their participation in PSE's programs due to their lack of resources or their lack of building ownership; quite often, small business owners lease their offices, and may believe that they are limited to the availability of energy-efficiency measures. PSE's small business and community "blitzes" continued to expand the Energy Efficiency message, with good responses during the events.

The Energy Efficiency Communities organization played a significant role in conveying the conservation message to this customer segment.

In 2017, the Business Energy Management's (BEM's) custom grant programs continued to adjust the customer qualification standards to accommodate lower-cost measures, enabling more small-to-medium business to participate.

Commercial kitchens—another PSE-defined potential HTR segment—which are often comprised of small business owners, have their own unique attributes. They have limited opportunities to discuss, apply for, and install efficiency measures. BEM's Commercial Kitchens & Laundry program staff are skilled at recognizing these customers' specific requirements.

v. Multifamily Tenants

In order to reach this potentially underserved customer segment, Energy Efficiency conducted awareness events and energy fairs at multifamily campuses throughout the PSE territory, in concert with the PSE Energy Efficiency Communities organization.

The program provided brochures and information geared to multifamily tenants. The Residential Business-to-Business staff also refined novel methods to communicate directly with tenants of multifamily buildings, including energy fairs, "Strive for Five" plaques, and engaged multifamily contractors and commercial/industrial contractors to increase program awareness.

vi. Manufactured Home Owners or Tenants

Energy Efficiency provided a wide range of weatherization, HVAC, and appliance measures to manufactured home owners and tenants. PSE partnered with its Contractor Alliance Network (CAN) to coordinate focus on this segment and provide weatherization, duct sealing and HVAC services. PSE also recognizes that there is a probability that this segment may overlap with its LIW program, and works with the low-income agencies to support those projects.

vii. Industrial Customers

Many industrial customers are also eligible for PSE's Large Power User/Self-Directed program, provided under Schedule 258.

As discussed in the program review on page 132, Business Energy Management program staff engaged eligible customers in a focused communication effort, coordinated with the implementation of the program's RFP process.[26] Another program that focuses on this potentially underserved segment is Energy Efficiency's Industrial Systems Optimization Program (ISOP). By participating in the program, industrial customers potentially have the benefit of operational and maintenance improvements across each participating site.

PSE sponsorships of specific industrial organizations are another effective means of sharing the conservation message with this segment. In 2017, PSE sponsored the Washington Industrial Energy Leader Awards and the Wastewater/Water Sustainable Energy Cohort. As with other HTR segments, PSE's Energy Efficient Communities team provides outreach services for this segment.

viii. English as a Second Language

English-as-a-second-language customers may also be a proportionately underserved segment of PSE's customers. This PSE-identified segment may also span one or more of the above-noted segments.

In 2017, PSE conducted and participated in several events in neighborhoods that have a high English-as-a-second-language population. PSE's Energy Upgrades was featured at the *Fiesta Premio Esmeralda*. Additionally, PSE publishes several energy-efficiency brochures in other languages, while its web pages can also be viewed in other languages such as Russian, Chinese, Spanish and Korean.

4) Partners Must Meet PSE's Customer Satisfaction Expectations

PSE's emphasis on customer service is prominent in PSE's expectations of its trade allies, vendors, contractors, and third-party administrators. PSE holds each third-party entity that represents PSE Energy Efficiency programs when installing or servicing energy-efficiency measures to ever-increasing customer service standards.

Energy Efficiency staff regularly review vendors' and contractors' performance to ensure that they also meet customer expectations.

[26] In the Large Power User/Self-Directed 4-year cycle, customers are encouraged to develop RFPs in order to utilize the pool of Schedule 258 available conservation funds.

PSE's commitment to exceeding customer expectations also extends to a key set of customers: its Regulatory Stakeholders. This Report is designed to exceed Stakeholders' expectations by providing critical and useful information, based on their previous requests, comments, and ideas.

Specific program discussions in this Report will provide additional examples of PSE's commitment to providing an outstanding energy efficiency experience for its customers.

B. Continuously Improving Customer-Centric Processes

As noted in the program discussions throughout this Report, program staff consistently focused on increasing customer participation and minimizing customer costs in energy-efficiency programs, and exploring ways to maximize the value of external, customer-facing opportunities.

A key facet in the achievement of program objectives was the refinement of critical internal business processes. In 2017, Energy Efficiency focused on continuously improving its internal operational processes, and completing the implementation of its new project reporting system, DSMc.

1) Business Processes

Throughout 2017, Energy Efficiency program staff continued to conduct business operations with a focus on adaptive management through the application of progressive continuous improvement principles. Doing so not only ensures compliance with WAC 480-109-100(1)(a)(iv), *Adaptive Management*, it is clearly the most sensible and effective way to operate such a complex and customer-centric organization.

Continuous improvement is an established and engrained method of adaptive program management for Energy Efficiency program staff. Its application ensures the prudent stewardship of customer funds and enables PSE to consistently offer a superior suite of products, yielding optimal savings results while carefully managing business expenses. Staff efforts provided for prompt and innovative solutions to challenges and market opportunities, where teams were able to confidently adapt and maximize customer satisfaction and conservation savings.

In addition to conscientiously administering vendor and contractor payments, staff consistently examined processes required to manage the accurate and timely tracking of rebate and grant payments, ensuring a more positive customer experience.

Continuous improvement is a focus of not only programs in Residential Energy Management (REM) and Business Energy Management (BEM), but in all supportive organizations. Incorporating a wide range of continuous improvement principles, the skilled professionals in each organization achieved incremental progressions throughout the year, often in ways that are obscured from the public view, but critical nonetheless.

In each business consideration, PSE makes management decisions with these requirements uppermost in mind:

1. Meet customer expectations to drive continued program participation;
2. Prudently apply customer funds to cost-effective conservation;
3. Maximize staff productivity, process efficiency and effectiveness;
4. Ensure rigorous program execution and metrics, with a high degree of savings reporting accuracy, financial prudence, compliance, and transparency.

a. Highlights of 2017 Business Process Enhancements

The below list provides a brief summary of some of the Portfolio-wide business process enhancements. PSE discusses these and others, specific to programs or functional organizations, in chapters 5 through 13.

- Residential program managers developed improved vendor invoice processing methods to improve the accounting accuracy, minimize charges to incorrect order numbers, and reduce the need for journal entries.
- The Market Research team created a dashboard that provides program staff with standardized satisfaction and performance indicators.
- PSE Evaluation staff applied advanced analytics to model energy consumption data for over 35,000 program participants, enabling staff to determine the predictability of energy consumption.
- All net metered customers are now tracked through the online interconnection tool, PowerClerk®.
- As part of its field services, Direct To Consumer representatives directly engaged customers in store aisles to assist them in making their purchasing decisions relative to energy-efficiency products.

- The Data and Systems Services team created a support model for internal DSMc users, designed to address questions and system issues.
- Dealer Channel staff reduced operating costs by transitioning inventory responsibility to its primary contractor.
- Rebates Processing staff designed an improved rebate application form, and performed analyses on non-qualified rebates, using results to simplify the process for customers.
- CAN program staff developed an enhanced process to track contractor referrals, resulting in a higher level of contractor engagement.

A major 2017 initiative that impacted the bulk of Energy Efficiency departments and operations was the implementation completion of the new department-wide program management "DSMc" (Demand Side Management central) system.

2) DSMc Implementation

Several PSE organizations, with significant staff effort, participated in DSMc's operational ramp-up. By the end of 2017, all REM and BEM programs managed their measure suites, rebate application processes, and reporting in DSMc.

As 2017 progressed, DSMc increasingly streamlined the processing of customers' grants and rebates and provided project and measure data a granular level in real time. PSE expects that these, and other benefits will enhance customer satisfaction with Energy Efficiency, and potentially lead to new participation opportunities. Another key result area is increased reporting accuracy. An updated DSMc data review process consists of program staff comparing vendor-supplied data files and invoices to data captured. This occurs concurrent with the loading of the files into DSMc.

In September, Energy Efficiency successfully rolled out DSMc's Public User Interface (PUI) function, becoming available to all PSE customers. The PUI allows customers to submit and track their rebate applications online. Customer adoption of the online portal as the preferred method of submitting rebate applications has steadily increased since its inception.

a. Highlights of DSMc Implementation

Through its consistent application of continuous improvement, PSE achieved several of its adaptive management objectives.

Highlights of notable customer satisfaction, measure offerings, process, and DSMc system enhancements initiated or completed in 2017 include:

- An overall reduction in the submittal-to-payment timeframe for internally-processed rebate programs.
- An improvement in rebate status notifications.
- Customers may submit their rebate applications online. The can also check the status of their payment online as well.
- There is now the ability to correct errors, make updates to the system, and build new program processes in the system much more quickly.
- The system is now entirely managed by Energy Efficiency dedicated staff.

Program discussions in the following chapters provide additional instances and details of adaptive management achieved through the application of continuous principles.

C. Commitment to Surpass Regulatory Stakeholder Expectations

PSE provides a complete discussion of its Regulatory Stakeholder[27] 2017 activities and accomplishments in Chapter 15: *Stakeholder Relations*. Energy Efficiency staff considered sustaining the excellent relationship that PSE has with its Stakeholders as a key 2017 focus area due to the turnover of a number of CRAG members, many of whom had not completely experienced the Biennial Conservation Planning[28] (BCP) process, and weren't entirely familiar with PSE processes, terminology, or program issues.

Energy Efficiency staff expended considerable energy in 2017 to ensure that Stakeholders had a suitable degree of familiarity with its operations, were comfortable communicating with Energy Efficiency staff, and were supportive of PSE's conservation programs.

PSE values the collaborative relationship that it has established with its Stakeholders over several years, and expects that its operational processes, guidelines, and regulatory training Energy Efficiency staff have developed will continue to meet the expectations of its Stakeholders.

[27] PSE considers its Regulatory Stakeholders to be the Conservation Resource Advisory Group (CRAG) and members of the UTC staff.

[28] The majority of 2017 CRAG meetings focused on the 2018-2019 BCP development.

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IV. RESIDENTIAL ENERGY MANAGEMENT

Chapter 4 provides a summary of the results made possible by customers served by Residential Energy Management (REM) staff. PSE will discuss savings and expenditure metrics, highlights of programs that drove results, ongoing efforts to connect with potentially hard-to-reach customer segments, cost-effectiveness results, and measure savings type profiles.

A. 2017 Residential Energy Management Sector Summary

Table IV-1 and Table IV-2 provide, at a program level, REM 2017 savings and expenditure figures, respectively. PSE provides detailed program discussions in Chapter 5: *Residential Program Details*. PSE discusses the Business Energy Management (BEM) Sector results in Chapter 6: *Business Energy Management Overview,* and Chapter 7: *Business Energy Management Program Details*.

Table IV-1: 2017 Residential Electric and Natural Gas Savings

2017 Savings				2017 Goal
Schedule	**Programs**	**Total**	**% of Goal**	
Electric	Electric			Electric
Gas	Gas			Gas
E201	Low Income	2,148	117.0%	1,836
E214	Single Family Existing	101,938	105.4%	96,697
E216	Single Family Fuel Conversion	2,060	105.6%	1,950
E217	Multi Family Existing	18,013	94.9%	18,985
E218	Residential New Construction	1,318	101.9%	1,294
	Total Electric Programs	**125,477**	103.9%	120,762
G201	Low Income	13,057	148.6%	8,786
G214	Single Family Existing	1,684,009	118.0%	1,426,706
G217	Multi Family Existing	30,534	36.1%	84,536
G218	Residential New Construction	104,219	268.1%	38,880
	Total Gas Programs	**1,831,819**	117.5%	1,558,908

Table IV-2: 2017 Residential Electric and Natural Gas Expenditures

2017 Expenditures				2017 Budget
Schedule	**Programs**	**Total**	**% of Budget**	
Electric	Electric			Electric
Gas	Gas			Gas
E201	Low Income	$ 4,188,879	112.1%	$ 3,735,428
E214	Single Family Existing	$ 25,339,409	91.6%	$ 27,657,201
E216	Single Family Fuel Conversion	$ 916,221	109.5%	$ 837,031
E217	Multi Family Existing	$ 11,593,885	115.1%	$ 10,074,198
E218	Residential New Construction	$ 620,849	85.2%	$ 728,455
	Total Electric Programs	**$ 42,659,242**	99.1%	$ 43,032,313
G201	Low Income	$ 242,271	132.0%	$ 183,600
G214	Single Family Existing	$ 6,934,706	119.8%	$ 5,789,539
G217	Multi Family Existing	$ 308,476	50.7%	$ 608,958
G218	Residential New Construction	$ 562,085	225.5%	$ 249,213
	Total Gas Programs	**$ 8,047,538**	117.8%	$ 6,831,310

B. Key Performance Drivers

PSE provides program-specific discussions on key drivers of REM savings and expenditures in Chapter 5. The following sections provide brief highlights of those; readers may reference the above tables for these highlights.

1) Savings Drivers

The majority of REM programs met or exceeded their savings goals. Particularly noteworthy are the Web-Enabled Thermostat electric and natural gas savings achievement (83 percent and 62 percent above goal, respectively), and the Multifamily New Construction natural gas program, finishing the year 168 percent above goal. On the electric side, several programs finished above their savings goal while prudently managing their expenditures to levels below forecast. This include Home Energy Assessments (102 percent of savings goal, 78 percent of budget), Showerheads (116 percent of savings goal, 79 percent of budget), and Multifamily New Construction (102 percent of savings goal, 84 percent of budget).

On the electric side, only three programs finished the year slightly below their savings goals, while Home Appliances and Multifamily Retrofit were substantively lower than their natural gas savings goals (34 percent and 64 percent lower, respectively). Programs that missed their savings targets also realized a proportional expenditure reduction from budget.

2) Expenditure Drivers

As noted in the previous section, several electric REM programs managed their expenses exceptionally well. Programs that missed their savings targets also realized a proportional expenditure reduction from budget. Examples include electric Weatherization (83 percent of budget, 91 percent of savings goal), and Multifamily New Construction's natural gas program (247 percent of budget, 268 percent of savings goal). A conspicuous exception is the Web-Enabled Thermostat program, which, although exceeding its electric and natural gas savings goals, finished 2017 at 300 percent of the anticipated spending.

C. Targeting Hard to Reach and Proportionately Underserved Market Segments

As noted in Chapter 3, section A.3, several programs in the REM Sector positively impacted many of the Hard-to-Reach and Proportionately Underserved customer segment. PSE provides additional detail on its initiatives to connect with potentially hard-to-reach customer segments in the program discussions in Chapter 5. Here, REM provides some highlights of those discussions.

Through partnering with its Energy Efficiency Communities and Events organizations, REM made strides in reaching low-income customers in 2017 by working closely with low-income agencies, community organizations, and numerous other groups to develop creative solutions to the specific needs of this customer segment.[29] Consistent with its long-standing policy, PSE does not limit the amount of funding that it makes available to low-income agencies through its Low Income Weatherization program.

As a result, LIW exceeded its electric goal by 14 percent. More significantly, LIW reversed a recent trend by exceeding its natural gas savings goal by a substantial 40 percent. The program also provides funding for certain repairs needed to effect energy-efficiency measures, and in 2017, partnered with PSE's Assistance Programs to improve low-income customers' experience.

[29] Section II.A.3.b.i outlines several other points of focus for the LIW team.

REM also addressed the need to provide energy-efficiency calls to action for working-class and moderate-income customers in multifamily dwellings and PSE's non-English-speaking customers. PSE hosted or participated in community events such as *Fiesta Premio Esmeralda*. In 2017, the Sector developed a strategy to reach multifamily residents who may not have access to/information about energy-efficiency measures, including energy fairs at apartment and condominium complexes. Staff also used GIS analysis of census data to identify regions categorized as "assumed low income", which help target awareness efforts.

Through its partnership with NEEA on the Consumer Strategy Working Group, Dealer Channel staff focused on driving a regional strategy around heat pump water heaters. Staff also focused on designing offerings and services for customers renting their abodes, those living in rural areas, and those living in mobile and manufactured homes. The Dealer Channel continued offering Home Energy Assessments to mobile home and manufactured home customers in 2017.

In the manufactured/mobile home market, Energy Efficiency's mobile home ductless heat pump measure had a higher incentive level than traditionally-constructed homes, and expanded its Home Energy Assessment program to include manufactured homes.

PSE provides details of these, and additional initiatives, in the program discussions throughout Chapter 5.

D. REM Cost Effectiveness

Table IV-3 represents the actual calculated Utility Cost and Total Resource Cost benefit-to-cost (B/C) tests for the Residential Sector. PSE presents the complete UC and TRC tables, showing cost-effectiveness calculations by program in Exhibit 2 of this Report.

Table IV-3: 2017 Residential Sector Cost-Effectiveness Tests

Benefit to Cost Ratios Residential Energy Management		
	Utility Cost	**Total Resource Cost**
Electric	2.54	2.32
Gas	2.46	1.87

1) REM Program Cost-Effectiveness Performance

All REM electric programs, with the exception of Low Income Weatherization (LIW), finished 2017 with a TRC of over 1.0, with an overall Sector total TRC B/C ratio of 2.32. LIW's electric TRC was 0.76. Although REM's natural gas Single Family Weatherization (TRC of 0.88) program finished 2017 below a TRC of 1.0, the overall sector's natural gas TRC B/C ratio was a respectable 1.87 for the year. The LIW natural gas program also finished the year with a TRC of 0.59. It is notable that LIW's electric and natural gas programs were consistent with regulatory cost-effectiveness allowances.

E. Five-Year Trends

Figure IV-1 provides a representation of REM's 5-year electric savings and expenditures performance. In 2017, electric savings were 27 percent lower from 2013 levels, while commensurate expenditures were 15 percent lower. From 2016 to 2017, electric savings were 11 percent lower, while spending was 8 percent lower for the same period.

Figure IV-1: Residential Electric Five-Year Trends

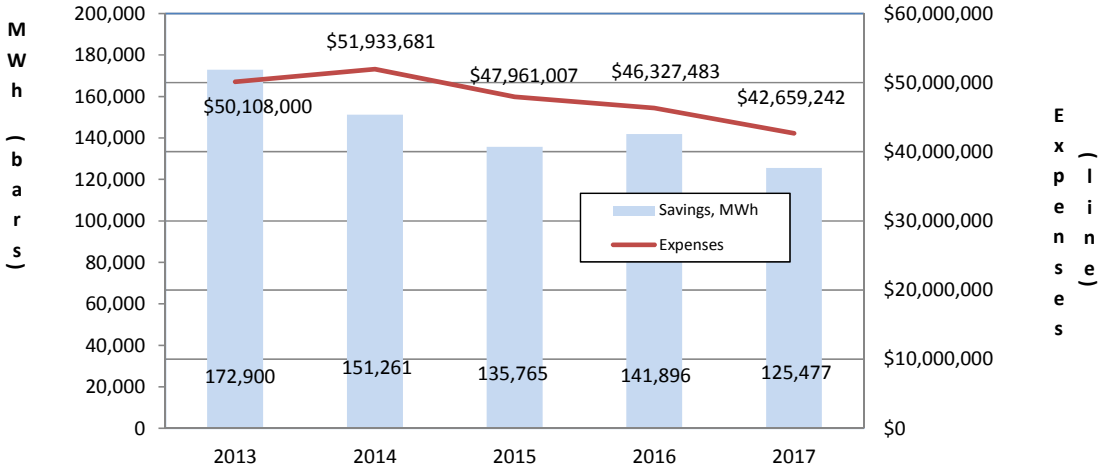
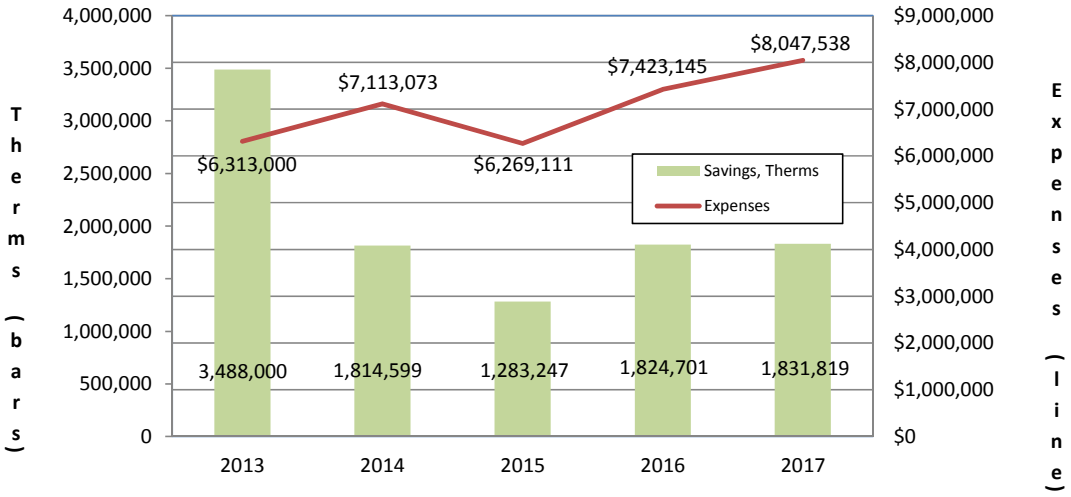


Figure IV-2 provides a view of REM's 5-year natural gas savings and expenditures performance. On the natural gas side, there was a 47 percent decrease in 2017 from the 2013 therm savings, and a 27 percent increase in natural gas expenditures. From 2016 to 2017, however, there was a 0.3 percent increase in savings, with only an 8 percent increase in spending.

Figure IV-2: Residential Natural Gas Five-Year Trends



F. Program Measure Tables

PSE provides measure tables in each of the program discussions in Chapter 5: *Residential Program Details*. As noted in Chapter 2, PSE provides these high-level figures to afford a sense of program scale, customer demand, key savings contributors, and interesting measure types in each program. The tables are extracted from DSMc, include a limited number of measure types, and aren't intended to be a comprehensive list of all measures installed; PSE provides only a representative sampling of measure types. The listed measures aren't intended to comprise the total amount of 2017 program savings, and aren't intended to be used as audit tools or to reconcile actual tracking records.

It is noteworthy that selected measures may be indicated in the "Dual" savings column in applicable program measure tables. These are measures—water-saving, some insulation, and various HVAC categories, for instance—where it isn't possible to conclusively determine the customer's primary applicable fuel type.

Using algorithms created to calculate electric and natural gas savings in these instances, the “dual” savings type applies specific ratios or existing electric-only and natural gas-only savings values to determine the amount of electric and natural gas savings attributable to those measures. Showerheads installed in locations where PSE provides both the electric and natural gas service is one example. Another applies to equipment that conserve both electric and natural gas: certain clothes washers and commercial dishwashers, for instance.

G. Program Discussions

The program discussions In Chapter 5 outline process and tactical improvements that enhance the customer’s energy-efficiency experience and prudently utilize Conservation Rider funding, along with program results, key drivers of savings and expenditures, adaptive management, and significant accomplishments.

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V. RESIDENTIAL PROGRAM DETAIL DISCUSSIONS

The following program discussions address specific results and accomplishments in the Residential Energy Management Sector. The discussion flow aligns with Energy Efficiency's Exhibit 1: *Savings and Budgets*.

A. Single Family Existing

Schedules E/G 214

1) Description

The Single Family Existing group is comprised of two Channels:

- Direct to Consumer Channel, and
- Dealer Channel,

each of which is comprised of several programs. These programs are detailed in the following chapter.

Single Family Existing programs implement cost effective, targeted, residential energy savings using a menu of prescriptive and calculated efficiency measure incentives, including rebates for single family existing structures. Existing single family structures are defined as residential dwellings which include: structures with four or less units that are attached by a contiguous roofline; manufactured or factory built homes permanently affixed to a concrete foundation; and manufactured or factory built homes that are transportable. Single family existing residences exclude structures that are currently under construction. Prescriptive rebates are intended to facilitate participation by customers, contractors, manufacturers, retailers, developers, and trade allies. They also provide administrative efficiencies for PSE in meeting energy efficiency goals.

Note: Multifamily campuses which have a mixture of existing residential building types, including buildings with four attached residential units or less, are served under the Multi-Family Retrofit Program; schedules E217 & G217.

Rebates offered to eligible natural gas and/or electric PSE Single Family Existing customers include a variety of end-use classifications, not limited to:

- Light-Emitting Diode (LED) lighting including A-line, BR-30, indoor & outdoor fixtures, MR-16, and candelabra.
- Appliances—including refrigerators, freezers, clothes washers, heat pump dryers, and others through PSE's partnership with NEEA.
- Consumer Electronics—including but not limited to advanced power strips, and others through PSE's partnership with NEEA.
- Retail, online, leave-behind, and engagement LEDs and water-savings products.
- Refrigerator and Freezer Decommissioning – both secondary and primary units.
- Clothes Washer Replacement – focus on older inefficient models to encourage early retirement.
- Home Performance activities that may include home energy assessments, audits, and all-inclusive home retrofit services.
- Weatherization, including windows, insulation air and duct sealing, with targeted measures for manufactured home customers.
- Space heating including hydronic systems, high efficiency furnaces, high efficiency boilers, high efficiency fireplaces, heat pumps, and system controls, such as web-enabled thermostats.
- Water heating, including heat pump water heaters, and efficient showerheads.
- Fuel conversion rebates for PSE electric customers switching to energy-efficient gas products such as space and water heating and clothes dryers.

Program staff regularly review incentive amounts and savings values and base them on regionally-accepted energy savings estimates and incremental efficiency measure cost. Incentives may be subject to change in response to revisions in savings estimates, average incremental cost, market conditions, or changes in Federal appliance efficiency standards or State codes.

2) Sector Performance

Table V-1 provides a 2017 summary of savings for programs within the Single Family Existing group.

Table V-1: Single Family Existing 2017 Savings

2017 Savings				2017 Goal
Schedule	Programs	Total	YE % of Goal	
Electric	Electric			Electric
Gas	Gas			Gas
E214	Single Family Existing			
	Residential Lighting	73,696	106.1%	69,473
	Space heat	8,030	103.9%	7,731
	Water heat	941	129.3%	728
	Home Energy Assessments	5,141	102.0%	5,039
	Home Appliances	6,055	90.1%	6,722
	Mobile Home Duct Sealing	0		0
	Web-Enabled Thermostats	1,283		703
	Showerheads	4,939	115.6%	4,273
	Weatherization	1,852	91.3%	2,028
	Home Energy Reports	0		0
Subtotals		**101,938**	**105.4%**	**96,697**
G214	Single Family Existing			
	Residential Lighting	0		0
	Space heat	677,556	109.6%	618,205
	Water heat	0		0
	Home Energy Assessments	0		0
	Home Appliances	26,737	65.7%	40,705
	Mobile Home Duct Sealing	0		0
	Web-Enabled Thermostats	275,753	162.2%	170,000
	Showerheads	223,161	118.8%	187,783
	Weatherization	480,802	117.3%	410,013
	Home Energy Reports	0		0
Subtotals		**1,684,009**	**118.0%**	**1,426,706**

Table V-2 provides program-level details of expenditures for the Single Family Existing group, which consists of multiple single-family programs.

Table V-2: Single Family Existing 2017 Expenditures

2017 Expenditures				2017 Budget
Schedule	Programs	Total	YE % of Budget	
Electric	Electric			Electric
Gas	Gas			Gas
E214	Single Family Existing			
	Residential Lighting	$ 11,955,076	86.4%	$13,833,179
	Space heat	$ 4,376,056	109.5%	$3,996,974
	Water heat	$ 566,088	118.6%	$477,188
	HomePrint	$ 2,210,483	77.7%	$2,843,948
	Home Appliances	$ 4,271,393	95.8%	$4,458,255
	Mobile Home Duct Sealing	$ -		$0
	Web-Enabled Thermostats	$ 510,670		$158,040
	Showerheads	$ 507,772	79.2%	$640,815
	Weatherization	$ 937,090	83.5%	$1,122,427
	Home Energy Reports	$ 4,780	3.8%	$126,375
Subtotals		**$ 25,339,409**	**91.6%**	**$27,657,201**
G214	Single Family Existing			
	Residential Lighting	$ -		$0
	Space heat	$ 2,405,127	102.4%	$2,349,235
	Water heat	$ -		$0
	HomePrint	$ -		$0
	Home Appliances	$ -		$14,805
	Mobile Home Duct Sealing	$ -		$0
	Web-Enabled Thermostats	$ 1,221,273	345.9%	$353,040
	Showerheads	$ 438,022	132.5%	$330,536
	Weatherization	$ 2,868,348	106.3%	$2,698,911
	Home Energy Reports	$ 1,936	4.5%	$43,012
Subtotals		**$ 6,934,706**	**119.8%**	**$5,789,539**

3) Single Family Existing 2017 Customer Engagements

In 2017 the Direct to Consumer and Dealer Channels collaborated to develop and execute unique customer engagement campaigns focused on driving customer awareness of and participation in PSE's single-family residential energy efficiency programs; the Energy Upgrades campaign, Cross-Sell campaign, and other Energy Efficiency Awareness Tools.

a. The Energy Upgrades Campaign

2017 marked the fourth year of this award-winning campaign. The Energy Upgrades Campaign grew bigger and achieved its goal of directly reaching half of PSE's residential electric customers. All of the campaign key metrics are outlined in the list on page 58.

The campaign continued to use the message of "save money and shrink your bill with energy efficiency upgrades". PSE's research has shown that saving money cuts across all segmentations of customers and the word "upgrade" signals to customers that energy efficiency does not mean the customer has to sacrifice anything. Starting in 2016, the campaign included an exciting offer for a free LED, which would be delivered to the home of each customer that specifically requested it. This ambitious task was divided by directly sending the free LED offer to half of PSE's electric customers in 2016 and the other half in 2017. This free LED offer was a way to surprise and delight customers and encourage them to try an LED bulb in their home. The delivered LED contained a coupon for an additional discount off other LEDs at partner retailers.

The multi-faceted campaign launched in April 2017. PSE partnered with four lighting manufacturers, two appliance manufacturers, a smart thermostat manufacturer, and several retailers in PSE's service territory to offer special limited time offers from April through November on select products. The offers rotated throughout the campaign to give equal attention to each partner. In addition to advertising the special limited time offer with the free LED, PSE also used a variety of other marketing and outreach tactics, including but not limited to; paid advertising, bill inserts, social media, in-store events, and door-knocking.

Throughout the campaign, PSE staffed various retail blitz events that engaged customers to scan their "Golden Ticket" to instantly win a prize, donated or paid for by partners. The prizes included a coupon for a free LED that they could pick up instantly at the retail store, a water-saving showerhead and aerator kits, energy-efficient appliances, and even energy-efficient televisions. Energy efficiency experts staffed the retail blitz events and assisted customers with their energy efficiency questions.

PSE also participated in the Spanish-speaking community event *Fiesta Premio Esmeralda*.

The Energy Upgrades Campaign utilized many marketing assets in order to achieve millions of impressions. This included transit ads, social media, a campaign website, email, direct mail, bill inserts, cinema ads, radio, earned media through press releases, and more. PSE also launched a door-to-door campaign to directly reach targeted communities and to hand-deliver the customer's requested LED bulb. The canvassing included informing residents in the door-to-door communities of the other energy efficiency programs that PSE offers.

2017 Upgrades Campaign by the numbers:

- 77,699,734 advertising impressions.
- 276,772 direct mail offers to PSE electric customers for a free LED.
- 344,618 direct email offers to PSE electric customers for a free LED.
- 130,892 LEDs delivered to PSE electric customers.
- 8 months of limited time offers on select LED products.
- 1,037,979 emails to PSE customers marketing these limited time offers.
- 48 different in-store retail blitz events at 5 different retail chains.
- 18,518 Golden Tickets distributed to customers at the retail blitz events.
- 2,071 Golden Tickets distributed to guests at the Spanish-speaking community event *Fiesta Premio Esmeralda*.
- 1,297 LED prizes awarded at the Spanish-speaking community event *Fiesta Premio Esmeralda.*
- 42,599 door knocks in over 11 PSE communities.

b. The Cross-Sell Campaign

2017 marked the fifth year of the Direct to Consumer and Dealer Channel's Cross-Sell email campaign. The goal of this campaign is to encourage customers to participate in PSE's energy efficiency programs, to keep them regularly engaged, and to increase their awareness of other PSE energy efficiency offerings.

Program staff accomplished this by leveraging PSE's propensity modeling, which uses predictive analytics to determine customers' likelihood to qualify and participate in a number of energy efficiency programs. This gives a higher probability that customers receive messages that are relevant and wanted.

To this end, PSE distributed 24 unique electronic messages for a total distribution of 5.3 million emails, an increase of 200,000 emails from 2016. This consistent, relevant messaging contributed to meeting targets across the portfolio of residential programs.

c. Energy Efficiency Customer Awareness Tools

In year three of this customer initiative, PSE continued to provide energy efficiency email messaging to customers during moments when they are likely to be thinking about their energy usage (typically, when they receive a PSE bill, at the start of heating season, etc.). Emails were sent to customers in 2017 during three specific instances:

- In both the spring and fall of 2017, as equipment needs to be checked or serviced, PSE customers received an email providing energy efficiency tips and solutions for seasonal concerns. Each email was sent to approximately 200,000 customers.
- For existing e-billing customers, when their bill was ready, customers received an email reminder with a usage breakdown summary and links to energy efficiency programs to help them better understand and manage their energy use. Emails were sent to approximately 375,000 customers monthly in 2017.
- PSE's Unusual Usage Alert launched in May of 2016. This product provides customers an alert in advance of a higher than expected bill, where their usage is projected to increase by a minimum of 20 percent year-over-year. Since launch, PSE sent out over 626,000 of these notices, to a customer pool of 200,000, with unique open rates averaging 50 percent and aggregate open rates near 100 percent; making this the most engaged email communication to customers.

i. Variance Driver

It is noteworthy that PSE inadvertently omitted a budget amount of approximately $1 million for Customer Awareness Tools from its 2017 Annual Conservation Plan.

Actual 2017 expenses that should have been charged to the applicable order number were $900,000. Due to an accounting inaccuracy, those charges were instead attributed to the Individual Energy Reports pilot (see page 155). Customer Awareness Tools and the IER pilot are both provided by OPower; there were no late or missing payment issues.

B. Direct to Consumer Channel

The Direct-to-Consumer Channel focuses on services targeted to a wide variety of retail and manufacturer entities, including but not limited to "big box" chains, drugstore/grocery chains, warehouse stores, online retailers, and other local and independent resellers.

Management of the PSE-branded online store, ShopPSE (http://shop.pse.com) shifted to the Dealer Channel in mid 2017. For the purposes of this report, ShopPSE will remain in this section, but will be moved to its new Channel in 2018's report.

The Channel manages several programs—most of which are consumer-oriented—including refrigerator decommissioning, showerheads, appliances, electronics, and of course, energy efficient lighting. This Channel also collaborates on consumer electronics and select appliances through PSE's funding relationship with NEEA. The Direct-to-Consumer Channel operates primarily within the structure of Schedule 214; Single Family Existing.

1) Direct-to-Consumer Channel Customer Awareness Initiatives

The following discussions highlight some of the Direct to Consumer Channel's key 2017 customer awareness initiatives.

a. Retail Store Awareness and Field Services

In 2017, Puget Sound Energy successfully implemented field services in 401 retailer locations. From awareness of campaigns to the daily maintenance of the retail programs, the field services team provides a connection between PSE, the retail programs, and the PSE customer.

The suite of products that the field team services now ranges from lighting to appliances to thermostats, ensuring that PSE's customers have an abundance of tools to reduce their energy usage using energy efficiency.

2017 saw a reduction in the total number of stores on the program, from 420 to 401 stores. However, the reduction in overall store count meant field reps had more time to spend in high maintenance stores and to provide special support to retail locations that participated in PSE's marketing campaigns.

i. Summary of Field Visits, trainings, and events:

PSE's field services team, made up of four full-time representatives, made over 3,900 field visits in 2017. In 2017, the stores were classified in an organized tier system that determined the number of team visits needed to ensure adequate representation:

- A (1-2 visits per month)
- B (1 visit per month)
- C (1 visit every other month, with two levels of communication in the off month)
  - C1 (1 visit every other month, call/email other month)
  - C2 (1 visit every other month)
- D (1 visit every quarter)
- E (1 visit or call every 6 months)

Visits per tier and total visits and average visits per month[30] by tier are:

Store Tier	Number of Stores	Total Number of 2017 Visits	Visits per Store	Avg. Visits per Month
A (1-2 visits per month)	38	615	16.2	51.3
B (1 visit per month)	117	1576	13.5	131.3
C1 (1 visit (call/email) every other month)	132	713	5.4	59.4
C2 (1 visit every other month)	60	663	11.1	55.3
D (1 visit every quarter)	59	313	5.3	26.1
E (1 visit or call every 6 months)	6	23	3.8	1.9

The tiered system allows PSE's field service representatives to spend the right amount of time with lower-maintenance stores and more time with high-need stores, such as The Home Depot and new stores.

In 2017, the same 4 field representatives conducted almost 1,400 trainings. Trainings are defined as either an informal one-on-one or formal group education of retail sales associates. These trainings consisted of both everyday rebate offerings as well as education on limited time offers associated with PSE's marketing campaigns.

Field representatives also completed 94 retail events throughout 2017. These events were educational tabling events within the retail store itself during peak shopping times that engage PSE customers with energy efficient products and program knowledge. For 2017, the field reps continued the innovative format of events that entailed assisting customers in the aisle with their lighting decisions.

As LED technology continues to develop, there is a wide variety of choices and new terms for customers to learn. With the increased choice, however, comes increased confusion from customers about which light bulb to choose.

[30] "Visits per Store" and "Avg. Visits per Month" are rounded calculations, based on the actual number of store visits.

In the past, customers could walk in with their burned-out light and easily find a replacement—find the matching shape, find the matching wattage, and they were done! Now, customers have to decide on shape, lumens, and color temperature. To help with this, reps have restructured their events to spend more time in the aisle with customers and less time behind a table.

A. Summary of Quality Assurance / Quality Control

Secret shopper visits were conducted in several stores throughout the year to provide QA/QC of field activity.

Representatives are scored on a number of aspects including, but not limited to; routing, organization, price auditing, POP placement, and interaction with store employees.

The representatives are evaluated on these aspects as well as overall for each visit based on this scale:

Field QA/QC Scoring Definitions
5. Rep is outstanding
4. Rep is above average. Minor issues if any.
3. Rep is fine w/ some guidance.
2. Rep is below average. Guidance needed.
1. Rep needs immediate guidance.

Based on the scale, the reps averaged an overall score of 4.56 for the secret shopping visits, meaning they are doing a near outstanding job in the various aspects scored. In 80 percent of the secret shopping store visits, POP was deemed satisfactorily visible and the average scores for each section of the store were 4.2 or above out of 5. Additional comments and feedback from the secret shopping was largely positive.

The results of retail store employee interviews, conducted during these visits, also indicate that the PSE field services team has built strong relationships with store managers and employees.

ii. Thank You Kits

2017 marked the fourth year of PSE's successful "Thank You" kits. PSE offers two types of kits based on the residential customer's fuel type. The electric and combined service kit contains two A-Lamp LEDs. PSE sent electric "Thank You" kits to more than 33,000 eligible residential electric and combined service customers that either participated in a PSE rebate program or applied for a non-qualifying measure. The gas-only customer kit contains a water-saving fixed showerhead, two bathroom aerators, a kitchen aerator, and Teflon tape. PSE sent gas-only "Thank You" kits to almost 8,700 eligible residential customers that participated in a PSE rebate program or had their application denied.

The purpose of the "Thank You" kits is to show appreciation to PSE customers for their interest in its energy efficiency programs and to offer a surprise opportunity to adopt energy efficient measures in their home.

"Thank You" kits include a brochure thanking the customer for their participation and detailing PSE's various energy efficiency residential programs. By sending these energy efficient products, PSE gave customers the opportunity to trial these measures in their home.

iii. Pop-Up Retail Events

PSE continued its popular "pop-up" retail events at PSE businesses throughout PSE's service territory. A pop-up retail event is a limited-time—often one day—opportunity for customers to learn about and purchase PSE qualified and rebated products. Other PSE conservation programs are often promoted as well.

Events are generally offered to businesses with more than 500 employees in the core PSE electric service territory. In 2017, in collaboration with these businesses, PSE conducted 93 total events; an increase of 8 events from 2016. It is estimated that over 100,000 customers were made aware of the energy efficiency offerings while purchasing over 8,800 PSE branded Energy Efficiency Kits.

iv. shopPSE

After nearly two years of market & customer research and development, PSE launched its own E-commerce website in 2016. Designed to offer a best in class E-commerce experience, http://shop.pse.com offers customers the ability to take advantage of PSE's energy efficiency rebates online everyday on three select product categories; lighting, showerheads and tier II advanced power strips. At the end of 2017 tier II advanced power strips were removed due to reduced savings found during an evaluation.

During 2017 ShopPSE had more than 60,000 customers visit the site, and produced 4,000 orders. The top selling items on the site were advanced power strips, followed by showerheads and lighting.

v. Corporate Citizenship

In 2017 PSE leveraged the Energy Upgrades campaign platform to boost awareness and fundraising capability. The goal was to put the money where the future is; promoting energy-efficient products while making sure children get the nutrition they need year round for health and wellness.

PSE ran an 8-week charity campaign with local appliance retailers and a lighting manufacturer. At select locally owned appliance retailers, PSE increased incentives on energy-efficient appliances and offered customers the opportunity to share their rebate with the charity Food Lifeline. The lighting manufacturer partner donated 10¢ for every LED sold during their segment of the Upgrades campaign. PSE pledged to match up to $5,000 in customer donations. In total, the campaign raised $22,988, which will provide 91,952 meals through Food Lifeline, a local non-profit organization.

C. Program Reviews

The following discussions provide 2017 recaps for the individual programs that comprise the Direct to Consumer Channel.

1) Retail Lighting

PSE offers incentives to purchase energy efficient lighting measures through instant rebates and limited time offers. The 2016 program year saw several significant changes in the lighting industry. The 2017 program year was less volatile as the previous industry changes stabilized. PSE continued worked to educate customers and sales associates on the variety of LEDs available in the market as well as the benefits of selecting a LED bulb over an incandescent or halogen bulb. PSE developed in-store signage designed for this purpose, and after receiving positive feedback from stores during the trial run in 2017, the signage will be fully launched in participating retail locations in 2018.

a. 2017 Program Accomplishments

In 2017, the Residential Retail Lighting program exceeded its savings goal while staying under budget. There are several possible reasons for coming in under budget.

Retail pricing for LEDs reduced in 2016 and 2017, meaning that the appropriate level of incentives to encourage customer adoption was lower than originally forecasted in 2015. The Direct to Consumer Channel's market manager position was vacant for nearly half of 2017, providing a cost savings for labor. And there were efficiencies in the Marketing expenses for the 2017 Energy Upgrades campaign since it was a continuation of the strategy established in 2016.

Effective campaigns such as Energy Upgrades and Cross-sell contributed to the program's successful performance for energy savings. LED multi-packs continued to be popular in 2017 and the average retail price of LEDs was low enough to encourage customer adoption. PSE offers LED rebates at a variety of retailers, including big box stores, grocery stores, and independent hardware stores, all throughout PSE's service territory making it easy for customers to take advantage of the great deals on LED lighting.

b. Adaptive Management

PSE ended CFL rebates on the first of January, 2017. The entrance of low-cost value LED bulbs, the overall reduction in LED retail prices, and the significant industry changes for CFLs supported this decision in 2016. Lower LED retail prices supported an incentive reduction for PSE's residential retail lighting program in 2017.

After successful trial runs, PSE also offered LED T8 shop lights, LED T8 retrofit, and LED string lights as eligible measures rebated on all retail lighting agreements. These changes kept the program in line with efficient lighting trends.

2) Residential Appliances

In 2017, the Direct to Consumer Channel offered incentives on a variety of appliance programs for residential customers.

These include:

- Refrigerator & Freezer Decommissioning;
- Energy Star® Clothes Washers;
- Energy Star Refrigerators;
- Heat Pump Clothes Dryers; and
- Clothes Washer Replacements.

a. 2017 Program Accomplishments

PSE's retail appliance program partnered with manufacturers Whirlpool and Samsung in 2017 as part of the Upgrades campaign. PSE promoted double incentives on energy efficiency appliances and a piloted a limited-time electric dryer rebate. PSE saw a significant lift in rebate applications during the campaigns. The program also sponsored a charity campaign; highlighting local retailers, promoting energy efficiency, and benefitting a local charity with funds raised from the campaign.

For the appliance decommissioning program, PSE increased the incentive for decommissioning starting in June and ending in July. The program saw a 120 percent increase in customer participation during the limited-time offer.

b. 2017 Adaptive Management

In 2016, PSE implemented a tiered rebate structure for the retail appliance measures to incentivize customers to purchase energy efficient appliances. Although customers enjoyed having more eligible models, customer surveys conducted within 2016 indicated confusion with the tiered rebate system. PSE used this customer data to redesign the program for a 2017 refresh. The flat rebate amount was well-received by customers and the customer satisfaction rating increased from 11th to 5th out of PSE customer surveyed programs.

In 2016, PSE retired the refrigerator replacement program, but continued with the clothes washer replacement portion of the program through 2017. Despite targeted social media marketing, PSE continued to see a decrease in customer participation for the clothes washer replacement program. The clothes washer replacement program began in 2011 and PSE believes, after six years, that the program has captured the majority of early clothes washer replacements. Rising costs also impacted the cost-effectiveness of the program. In light of these circumstances, PSE ended the program on December 31, 2017.

c. Key Variance Drivers

Although the retail refrigerator measure exceeded budget, the retail clothes washer measure had lower volumes than anticipated. Combined with the poor performance of both the replacement measures and decommissioning measures, the retail appliance savings and budget result was below its forecast and spending goals for the year. Lower-than-expected customer participation in the clothes washer replacement program—along with the commensurate thank-you kit—resulted in the program's natural gas savings shortfall.

3) Advanced Power Strips

Reported under PSE's Residential Appliance program, an Infrared (IR) sensing advanced power strip is installed with a home entertainment system. When this device is installed, it disconnects power to connected devices after a set period with no IR signal.

a. 2017 Program Accomplishments

In 2017, PSE continued to promote advanced power strips with PSE's online efficiency marketplace http://shop.pse.com, offering customers the opportunity to purchase the devices every day at an incentivized price. PSE also distributed advanced power strips through pop-up retail events.

b. Key Variance Drivers

Although customer interest in the product was higher than prior years, the uptake of the measure was below forecast due to no retail locations carrying the product and lack of available delivery methods. The measure was subject to a third party evaluation in 2017.

The evaluation found that the advanced power strips had significantly less savings than claimed as customers either do not install them correctly or uninstall the strip because of a lack of understanding of the technology. PSE chose to stop incentivizing the measure effective December 31, 2017, until the savings claim discrepancies and their causes are resolved.

4) Residential Showerheads

PSE continued to look for ways to build and strengthen its showerhead program portfolio in 2017.

a. 2017 Program Accomplishments

Most notably, Costco stores re-enrolled in the instant rebate showerhead program with the showerhead manufacturer, Waterpik®. Habitat for Humanity joined the retail showerhead program as well for the first time. The retailer had only participated in the retail lighting program previously and expanded the agreement to encompass showerheads in 2017.

PSE also utilized shopPSE to promote the showerhead programs to customers through the Cross Sell campaign, marketing showerhead offers to customers throughout the year, which resulted in more than 2,800 orders.

In addition, the program leveraged its partnership with Watersense® and the Energy Upgrades campaign to distribute a shower kit that contained one showerhead and three aerators. Customers filled out a business reply card (BRC) available at events and were mailed a kit. BRCs were distributed during WaterSense's 2017 "Fix the Leak" week campaign in March, and Upgrades events from April through November resulting in 1,960 kit fulfilments in 2017.

b. Key Variance Drivers

The Retail Showerheads program exceeded its electric and natural gas savings goals and came under budget for expenditures, thanks in part to PSE's marketing and successful outreach efforts. Sales were also supplanted by the engagement of another national retailer.

5) Web-Enabled Thermostats

a. 2017 Program Accomplishments

The web-enabled thermostat program had a very successful 2017. The program offered one of the first instant thermostat rebates in the country and surpassed forecasted savings targets.

b. Adaptive Management

Customer surveys revealed that the biggest issue PSE customers had with the thermostat rebate was the perceived delay in receiving their rebate. In order to respond to this, program staff rolled out an instant rebate campaign coordinated closely with a manufacturer partner, Nest. The instant rebate campaign allowed customers to validate their service type online or in person through a simple tool. These customers were then provided with a coupon code they could use at checkout. Using the coupon code meant customers simply paid less for the thermostat rather than waiting for a rebate in the mail.

Post-event surveys showed a 30 percent improvement in customer satisfaction when compared with the standard rebate process.

c. Key Variance Drivers

The initial forecast for the thermostat program did not take into account the rapid growth in awareness, technology and product offerings that the market would experience in 2017. As such, PSE surpassed its initial forecasted targets and budgets.

6) Home Energy Reports

2017 was the eighth full year of PSE's Home Energy Report "legacy" program.[31] The program reported 310 kWh electric and 13 therms savings for 2017, due to the results of the 2016 Home Energy Report impact evaluation.

[31] It is important to note that, consistent with a CRAG agreement established in 2015 target-setting meetings, "legacy" Home Energy Report electric savings apply towards the EIA 2016-2017 conservation penalty target, while the expansion pilot savings (if any) are excluded from the EIA penalty target.

Like in years past, the actual 2017 savings will be "trued up" following the next impact evaluation.

a. Key Variance Drivers

Due to costs being charged to an incorrect order number, there were approximately $162,000 in charges that should have been attributed to the legacy Home Energy Report program. These charges were instead attributed to the Individual Energy Report expansion pilot program (see page 155). Had they been correctly coded, the actual spending would have been in line with expectations. Since these programs are all administered by the same vendor, there were no late or missing payment issues.

7) Direct to Consumer Channel Measure Highlights

It is interesting to note that many of the water-savings measures indicated in the following table (such showerheads, aerators, etc.) are often reported in PSE's electric-only, natural gas-only, or combined territories. The latter figures are presented in the "Dual" column.

PSE provides an overview of Direct to Consumer Channel measures by measure types reported in 2017 in Table V-3.

Table V-3: Overview of 2017 Direct-to-Consumer Channel Measure Activity

Direct to Consumer Channel Measure Counts				
Program / Measure Type	Measure	Electric	Dual	Natural Gas
Retail Lighting				
	LED Fixture	434,000		
	CFL Lamp	77,000		
	LED Lamp	3,710,000		
	String Lighting	20,800		
Home Appliances				
Appliances	Clothes Dryer	1,600		
	Clothes Washer Replacement	1,000		
	Clothes Washer	5,700	6,900	
	Freezer Decommissioning	1,000		
	Freezer	580		
	Refrigerator Decommissioning	3,600		
	Refrigerator Replacement	790		
	Refrigerator	7,300		
Plug Load	Advanced Power Strip	5,300		
Lamp	LED Lamp	5,600		
Water	Residential Faucet Aerator	9,100	7,600	
	Residential Showerhead	3,000	2,500	
Web-Enabled Thermostats				
	Web-Enabled Thermostat	1,500		8,700
Showerheads				
	Residential Adapter	30	80	5
	Residential Aerator	13,900	27,000	21,000
	Faucet		2,300	
	Showerhead	12,900	33,000	7,400
Home Energy Reports		16,000		16,000

C. Dealer Channel

The Dealer Channel's target market consists of two audiences:

- Distributors and contractors that sell, install, and service energy efficiency appliances for single family residential customers, and
- Single family residential home owners and renters

Primary measures offered include: HVAC systems, water heating systems, windows and insulation, fuel conversion appliances, comprehensive Home Performance activities such as home energy assessments, and home retrofit services. The Dealer Channel operates primarily within the structure of Schedule 214: Single Family Existing.

1) 2017 Channel Highlights

The Dealer Channel launched an online customer-facing application for space heating, water heating, windows and home performance with Energy Star® rebates. Customers are able to review qualifications, submit rebate applications, and review status. Customers also receive email notifications that provide additional information on their rebate, as well as communicate any additional information that is required by PSE to complete their application. The online rebate application launched in September, and as of December 31, received over 2,400 project applications.

Dealer Channel programs continue to target hard-to-reach customers such as those renting their home, manufactured and mobile home customers, and customers in rural locations through outreach efforts, program design approaches, and marketing. Program staff continue to participate on the NEEA-coordinated Consumer Strategy Working Group focused on driving a regional strategy around heat pump water heaters.

Staff actively supported the installation of 57 e-Radios on eligible heat pump water heaters, allowing units to receive and send demand-response signals sent by the Bonneville Power Authority (BPA) who is managing the project. This demand-response initiative aims to pilot a regional strategy related to placing demand-response technologies in customer homes.

In 2017, the Single Family Existing programs exceeded savings targets while staying within their budgets. Several programs introduced new measures, made adaptive changes to service delivery method, and simplified processes to improve customer experience and increase cost efficiency of administering Dealer Channel programs. Specific activities are outlined by program in the following sections.

2) Home Energy Assessments

Home Energy Assessment (formerly HomePrint™) provides customers with a no-cost in-home service performed by PSE-qualified Home Energy Assessment Specialists. The program is intended to increase the awareness of customers regarding their home's energy consumption and identify cost-effective ways to use less energy. Participants receive a detailed Home Energy Assessment Report which provides guidance on cost-effective upgrades and associated PSE rebates available. Additionally, eligible customers benefit from instant energy savings from the direct installation or distribution of leave-behind high-efficiency products to include, but not limited to: light bulbs, showerheads, faucet aerators, and Advanced Power Strips.

a. 2017 Program Accomplishments

The Home Energy Assessment program exceeded savings targets, and was under budget on its planned Outside Services expenditures. PSE focused on more targeted and efficient delivery of the messaging around the program. Activities included targeted email campaigns by zones, broader communications associated with PSE's Voice of the customer newsletter, and a community canvassing campaign. The community canvassing campaign proved to be more successful, in total volume of engagements and completed projects, than previous years, due to enhancements of scheduling customers through the online platform, improved coordination among partners through the use of data and communications, as well as implementing "next-day" scheduling opportunities for customers.

b. Adaptive Management

During the second half of the year, program staff increased total maximum lamps allowed to be installed per home from 20 to 30 in an effort to improve declining average savings and maintain a cost-effective program. This change resulted in an increase to average assessment savings and improved customer satisfaction.

PSE attained cost savings in the outside services expenditures by transitioning to a different inventory management structure which was handled directly by Franklin, the third party implementer. This reduced product costs and overall administration time by streamlining and optimizing the process.

It was discovered after an evaluation that the tier II advanced power strip savings were lower due to persistence (customers were not installing them or removing them). The HEA program stopped offering this as an option through the program and will explore other products and/or educational opportunities to improve persistence. While primarily delivered through Franklin Energy Services, PSE continues to offer the program through several Contractor Alliance Network (CAN) contractors.

c. Hard-to-Reach and/or Proportionately Underserved Customers

In order to better access hard-to-reach and proportionally underserved customers, PSE continues to offer a Home Energy Assessment offering for customers residing in Manufactured-and Mobile homes.

PSE also released a request for proposal and secured bids for a single family rental pilot that would complement the HEA program through landlord outreach, contractor management, and tracking of follow on work in 2018.

3) Weatherization

The weatherization program oversees the “shell” of residential structures; installation of windows, insulation, air and duct sealing. There are a wide variety of duct sealing offerings, some directed specifically to mobile homes, while other focus on site-built residences.

a. 2017 Program Accomplishments

The program exceeded the original natural gas savings estimates during 2017 by 17 percent. Key contributors were air sealing and single-pane conversion windows measures, along with water-saving measures. It is possible that customer interest may have been driven by the region’s high property turnover. According to the program’s contractor feedback, customers seem to be more likely to make significant weatherization investments when a home is new to them.

b. Adaptive Management

Electric savings fell short of 2017 estimates. During the second half of the year, program staff developed a process to better track referrals and re-engage contractors to improve savings moving forward.

c. Key Variance Drivers

Single family weatherization gas savings over performed, achieving 117 percent of 2017 targets. The higher savings can be attributed primarily to higher than expected therm savings for single pane windows replacement, which was close to 25 percent of total program savings at approximately 95,000 therms, and 29 percent above target.

4) Space and Water Heating

The Space and Water Heating programs deliver incentives and drive installations of heating and water heating systems, including but not limited to: natural gas furnaces and boilers, heat pumps, hydronic systems, and domestic water heaters.

a. 2017 Program Accomplishments

Electric Space heating programs exceeded program goals. Ductless Heat Pumps continue to become a larger factor in meeting savings targets, which has followed a multi-year trend. Natural Gas Space heating programs also slightly exceeded their goal with strong redemption of the Energy Star® furnace rebates.

The Residential Electric Water Heat program exceeded its savings targets and spending forecast in 2017.

b. Adaptive Management

In 2017, PSE began the process of adjusting single family rebate offering to better align with our overall program goals. PSE reduced the rebates for Ductless Heat Pump (DHP) for traditionally constructed (sometimes referred to as “stick-built”) homes to $800 due to market changes and budget constraints. PSE maintained the $1,200 rebate for DHPs in manufactured homes to provide additional support and accessibility to this hard-to-reach customer segment.

PSE also updated the eligibility requirements for the Electric Water Heating program which will now allow the installation of heat pump water heaters in conditioned spaces. PSE made this change to align with the Regional Technical Forum and rebate requirements for other regional utilities. This change resulted in an increased demand for this product.

c. Pilot-Like Initiatives

PSE piloted an approach of partnering with HVAC distributors to combine marketing efforts and help customers save even more money on eligible equipment. PSE worked with Mitsubushi and Trane® to run two limited-time offers for PSE customers which leveraged distributor rebate dollars and financing opportunities. This unique approach helped promote rebates in while leveraging distributor marketing and rebate dollars. Over 400 customers participated and PSE received valuable feedback on how to improve these types of offers in 2018.

d. Hard-to-Reach and/or Proportionately Underserved Segments

The program maintained a higher mobile home ductless heat pump rebate to reach the mobile home market. Ductless Heat Pumps (DHP) are excellent options for mobile homes using electric resistance forced air systems. The smaller size and relatively lower cost of the product allows the space heat program to help PSE customers lower their energy bills and increase their comfort with a cost effective option.

The program continues to work with contractors to offer this rebate to qualifying customers.

e. Key Variance Drivers

Space heating savings came within 10 percent of target, slighting exceeding expectations with minimal variance. Electric water heating exceeded its targets as a result of regional outreach efforts and changes to eligibility requirements.

5) Dealer Channel Measure Highlights

Measures, grouped by types that were reported in 2017, are presented in Table V-4. Measures indicated with an asterisk are reported in units of square feet.

Table V-4: Overview of 2017 Dealer Channel Measure Activity

Dealer Channel Measure Counts				
Program Measure Type	Measure	Electric	Natural Gas	
Home Energy Assessments				
Plug Load	Advanced Power Strip	200		
Energy Assessment	Home Assessment	11,500	1,300	
Lamp	LED Lamp	156,000		
Water	Residential Showerhead	4,800	6,200	
	Residential Aerator	3,000	4,100	
Space Heat				
Heat Pump	Heat Pump Sizing and Lockout Control	700	90	
	Ductless Heat Pump	2,400		
	Ground Source Heat Pump	10		
	Heat Pump	1,400		
	Heat Pump Conversion	560		
Boiler	HVAC Boiler		60	
Fireplace	Gas Fireplace		830	
Furnace	Gas Furnace		5,400	
Water Heat				
Water	Heat Pump Water Heater	600		
Weatherization				
Sealing	Air and Duct Sealing	200	1,400	
	Air Sealing	275,000	1,600,000	*
	Duct Sealing	30	110	
Energy Assessment	Home Performance Assessment	10		
Insulation	Attic Insulation	244,000	1,210,000	*
	Floor Insulation	278,000	1,050,000	*
	Wall Insulation	43,300	190,000	*
Safety	CO Detector		800	
Ventilation		10		
Window	Double Pane	130	1,100	
	Single Pane	81,900	210,000	*

D. Single Family Fuel Conversion

Schedule E216

This program discussion is presented out of Conservation Schedule-number sequence. This is because it is managed within the Dealer Channel. Presenting it in numeric sequence would also interrupt the program sequence of the Residential Business-to-Business (RB2B) Channel, which also includes the Single Family New Construction program, Schedule E/G 215 as part of its Residential New Construction discussion. PSE retired the Single Family Fuel Conversion program at the end of 2017.

1) Description

The Company provides incentives for replacing existing electric forced-air or zonal space heating equipment and/or electric water heating equipment with high efficiency natural gas space heating equipment[32] and/or high efficiency natural gas domestic water heating equipment.

PSE also incentivized qualifying natural gas clothes dryers through the fuel conversion program in 2017. Incentives were provided for replacing existing electric ranges and clothes dryers operating on PSE electric with the equivalent or better natural gas version of that appliance.

2) 2017 Accomplishments

Historically the majority of the savings for the program came from electric to natural gas water heater conversions. This is due to the relative ease of converting water heaters when there is already natural gas service to the house.

However, in 2017 the program outperformed original savings estimates with the main driver being higher than anticipated activity applicable to the clothes dryer conversions and overall space-heat conversions performing in-line with forecasts.

[32] As outlined in the Company's Schedule 216, **Section 1, Availability/Eligibility**, the equipment to which the Customer is converting must be "highly efficient natural gas space and/or domestic water heating…"

3) Adaptive Management

During the third quarter of 2017, PSE elected to sunset the fuel conversion program by December 31, 2017, due to a variety of factors including but not limited to: alignment with carbon reduction efforts internally at PSE and across the region; and, reductions in cost effectiveness in the program.

4) Key Variance Drivers

In 2017, the Fuel Conversion program performed slightly under its savings forecast. Historically, this program has been difficult to market as it is geared towards a very specific customer. Overall, the number of units installed exceeded targets but the savings targets fell short. This was due to the implementation of the range and dryer incentives. These measures are an easy conversion but carry a relatively low savings compared to converting space and/or water heat.

5) Fuel Conversion Measure Highlights

A summary of measure categories installed in the 2017 Single Family Fuel Conversion program is provided in Table V-5.

Table V-5: Key Fuel Conversion Measures

Fuel Conversion Measure Counts			
Measure Type	**Measure**	**Electric**	**Natural Gas**
Clothes Dryer	Residential Clothes Dryer	580	
Combined	Space and Water Heat	40	
Furnace	Gas Furnace	60	
Range	Residential Range	310	
Water Heat	Storage Water Heater	40	
	Tankless Water Heater	130	

E. Residential Business to Business (RB2B) Channel

The Residential Business-to-Business (RB2B) Channel develops and implements programs for businesses that provide direct services and benefits to PSE customers, and is comprised of the Multifamily Retrofit, Low Income Weatherization, Single Family New Construction and Multifamily New Construction, and programs.

The Multifamily Retrofit program collaborates with variety of stakeholders and provides outreach services to increase customer awareness and maximize the benefits of PSE services to property residents and managers. The Low Income Weatherization program works with social service agencies to satisfy the need of PSE customers that meet low income guidelines. The Single Family and Multifamily New Construction staff relies heavily on their relationships with the building industry and related trade allies like NW Energy Star® Homes, to ensure that measures are incorporated in the design and construction of a wide spectrum of multifamily building types.

The group provides services under electric and natural gas Schedules 215, 217, 218 and collaborates with PSE's Business Energy Management sector when multifamily projects include a combination of residential and commercial custom measures. The Low Income Weatherization program is operated under the terms of electric and natural gas Schedules 201.

1) Low Income Weatherization

Schedules E/G 201

a. Description

The Low Income Weatherization program assists low-income residential customers to improve the energy efficiency of single family residences, multifamily structures and manufactured/mobile homes.

In 2017, the goal of Puget Sound Energy's Low-Income Weatherization program was to continue to lessen the energy-cost burden of lower-income customers by improving the energy efficiency of their residences and educating these consumers on routine ways to reduce their energy use and costs. Program efforts built on the existing model and continues to focus on partnerships with assistance agencies and leveraged PSE programs such as bill-payment assistance.

Key stakeholders include: low-income gas and electric customers; county and municipal low-income weatherization agencies in the PSE service area; Washington State Department of Commerce (Department of Commerce or Commerce); and participating weatherization contractors and suppliers.

For those projects receiving PSE funding combined with other State and Federal funding, income eligibility is determined in accordance with Department of Commerce Policies and Procedures. Residential Low Income Weatherization provides funding of many cost-effective home weatherization Measures for low-income customers receiving gas and/or electric heat from PSE.

Funds are used for single-family, multi-family and mobile home residences. Some Measures that do not meet standard cost-effectiveness tests may also be approved. Measures funded may include conservation measures that are cost effective consistent with the Department of Commerce's *Weatherization Manual* and those measures identified through the priority matrix in the *Weatherization Manual*.

In addition, this program provides funding for energy-related repairs and energy education. An energy-related repair is a repair that is necessary (1) to install a weatherization Measure properly, (2) to protect the health and/or safety of the occupants, (3) to address an existing problem that weatherization could aggravate or (4) to protect the integrity of the installed Measure.

Examples include but are not limited to:

- Repair roof leaks;
- Electrical inspection and repairs;
- Mold/mildew remediation;
- Rodent, insect and pest extermination;
- Bath and kitchen ventilation upgrades;
- Furnace or water heater repairs or replacement.

Sources of Low Income Weatherization funding include, but are not limited to, Electric Rider, Gas Tracker, Company funds, BPA credits or other federal or state government programs.

For those funds that must meet a cost effectiveness standard, up to 30 percent may be applied to energy-related repairs or to pay the balance of an energy-efficiency measure that are necessary to effect the installation of other cost-effective Measures.

b. 2017 Program Review

The 2017 Low Income Weatherization program electric savings exceeded goal by 13 percent, and natural gas savings finishing the year at 140 percent of goal. The natural gas program significantly exceeded expectations which is discussed further under “Key Variance Drivers”. The Program served over 1,300 housing units. Of those, 17 percent were single family, 65 percent were multi-family, and 18 percent were manufactured home residences.

c. Adaptive Management

The PSE Low Income Weatherization program continued to achieve conservation savings on measures that are considered cost effective by the Department of Commerce (DOC) in addition to prescriptive measures typically offered by the Program. For measures considered cost-effective by DOC, the program was able to leverage Savings to Investment Ratio (SIR) values on custom measures while capturing TREAT energy modeled savings values.

d. Pilot-Like Initiatives

PSE completed a successful social media campaign promoting PSE Assistance Programs that targeted working families. Data shows the campaign reached approximately 63,000 people with a higher-than-average click-through rate, thus showing first increased awareness, and second, follow-up action. PSE worked with a public relations firm to identify a target audience, craft the messaging, and identify the delivery channel, which was Facebook.

e. Hard to Reach and/or Proportionately Underserved Segments

By its design, the Low Income Weatherization program is completely focused on a Hard-To-Reach segment of PSE customers: those that meet a specific income criteria. The program also reached other Hard-To-Reach Segments including, Rural, Manufactured Home, Multi-family, and Renters.

In addition to its ongoing work to effect energy efficiency in this segment, LIW program staff participated in a Get to Zero Working Group for PSE Assistance Programs with emphasis on Energy Assistance. This effort culminated in contractor selection to support the development of online self-service tools such as scheduling and intake to improve the customer experience.

f. Key Variance Drivers

In 2017, PSE offerings for the gas program continued to be limited due to cost-effectiveness considerations. However, the program exceeded its 2017 goal, which was reduced from 2016 due to identified program constraints discussed in the 2016 Annual Report. In 2016, it was reported that reduced gas program savings had more to do with limited PSE program offerings and the inability to find structures that qualify for those offerings. Nonetheless, the program found more opportunity than forecasted, particularly in the multi-family sector in the 4th quarter.

Additionally, in 2016, the program experienced some management transition at the agency level, so this increase may in part be reflective of some post-transition stability. Finally, the program invested in upgrades and maintenance to its online tracking and reporting system. The upgrades, primarily focused on the gas program, were done in preparation for the 2018 program year. These upgrades are reflected as a $25,000 capital accrual, a miscellaneous expense, in December gas reporting.

g. Measure Summary

Table V-6 provides a high-level summary of Low Income Weatherization measures installed in 2017. The figures represent unique dwelling units (homes, apartments, manufactured homes, etc.), and don't always correlate to the total number of measures installed.

For instance, for each “LED Lamp” category indicated, there could be substantially more than one LED lamp installed. Indicated values also include measures approved through the agencies’ application of the SIR test in certain instances.

Table V-6: Low Income Weatherization Measure Highlights

Low Income Weatherization Measure Counts			
Measure Type	**Measure**	**Electric**	**Natural Gas**
Barrier	Vapor Barrier	60	
Door	Door	10	1
Insulation	Attic Insulation	200	50
	Duct Insulation	10	40
	Floor Insulation	200	30
	Pipe Insulation	200	30
	Slab On Grade Insulation	5	
	Wall Insulation	50	20
Lighting	LED Lamp	2,700	
Refrigerator	Refrigerator Replacement	40	
Sealing	Air Sealing	200	
	Duct Sealing	100	40
	Shell Sealing	200	60
Space Heat	Zone Heating	1	
	Furnace Replacement	5	100
	Ductless Heat Pump	400	
Ventilation	Mechanical Ventilation	100	1
	Whole House Ventilation	200	
Water	Heat Pump Water Heater	5	
	Water Heater Insulation	5	
	Water Heater Replacement		
	Residential Use Aerator	200	40
	Residential Use Showerhead	70	20
Window	Double Pane	30	

2) Multifamily Retrofit

Schedules E/G 217

a. Description

The objective of the Multifamily Retrofit program is to increase the installation of cost effective energy efficient Measures into existing multifamily (MF) buildings with PSE natural gas and/or electric service.

The Multifamily Retrofit program is designed to increase the uptake and installation of selected energy efficient Measures in existing multifamily buildings with five or more attached residential dwelling units located in PSE's electric and natural gas service areas. The team works with property owners, managers, trade ally contractors, tenants, and condominium Home Owner's Associations (HOAs) to encourage program participation. The program also serves multifamily campuses which have a mixture of building types including buildings with less than five units. Multifamily structures and campuses typically have opportunities for upgrades in the units, common areas, and building envelope.

Measures may include: windows, insulation, and air sealing enhancements; appliances, interior and exterior lighting, and HVAC upgrades; O&M improvements; behavioral modification; and calculated commercial upgrades such as central boilers and solar pool heaters. This program targets installation of energy efficient measures occurring during planned retrofit and replace upon failure. PSE will update current measures list and incentives as needed.

The program continually researches and develops new and innovative means to achieve cost effective energy savings. Examples may include behavioral based programs such as web-enabled thermostats and Strategic Energy Management (SEM). Web-enabled thermostats empower customers with both knowledge and control of their heating costs through a simple user-interface accessed on their smart phone. SEM provides a holistic approach to multifamily property portfolios by engaging managers, maintenance staff, and residents to achieve energy cost savings through behavioral changes, operational improvements, facility maintenance, and attention to utility accounting.

Through effective customer education and implementation, PSE is continually exploring the impacts of how new technologies and energy management plans can contribute to the quantification of behavioral based energy savings.

b. 2017 Program Review

Overall, the program achieved 95 percent of the electric target and 36 percent of the natural gas target. The Multifamily Retrofit program reached over 500 multifamily properties across almost 3,500 buildings, which ultimately served over 35,000 household units. Contractor-installed measures accounted for approximately 56 percent of the total savings, whereas vendor direct install measures comprised the remaining 44 percent.

i. Air Sealing

Air Sealing projects were conducted across 30 buildings in 2017, resulting in 354 multifamily households being served. Air Sealing projects can take up to 8 months to complete, and field staff continues to provide a high level of involvement of quality control and assurance during the installation process. The program now requires preconstruction meetings with all project stakeholders to establish clear lines of communication with property managers and provide technical assistance to contractors.

The Air Sealing program continues to be a stand-out measure in Multifamily with growing interest from regional utility stakeholders, especially as insulation opportunities become more saturated. In 2017, PSE began utilizing a prescriptive PSE deemed savings per dwelling unit based on the third party evaluation report recommendations rather than utilizing a calculated approach. This approach allows for fewer blower-door tests, which in turn reduces the disturbance of residents and helps maintain lower costs associated with the measure. Actual measured savings and bill history will be periodically evaluated to ensure relative precision of the prescriptive savings value.

ii. Energy Fairs & Customer Recognition

To increase customer engagement, the program conducted seven “energy fairs” in 2017 at apartment and condominium complexes. Most of these were held during or immediately prior to direct-install work being done.

This increased customer participation and education, allowing customers to ask questions and touch/see the products that would be installed.

The program also continued the “Strive for Five” recognition campaign. The campaign recognizes multifamily property managers who complete three or more measure categories within a property with a plaque to display. In total, 33 plaques were delivered to properties achieving the minimum number of measure categories.

Given PSE’s long-standing relationships with multifamily property managers and the fact that a comprehensive retrofit on a complex can span multiple years, the plaques serve to further engage and encourage the customer to complete all energy efficiency measure opportunities.

c. Adaptive Management

The multifamily team continues to focus on driving awareness of the program and increase participation with owners and managers of multiple properties. The program now has a close working relationship with a variety of multifamily customer types including housing authorities, market rate property management companies, condominium Home Owners Associations (HOAs), and workforce housing providers including the low income agencies in the region.

The Multifamily team hosts “energy fair” table events and attends HOA board meeting in an ongoing effort to make their participation easier. These strategies help achieve 50 percent participation in direct install, a target set by the program as the balance point of managing cost effectiveness of this free opportunity.

The Multifamily program also made process improvements for handling applications from condo owners in an effort to streamline their participation. PSE also developed specified brochures to outline their process given that energy upgrades for one townhome or condo follows a different process than upgrades for an entire property.

Furthermore, the team reached out to Multifamily contractors and other commercial/industrial contractors to create more awareness of the program. Overall, these adaptive strategies resulted in a significant number of projects that were completed in December.

d. Pilot-Like Initiatives

i. Line Voltage Connected Thermostats

The multifamily market has been interested in Line Voltage Connected Thermostats (LVCTs), and PSE received a grant from Washington State University through their Community Energy Efficiency Program (CEEP) to pilot the installation of nearly 1,400 LVCTs. Across five different sites, Honeywell and Sinope thermostats were directly installed in 25 buildings. Product functionality, ease of use, product warranty, web/portal features, cost, and customer support all played a role in selection of the two products.

12 months of post install billing data will be collected and an impact evaluation will compare results against a control group with like buildings at each site. Customers have shown initial satisfaction and will also be surveyed at the completion of the evaluation period to help better understand the technology and help establish a regional savings value and products offered by manufactures.

ii. Strategic Energy Management

(SEM) is a pilot-like initiative that provides a holistic approach to energy efficiency by engaging property owners, managers, maintenance staff, and residents to achieve energy cost reductions. SEM is largely untested in multifamily properties and the pilot will apply proven C&I SEM strategies to the multifamily sector to evaluate effectiveness. The program is taking a holistic approach to energy efficiency that combines physical interventions with changes to operations, maintenance, and user activities.

The first quarter of 2017 marked the official kick-off to the 12 month engagement period with 15 large properties across 5 portfolios participating in the program. The properties represent approximately 37 million kWh of aggregate residential and commercial baseline energy consumption. The SEM team held Operations and Maintenance (O&M) workshops with facilities and management staff, and held monthly check-in calls to support their efforts to incorporate energy saving education and awareness into their engagement with residents. The team also held a number of community events (also referred to as energy fairs) to help educate residents on ways to conservation energy in their units.

The SEM team also engaged five of the sites in a two month 'Battle of the Building' style Energy Challenge. One site competed internally to see which buildings could earn the most points for their participation. Another site challenged the neighboring complex under the same management toward achieving the greatest number of points. Lastly, the fifth site set a targeted total point goal in order to win the challenge.

Achieving actual energy savings was certainly the goal, but a points system by achieving related behavioral energy efficiency tasks helped level the playing field and did not require waiting for the billing cycle to close to determine the energy saved. The prizes included a donation to a charity of the winner's choice sponsored by PSE's Outreach department and a community event with food and raffle prizes.

There were significant non-energy benefits that came from these interactions including explaining how to better understand PSE's monthly billing statement, and how to utilize PSE self-serve options available online. A full M&V report of the savings, outcomes, and lessons learned will be forthcoming upon completion of the 12 month engagement period.

iii. Incentive-Sharing for Water-Savings Measures

PSE has continued its partnership with the Cascade Water Alliance (CWA) in a joint effort to help the region save water. CWA and PSE split the installed cost of water-saving aerators and showerheads in locations that span both utilities' service territories. The added revenue helps to offset a portion of the program's overall costs, reflecting staff's commitment to identifying cost reduction strategies and prudently using ratepayer funds.

iv. Bundled appliance recycling strategy

In order to increase participation rates for multifamily customers, the Energy Star® Refrigerator rebate ($75) was bundled with the refrigerator recycling rebate ($25) for a combined $100 rebate. PSE's appliance replacement and recycling vendor, ARCA, was able to leverage their purchasing power to extend nearly wholesale prices to customers for new Energy Star refrigerators, while also providing the haul-away and decommissioning of old refrigerators.

The bundled approach aimed to make it easy for participation and gained some interest, but ultimately was not successful. Program staff found that property management companies often utilize their own preferred vendors.

e. Hard-to-Reach and/or Proportionately Underserved Segments

Low income customers are frequently deemed an underserved segment, but additional residential Hard-to-Reach (HTR) segments also include moderate income customers, and multifamily tenants. The Multifamily Retrofit program conducted a significant amount of work to develop plans to maximize capacity that ensure that PSE proportionately serve the HTR segment.

Through the use of a GIS (geographical information systems) analysis of census data within the PSE territory, PSE is able to geographically identify regions of that are categorized as “assumed low income”. Preliminary results have served as a benchmark of past participation among this customer segment and program staff continue to drive its marketing and awareness campaign in these areas.

f. Key Variance Drivers

As noted in the discussion introduction, the Multifamily Retrofit program ended the year at 95 percent of the electric savings target, while corresponding expenditures were 113 percent of the program budget. Natural gas savings were 36 percent of the target and 51 percent of the natural gas budget. Drivers of this shortfall are numerous.

As a long-running program, there are fewer multifamily structures that have not already participated In the program over time. In light of this, program staff have consistently lowered the natural gas savings forecast approximately 25 percent since 2015. Opportunities for natural gas measures in the Multifamily Retrofit program are limited within the PSE service territory. Multifamily buildings that use gas as the primary heat comprise only 13 percent of the inventory, half of which are centralized systems. Similarly, only 8 percent of the segment heats water with gas.[33]

[33] Source: Residential Building Stock Assessment (RBSA) – Multifamily 2013.

Furthermore, similar to C/I Retrofit and New Construction programs, the Multifamily Retrofit program is subject to potential construction delays. At a relatively small annual forecast of 84,000 therms, one such 2017 delay incurred represented approximately 25 percent of the program's 2017 natural gas savings plan.

Outside Services showed a significant variance for both electric and gas, and is due to several journal entries being completed in March and April to reconcile 2016 accounting errors of incentive payments issued by the program's service partner. The electric acquisition cost was 24 percent lower than originally anticipated due to a higher share of low cost/kWh measures. The gas acquisition cost was 15 percent higher than originally anticipated due to an increased rate of high cost/Therm measures.

g. Measure Highlights

Table V-7 provides a general overview of measure categories reported in the Multifamily Retrofit program in 2017. Some measures, indicated by an asterisk, are indicated in terms of square feet installed (for instance, insulation).

Table V-7: Multifamily Retrofit 2017 Measures

Multifamily New Construction Measure Counts				
Measure Type	**Measure**	**Electric**	**Natural Gas**	
Advanced Power Strip	Advanced Power Strip	11,300		
Appliances	Clothes Washer Replacement	300		
	Residential Use Washer	1		
	Refrigerator Replacement	300		
	Residential Use Refrigerator	15		
Fireplace	Gas Fireplace		1	
Lighting	LED Fixture	400		
	LED Lamp	140,100		
Furnace	Gas Furnace		1	
Insulation	Attic Insulation	3,433,000	124,000	*
	Floor Insulation	335,100	11,600	*
	Wall Insulation		700	*
Thermostat	ELV Thermostat	200		
	Web-Enabled Thermostat	600		
Ventilation	Mechanical Ventilation	1,000		
Water	Water Heater Insulation	1,200		
	Residential Use Showerhead	1,800	1,000	
	Residential Use Aerator	4,100	1,000	
	Residential Use Adapter	6,900	900	
Window	Double Pane	267,000	4,700	*
	Triple Pane	5,400		*

3) Residential New Construction

Schedule E215, G215; applicable to single family construction
Schedule E218, G218; applicable to multifamily construction

a. Description

The following discussion applies to new residential construction, both single-and-multifamily structures. Conservation Schedule terms and conditions, as outlined in the above-noted Schedule numbers, govern the applicability, measure types, funding, analyses and general rules and provisions for each structure classification. Where there are specific requirements, service offerings, measures, incentives, marketing, or outreach applicable to the specific structure type, those are so noted in each of the following sections.

PSE did not offer single family new construction incentives in 2017 due to stringent code updates. While PSE did not offer financial incentives, it worked closely with the Northwest Energy Efficiency Alliance (NEEA), the Master Builders Associations and other builder organizations to maintain a presence in the market and provide technical support.

The Residential New Construction program acquires cost-effective energy savings from single-family new construction (single, duplex, and townhomes) and multifamily new construction projects The goal of each program is to increase the installation of energy efficient measures into new electric & gas heated buildings constructed in the PSE service territory.

In addition to newly constructed single-family structures, covered under terms of Schedule 215 (for both gas and electric service) Residential New Construction will include multifamily structures, per Washington State Energy Code 2015 Edition (effective July 1, 2017). Multifamily units are covered under terms of Schedule 218 (for both gas and electric service). These structures typically have both in-unit and common area energy-savings opportunities. These include, but are not limited to, energy efficient upgrades to building shell, appliances, lighting, HVAC and water heating systems.

Eligible customers for multifamily new construction include owners, developers, or agents acting on behalf of a responsible party of service receiving electricity or natural gas through PSE.

This program provides financial incentives to the above audience for both natural gas and electric residential and commercial meters. The incentives offered are both prescriptive and calculated.

In the new construction marketplace, high-efficiency measures need to be specified and installed during design and construction. Otherwise, it may many years before energy efficient changes to the buildings take place. For measures and incentives that apply to existing multifamily structures, please refer to the Multifamily, Existing program measures in Exhibit 4: *Measures, Incentives and Eligibility*.

Rebates and incentives are offered to eligible natural gas and electric PSE new construction developers, contractors, trade allies and customers (cumulatively, the program refers to these as “partners”) who are constructing new single-family residential structures and multifamily buildings. The program also works with these partners to market energy efficient equipment to their customers. Energy Efficiency encourages the purchase and installation of energy efficient products for their construction projects.

For new multifamily construction projects, PSE packages financial incentives under one grant and are structured to work in accordance with current Business Energy Management programs. PSE provides a single “point of contact” to development teams for all energy efficient measures and/or upgrades. This allows PSE to maximize the energy savings opportunity in each development and reduce multi-program confusion for the customer.

The program includes prescriptive rebates, and/or incentives, and calculated grants. Eligible customers include builders, developers, owners or agents receiving electricity through PSE’s residential schedules 7 (including 17, 27, 37 and 47) and 7A; and commercial schedules 8, 11, 12, 24, 25, 26, and 31; and/or natural gas service through PSE’s residential schedule 23 and commercial schedule 31.

Structures include but are not limited to single-family dwellings, duplexes, apartments, town homes, condominiums, dormitories, affordable housing, low-income housing, workforce housing, and assisted living residences with four or more attached units.

There may be any combination of residential and commercial meter mixes in each type of construction. Once the meter type mix is confirmed with the development team, the appropriate PSE programs are identified to serve that development. Incentives include a variety of end-use classifications, not limited to:

- Lighting: Common area,
- Appliances: Clothes washers, refrigerators,
- Ventilation; in-unit whole-home or common area,
- HVAC equipment upgrades.

For all of the conservation Measures installed, Energy Efficiency receives measure installation data directly from builders, developers, showrooms and distributors. It is therefore possible to precisely track measure details.

b. 2017 Program Reviews

i. Single Family and Manufactured Home New Construction

Although PSE's Single Family New Construction (SFNC) and Manufactured Home New Construction (MHNC) programs were under hiatus in 2017 and maintain an active Conservation Schedule, PSE continued to work closely with the Northwest Energy Efficiency Alliance (NEEA), the Master Builders Associations (MBAs), and other builder organizations to maintain a presence in the market and provide technical support.

A. 2017 Achievements

In 2017 PSE began to explore the option of implementing a Regional Technical Forum (RTF)-deemed Built Green measure for SFNC and a performance based incentive developed through NEEA and the standard modelling protocol.

The standard modelling protocol aims to provide a simplified method for estimating reliable savings with site-specific energy modeling for efficient new homes. The goal is to align all market actors (utilities, realtors, builders, raters, MLS providers, financers, homebuyers) with a metric that differentiates homes on energy efficiency.

The benefits of offering a comprehensive single family program based on modeling protocols is that it enables utilities to determine savings on a house-by-house basis employing integrated design techniques with the same asset metric tool used by the other market actors (for instance, REM/Rate™).[34]

The protocol will validate REM/Rate savings estimates for new construction as an alternative to establishing individual UES measures.

Desired Outcomes include:

- Utilities easily claim all incremental savings above code in energy efficient homes;
- Utilities identify and offer programs for new construction customized to their needs;
- Realtors use the rating metric to communicate the energy efficiency of a home and increase sales rates;
- Builders use performance ratings to communicate the value of energy efficiency and sell homes for a premium;
- Raters provide builders with building science expertise to achieve integrated design savings that meet both market demand and utility objectives; and
- Homebuyers are able to identify which homes are more efficient and make comparative decisions.

B. Adaptive Management

PSE invested additional resources to better understand the market and which SFNC and MHNC program strategies would be most effective. To help determine which strategy would be most effective, PSE—with the help of NEEA—organized a focus group with several single-family certified home raters. In addition to the focus group, PSE held discussions with other utilities and MBA representatives, and Northwest Energy Works representatives to help PSE gain a better understanding of the barriers to influencing the market.

[34] From REM/Rate™'s website, http://www.remrate.com/: REM/**Rate**™ software calculates heating, cooling, hot water, lighting, and appliance energy loads, consumption and costs for new and existing single and multi-family homes.

Some of the barriers include increasingly stringent energy codes or limited demand for energy efficiency measures due to low housing inventory and high demand in the Puget Sound region. PSE worked alongside NEEA and the MBAs to reinstate a cost effective SFNC and MHNC program.

C. Hard-to-Reach and/or Proportionately Underserved Segments

In 2017, PSE began analyzing the feasibility of introducing a manufactured home new construction program in 2018. Additional analysis and development are ongoing.

D. Key Variance Drivers

The electric spending was 106 percent of what was budgeted for 2017 while the natural gas spending was 75 percent. PSE increased spending in the electric program due to increased electric market activity and a pending decision on the approval of a Performance Path program. A planned Marketing expense of $14,000 for the MBA sponsorship was incidentally accounted for in the "Miscellaneous" budget category.

The decrease in gas spending was due to the lack of gas measure development in the new construction market. PSE sought to align efforts with the region and leverage NEEA pilots and RTF measure metrics that were not effectively utilized until mid-2017.

ii. Multifamily New Construction

A. 2017 Highlights

The New Construction team continued an effort to increase collaboration with other PSE departments, such as Customer and System Projects (C&SP), in order to become aware of new construction projects earlier. This awareness gives PSE the ability to work with the customer to leverage the potential incentives to get the most cost-effective energy savings. In addition, PSE began an incentive marketing plan to provide increased industry awareness of new construction programs, and to stimulate earlier contact by customers. Similar to C&SP collaboration, increased awareness of projects gives PSE the opportunity to capture a greater proportion of the industry savings.

Earlier contact with prospective projects allows Energy Efficiency to have a greater energy savings influence on the project and provide a better customer experience with a timely, proactive grant process. In the first quarter 2017, PSE participated in joint utility round-tables to identify trends in how regional and national utilities are approaching the new construction market.

Through the discussions it was found that each utility struggles with similar new construction market challenges. Some of the main regional challenges the utilities identified were market saturation rates, increasingly stringent codes, cost effectiveness of measures, and implementing performance based programs. As a result, NEEA developed a Commercial Code Enhancement program to enable utilities to continue offering relevant energy efficiency measures that influence the new construction market for years to come.

B. Adaptive Management

As a result of the 2015 Washington State Energy Code changes taking effect on July 1, 2017, PSE continued to offer prescriptive, custom, and whole building measures to support the different builder types.

During the planning process, it was found that PSE was only capturing a small percentage of qualified multifamily new construction projects, which was also highlighted in the 2017 IRP. PSE began exploring other resources to help capture more of the market such as hiring a third party vendor to support early project design and shifting resources internally to account for the increase in activity.

In 2017, PSE continued to merge program resources between the Commercial and Multifamily New Construction programs. Given the similarities between the two programs PSE collaborated on incentive structures and collateral. This sharing of resources resulted in administrative efficiencies that allowed for improved marketing and outreach.

C. Hard-to-Reach and/or Proportionately Underserved Segments

In 1st quarter 2017, PSE designed an initial strategy to increase Affordable MFNC units served through enhanced incentive strategies. There currently is a critical need in the Puget Sound region for affordable housing.

King County has documented in their *Consolidated Housing and Community Development Plan for 2015-2019* (updated March 22, 2017) and *King County Consortium 2017 Annual Action Plan*, that the availability of affordable housing is scarce for households earning between 40 and 60 percent AMI (area median income), severely insufficient for those below 40 percent AMI, and completely insufficient for below 30 percent AMI.

In response to this serious affordable housing deficiency, the Residential New Construction team created a higher energy efficiency financial incentive level available to MFNC projects that will offer more than 50 percent of total housing units to those earning 60 percent AMI or lower. The program remains consistent with LIW program income eligibility guidelines. The energy conservation measures offered will be identical to those offered in Multifamily New Construction program and all enhanced measure incentives remain cost effective.

The program maintains an overall cost effectiveness above a 1.0 TRC for both the market incentive rates and the enhanced affordable project incentive rates. The TRC cost effectiveness of each measure was calculated using the measure cost, load type, measure life, annual energy conservation savings and program overhead. The enhanced incentive rate is capped at 50 percent more than the market rate incentive. Individual multifamily new construction measures are consistent with BEM cost effectiveness criteria.

PSE created an ongoing New Construction marketing plan for 2017 and beyond, focusing on raising awareness with key hard-to-reach market actors. The plan encourages project designers to contact PSE early in design so that the new construction incentives can have the most valuable impact. An important piece of the marketing plan is the future coordination with the local cities, municipalities, and utilities.

D. Key Variance Drivers

The electric MFNC program budget ended the year at 84 percent of what was budgeted for the 2017 year. The DBtC came in higher than expected due to an increase in cost effective measures and internal grant process efficiencies. The Final savings counts were at 102 percent of the anticipated goal. PSE did not use 100 percent of its anticipated electric expenditure because of a few custom projects being more cost effective than previously forecasted.

Although the MFNC program budget ended the year at 247 percent of goal, final savings counts were increased to 268 percent. This increase in savings and expenditures was the result of a large natural gas project that equaled 75 percent of the 2017 goal. This gas project was originally slated for completion in December of 2016 but was completed in early 2017. Multifamily projects that have substantial commercial elements frequently surpass expected completion dates. PSE also saw an increase in the amount of domestic hot water (DHW) projects beyond what was anticipated.

c. Multifamily New Construction Measures

PSE provides a general overview of prescriptive measure categories reported in the 2017 Multifamily New Construction program in Table V-8. Many Multifamily New Construction programs are based on custom grants, and as such, are not listed here.

Table V-8: Multifamily New Construction 2017 Prescriptive Measure Summary

Multifamily New Construction Prescriptive Measure Counts			
Measure Type	**Measure**	**Electric**	**Natural Gas**
Clothes Washer	Residential Use Washer	1,200	
Water	Residential Use Showerhead	500	1,600

VI. BUSINESS ENERGY MANAGEMENT

Chapter 6 provides a summary of the results made possible by customers served by Business Energy Management (BEM) staff. PSE will discuss savings and expenditure metrics, highlights of programs that drove results, ongoing efforts to connect with potentially hard-to-reach customer segments, cost-effectiveness results, and measure savings type profiles.

A. 2017 Business Energy Management Sector Summary

The following discussions provide brief summaries of the BEM sector. PSE provides detailed program discussions in Chapter 7: *BEM Program Details*. Table VI-1 and Table VI-2 provide, at a program level, BEM savings and expenditure figures.

Table VI-1: Business Energy Management 2017 Savings

2017 Savings				2017 Goal
Schedule	**Programs**	**Total**	**% of Goal**	
Electric	Electric			Electric
Gas	Gas			Gas
E250	C/I Retrofit	84,678	117.6%	72,000
E251	C/I New Construction	24,478	244.8%	10,000
E253	Resource Conservation Manager - RCM	14,394	47.6%	30,250
E258	Large Power User - Self Directed 449 + non-449	14,531	67.7%	21,474
E261	Energy Efficiency Technology Evaluation	0		0
E262	Commercial Rebates	33,800	102.3%	33,032
	Total Electric Programs	**171,881**	103.1%	166,756
G250	C/I Retrofit	621,452	146.2%	425,000
G251	C/I New Construction	12,546	12.5%	100,000
G253	RCM	676,636	123.0%	550,000
G261	Energy Efficiency Technology Evaluation	0		n/a
G262	Commercial Rebates	154,262	26.8%	576,665
	Total Gas Programs	**1,464,896**	88.7%	**1,651,665**

Table VI-2: Business Energy Management 2017 Expenditures

2017 Expenditures				2017 Budget
Schedule	Programs	Total	% of Budget	
Electric	Electric			Electric
Gas	Gas			Gas
E250	C/I Retrofit	$ 20,529,333	108.5%	$ 18,924,730
E251	C/I New Construction	$ 4,818,188	194.0%	$ 2,482,963
E253	Resource Conservation Manager - RCM	$ 1,455,455	71.4%	$ 2,038,023
E258	Large Power User - Self Directed 449 + non-449	$ 7,011,582	63.9%	$ 10,965,426
E261	Energy Efficiency Technology Evaluation	$ -		$ -
E262	Commercial Rebates	$ 6,613,595	81.3%	$ 8,135,272
	Total Electric Programs	**$ 40,428,152**	95.0%	$ 42,546,414
G250	C/I Retrofit	$ 1,743,705	87.2%	$ 1,998,657
G251	C/I New Construction	$ 190,895	35.7%	$ 534,927
G253	RCM	$ 495,080	90.6%	$ 546,324
G261	Energy Efficiency Technology Evaluation	$ -		$ -
G262	Commercial Rebates	$ 520,817	30.7%	$ 1,695,324
	Total Gas Programs	**$ 2,950,497**	61.8%	$ 4,775,232

B. Key Performance Drivers

PSE provides program-specific discussions on key drivers of BEM savings and expenditures in Chapter 7. The following sections provide brief highlights of those; readers may reference the above tables for these highlights.

1) Savings Drivers

Key BEM programs met or exceeded their savings goals in 2017. On the electric side, these include Commercial/Industrial Retrofit, C/I New Construction, and the Lighting To Go program. C/I Retrofit finished above its electric savings goal while prudently managing their expenditures to levels below forecast (118 percent of savings goal, 108 percent of budget), while the Small Business Direct Install program also performed well (99 percent of its savings goal, with expenditures at 92 percent of budget). Programs that missed their savings targets also realized a proportional expenditure reduction from budget. In the BEM natural gas suite, C/I Retrofit and the RCM program exceeded their savings goals.

Several BEM natural gas programs finished the year below their savings goals, including C/I New Construction (13 percent of goal), and two Direct Install programs: Small Business and Lodging (6 percent and 2 percent, respectively).

2) Expenditure Drivers

As noted in the previous section, programs that missed their savings targets also realized a proportional expenditure reduction from budget. Examples include electric Large Power User/Self-Directed ("449s": 50 percent of budget, 46 percent of savings goal, "non-449s": 68 percent of budget, 73 percent of savings goal), and many of the Business Rebates programs, including Agriculture Direct Install (27 percent of budget, 20 percent of savings goal).

On the natural gas side, program staff managed expenditures very well, finishing the year at 87 percent of budget while exceeding the savings goal by 46 percent, as was the case in the RCM program, with expenditures of 91 percent of budget and savings exceeding goal by 23 percent.

C. Targeting Hard to Reach and/or Proportionately Underserved Market Segments

PSE provides additional detail on its initiative to connect with potentially hard-to-reach customer segments in the program discussions in Chapter 7. Here, BEM provides some highlights of those discussions.

One hurdle for businesses interested in pursuing a custom energy-efficiency grant is their size. Smaller businesses often don't meet eligibility requirements for some programs, including potential lighting projects that are less than 25,000 kWh of first-year savings. BEM programs continue to evaluate these potential projects for grant opportunities. Commercial New Construction's new Lighting Power Density incentive approach also addresses the needs of smaller customers that do not qualify for whole-building incentives.

By continuing to collaborate with the Multifamily New Construction program, the C/I New Construction team enabled increased small business awareness and enrollment in all of Energy Efficiency's programs. The RCM program addressed the needs of small-to-medium businesses with different segment classifications within geographic zone with its Urban Smart Bellevue program, using the "blitz" approach with personalized attention.

The Business Rebates programs manage a suite of prescriptive measures that are designed to target hard-to-reach customers who do not traditionally participate in energy efficiency programs. For instance, most restaurant customers are considered underserved or hard-to-reach due to many factors including lack of upfront capital, renting of their space, uncertainty as to the longevity of their business, and reduced awareness of energy efficiency.

The Commercial Kitchen & Laundry program continued to reach these customers in unique ways that work for them, including door-to-door outreach through small business community outreach, and the sustained midstream rebate delivery through local equipment distributors. The kitchen program also continued its partnership with the Small Business Direct Install blitz activities, allowing for direct face time with over 50 individual restaurant customers.

The Small Business Direct Install program serves a unique set of customers who may be in rural areas, have limited access to resources, may be in difficult-to-access areas (for instance, Point Roberts), or be skeptical of efficiency services. Small-to-medium agriculture customers are, to a larger extent than small business customers, geographically diverse. Farms are characteristically in outlying areas that are rarely targeted for conservation by other vendors. Additionally, customer interest is seasonal- farms aren't able to address energy efficiency upgrades during growing seasons; they typically address upgrades during late fall and winter.

The small-to-medium sized hotel customer has many barriers to participating in PSE's programs, including limited access to the capital needed to make improvements. They also have many types of equipment which could qualify for rebates, and are often unsure where to start the process. This program brings the opportunity to these customers in a way that they can understand, providing a starting point on their energy efficiency projects. With many no-cost installations available to the customer, investments can be spent on larger opportunities with the help of the program's co-pay structure.

D. BEM Cost Effectiveness

Table VI-3 represents the Utility Cost and Total Resource Cost benefit-to-cost ratios for BEM.

Table VI-3: Business Sector Cost-Effectiveness Tests

Benefit to Cost Ratios Business Energy Management		
	Utility Cost	**Total Resource Cost**
Electric	3.66	2.24
Gas	1.69	1.48

A complete listing of cost-effectiveness ratios by program is presented in Exhibit 2: *Program Cost Effectiveness*. With the exception of Commercial HVAC (TRC of 0.82), all BEM electric programs finished the year with a TRC B/C ratio of over 1.0, with an overall Sector total of 2.24. Although the Commercial/Industrial (C/I) Retrofit (TRC of 0.75), C/I New Construction (TRC of 0.43) and Commercial HVAC (TRC of 0.59) programs experienced lower natural gas TRC ratios, the overall Sector's natural gas TRC was a satisfactory 1.48.

E. Five-Year Trends

Figure VI-1 provides a representation of BEM's 5-year electric savings and expenditures. BEM's electric savings are 2 percent lower in 2017, as compared to 2013, while electric expenditures over the same timeframe increased by 7 percent. From 2016 to 2017, electric savings increased 20 percent, and spending increased only 3 percent.

Figure VI-1: Business Energy Management Five-Year Trends: Electric

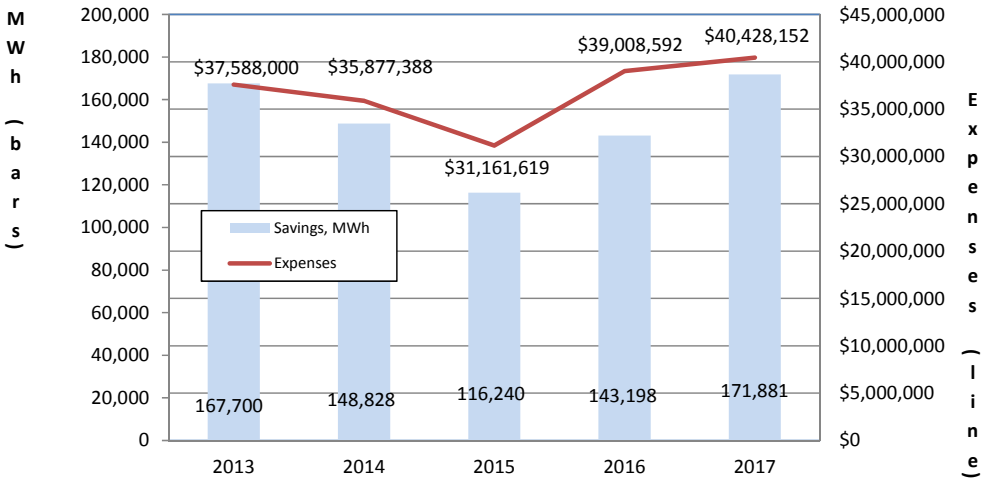
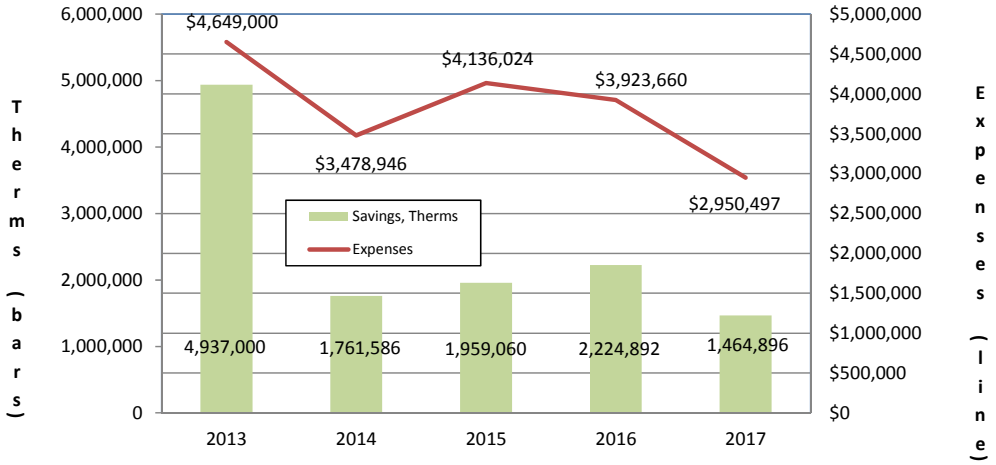


Figure VI-2 provides a view of BEM's 5-year natural gas savings and expenditures. BEM's natural gas savings have gone down 70 percent from 2013 to 2017, and the commensurate spending went down 36 percent. 2017 natural gas savings saw a decrease of 34 percent from 2016 levels, while expenditures were 25 percent lower than in 2016.

Figure VI-2: Business Energy Management Five-Year Trends: Natural Gas



F. Program Measure Tables

PSE provides project and measure tables in each of the program discussions in Chapter 7: *Business Program Details*. As noted in Chapter 2, PSE provides these high-level figures to afford a sense of program scale, customer demand, key savings contributors, and interesting measure types in each program. The tables include a limited number of measure types, and aren't intended to be a comprehensive list of all measures installed; only a representative sampling of measure types are provided. The listed measures aren't intended to comprise the total amount of 2017 program savings. Program measure tables aren't intended to be used as audit tools or to reconcile actual tracking records.

It is noteworthy that selected measures may be indicated in the "Dual" savings column in applicable program measure tables. These are measures—water-saving, some insulation, and various HVAC categories, for instance—where it isn't possible to conclusively determine the customer's primary applicable fuel type, or equipment that conserve both electric and natural gas: commercial dishwashers, for instance, and many custom grant projects have both electric and natural gas savings.

G. Program Discussions

The program discussions In Chapter 7 outline process and tactical improvements that enhance the customer's energy-efficiency experience and prudently utilize Conservation Rider funding, along with program results, key drivers of savings and expenditures, adaptive management, and significant accomplishments.

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VII. BUSINESS PROGRAM DETAIL DISCUSSIONS

The following discussions provide program-specific reviews of 2017 accomplishments, continuous improvement initiatives, and variance drivers.

A. Commercial/Industrial Retrofit

Schedules E/G 250

1) Description

PSE works with Commercial and Industrial customers to provide incentives for cost-effective energy efficiency upgrades to lighting, equipment, building shell, industrial process, and select O&M improvements. These services are provided on the customer's behalf and, where specified by the customer, will be developed in conjunction with design engineers, contractors, and/or vendors.

PSE conducts site assessments to identify savings opportunities, verify existing equipment and system operations, and makes recommendations to customers. PSE also reviews third-party savings estimates and analyses, and when required performs in-house analyses to validate energy savings. PSE works with financial decision makers at the customer's facility to ensure the customer is aware of cost-savings opportunities, including review of energy saving projections that can help obtain favorable financing rates.

Commercial/industrial retrofit projects commonly include: lighting system upgrades, HVAC equipment upgrades, HVAC controls improvements, commercial refrigeration Measures, and industrial process modifications. Additionally, incentives for existing building commissioning (O&M) improvements are provided through the Comprehensive Building Tune-Up (CBTU) Program.

Upon the customer's decision to proceed with a project, PSE issues a standardized Conservation Grant Agreement and Grant Attachment that establishes terms and conditions for participation in PSE's Custom Grant program and also explains how the measure will be verified. After the agreement is signed by both parties, the customer is given notice to proceed with the energy efficiency project.

Following completion of the project, PSE verifies the installation and energy savings via an on-site inspection, review of equipment operation and trend log data where necessary, and collection of project invoicing and specifications of installed equipment.

2) Overall C/I Retrofit Accomplishments

Some notable accomplishments of the C/I Retrofit program include:

- Transitioned the C/I Retrofit program to the DSMc system. This streamlined processes for internal staff and customer participating in the program.
- Continued to grow the large HVAC controls offering. The program has been praised by contractors for its defined set of program requirements and incentive approach that uses a whole building performance based approach.
- Worked with Seattle City Light staff to help get their Building Commissioning Program established based upon PSE's Commissioning offering. This allows natural gas customers in Seattle City Light's electric service territory to commission their buildings with common program requirements.
- Transitioned leads from the third party implemented ESG program over to the C/I retrofit program. Customers implementing refrigeration projects in grocery and retail stores will now be served through a custom approach under the C/I Retrofit program.

a. Adaptive Management

Program staff continued to focus on internal process improvements in 2017 to streamline the tracking of C/I Retrofit projects. The C/I Retrofit program, along with the other BEM programs were transitioned to the DSMc system. This transition included application of project, project assignments to EMEs, custom project creation, and payment processes. A focus of 2017 was staff training on the new system and streamlining processes to take advantage of the new system.

b. Pilot-Like Initiatives

Commercial/Industrial Retrofit saw an increase in the number of large HVAC controls projects. This was in large part due to the streamlined approach PSE adopted for these types of projects that utilizes a defined set of requirements for installed equipment, post measure trend logs for installed control sequences, and savings verification through a performance based whole building model.

c. Key Variance Drivers

The C/I Retrofit program finished below the program's electric target. More than half of the electric and natural gas achieved savings from this program came from some type of controls project (for instance, HVAC, Process, or Rooftop Units). Electric savings from these projects was slightly less than planned, while natural gas savings exceeded the 2017 expectations. The time span for these types of projects is generally more lengthy due to the nature of the verification process. It is also noteworthy that most of the engineering staff that work on these projects also managed business lighting projects, which significantly outperformed the target in 2017. Program spending was also commensurately below budget.

3) Hard-to-Reach and/or Proportionately Underserved Segments

PSE continues to evaluate projects that do not meet rebate eligibility requirements for custom grant opportunities when necessary. These projects typically involve small businesses that are difficult to categorize into a specific business type.

4) Business Lighting Program

The Business Lighting Grants program serves customers as a part of the Commercial/Industrial Retrofit Conservation Schedule 250. To simplify the customer experience, PSE offers only one Business Lighting grant program. This single program addresses customers' needs by providing custom calculated incentives for lighting and lighting controls measures.

a. Program Accomplishments

The Business Lighting program paid approximately 900 projects in 2017. The average project size increased by over 15 percent in 2017 to just over 75,000 kWh per project. As a result of this increase in project size and number of projects, the Business Lighting program exceeded the 2017 savings goals and its corresponding budget.

b. Adaptive Management

The Business Lighting Team consistently monitors the trends of the lighting market. The trend in 2017 was continued faster adoption of LED products and reduced LED prices as predicted at the beginning of the year.

In October 2017 the team developed reduced incentive rates and started development of a new application/calculator to take effect Jan 1, 2018.

c. Hard-to-Reach and/or Proportionately Underserved Segments

Small businesses often fall into the hard-to-reach category due to their cost-flow requirements. The Business Lighting program classifies smaller projects as projects with under 25,000 kWh first-year savings. In 2017, the program paid over 400 of these projects. These projects accounted for approximately 45 percent of the project count and 7.5 percent of the program savings. Additionally, 22 Relight Washington (small Washington cities) street lighting projects were completed in 2017.

d. Key Variance Drivers

LED technology is being adopted at a faster rate in part due to continued LED price reductions throughout 2017. As a result of this LED adoption rate, the program exceeded its electric savings goal by 47 percent. In 2017, Direct Benefit to Customer expenditures commensurately exceeded the program budget by 41 percent.

5) Contracted Programs

In addition to Commercial/Industrial Retrofit Custom Grant offerings, PSE contracts with industry experts to develop and implement cost effective programs tailored to the unique needs of target markets. Measure-specific incentives are provided through these contracted programs:

a. Industrial System Optimization Program (ISOP)

The program focuses on operational and maintenance (O&M) measures to be verified through custom analysis on an individual project or site basis. Incentives are based on actual savings achieved. Customers agree to continue monitoring and verification following implementation to assure persistence of the savings.

i. Program Accomplishments

The Industrial System Optimization Program engaged with 23 industrial customers in 2017, the second of a two-year program cycle. Of these customers, 15 customers have progressed towards full project implementation and 6 of these projects were completed in 2017.

ii. *Adaptive Management*

During 2017, ISOP worked to diversify the types of industrial facilities served through the program. These facilities included wastewater treatment plants, food processing facilities, small manufacturers, and a fish hatchery. This differed slightly from past years where the focus was more on cold storage and larger industrial facilities.

iii. *Pilot-Like Initiatives*

Four customers who had completed ISOP previously were selected for an Industrial Strategic Energy Management Pilot, which was implemented by Cascade Energy, the ISOP Implementer, as part of ISOP. One of the customers completed the full Industrial SEM program. While the remaining three had completed implementation in 2017, additional M&V requirements extended the close-out of the projects (and thus, savings reporting) into 2018.

iv. *Key Variance Drivers*

The combined savings for the ISOP and the Industrial SEM projects that were completed in 2017 are 69 percent of the 2017 savings goal, while the expenditures were 70 percent of the budget. The lower savings and spending were due to final M&V for several ISOP and the three SEM projects extending into 2018. While most of the ISOP and all of the Industrial SEM projects completed implementation tasks in 2017, savings verification was not closed out in time to claim savings in 2017.

b. Energy Smart Grocer (ESG) Program

PSE retired the Energy Smart Grocer (ESG) program at the end of 2017. The program had been offered since 2006 offering technical assistance, energy audits, and incentives to grocery and retail customers with commercial refrigeration. The program had reached a saturation point where there were few remaining measures customers could implement. Also, other regional utilities had decided to end their ESG offerings in 2017.

i. Adaptive Management

The focus of the ESG program in 2017 was on closing out all activity of the program and transitioning customer leads over to the C/I Retrofit program. Grocery and commercial refrigeration projects will be served through this program with the close of the ESG program.

ii. Key Variance Drivers

In 2017, The focus of the program was on closing out all active projects. Energy Smart Grocer exceeded both electric and natural gas goals in 2017. One popular measure implemented by customers was adding doors to open refrigeration cases.

This measure saves by reducing electric consumption of the refrigeration system and natural gas by reducing the interaction between the refrigeration and store heating system. The program saw increased interest in this measure by several chains and resulted in larger than anticipated natural gas savings for the program.

6) 2017 Project and Measure Type Summary

PSE provides the following Commercial/Industrial Retrofit tables to give readers a sense of programs' custom grant activity and scale of custom projects. A project may consist of a single structure or multiple structures. It should be noted that in this specific table, the column "Both Electric and Natural Gas" isn't indicative of adding the "Electric" and "Natural Gas" columns together. Rather, these are projects in which both electric and natural gas measures were installed.

Table VII-1 provides a representative number of Commercial/Industrial Retrofit projects completed in 2017.

Table VII-1: Commercial/Industrial Retrofit Projects

Commercial/Industrial Retrofit Custom Grants	Number of Custom Grant Projects		
Program Project Classification	Electric	Natural Gas	Both Electric & Natural Gas
Commercial/Industrial Custom Grants			
Commercial & Industrial Retrofit	60	40	20
C/I Lighting Grants			
Business Lighting Grants	900	0	0
Contracted Programs			
Energy Smart Grocer Program	60	30	20
ISOP	10	0	0
Total Project Count	1,030	70	40

PSE presents a representative number of electric and natural gas measure categories installed in their respective programs in Table VII-2. A key contributor to overall Commercial/Industrial Retrofit's achievement is its Business Lighting Grants, noted at the bottom of the table.

It is important to clarify that these are measure categories, not individual measures, and PSE rounds totals greater than 10 for this Report. It is important to note that indicated measures may include substantially more than a single unit.

Furthermore, custom grants may consist of a combination of prescriptive measures, calculated measures, and efficient equipment installed following detailed engineering analyses.

Table VII-2: (a) Highlights of Commercial/Industrial Retrofit and Lighting Grants Measure Categories

Highlights of Measure Categories by Program	Count of Measure Categories		
	Electric	Natural Gas	Total Measure Count
Commercial & Industrial Retrofit			
(All custom grants)			
Boiler - Hot Water - Custom	0	10	10
CBTU - Assessment, Commissioning & Performance Phases	6	4	10
Compressed Air System - Custom	2	0	2
Compressor or Dryer or Receiver - Custom	5	0	5
Energy Recovery System - Custom	2	2	4
Fan - VFD - Custom	20	10	30
Generic Measure - Custom	1	0	1
HVAC - Central Equipment & Other - Custom	2	1	3
HVAC Control - Only, Base & Performance Custom	20	10	30
Insulation - Building Shell - Custom	0	3	3
Lighting - Custom	1	0	1
Process - Modification - Custom	10	1	11
Pump - VFD - Custom	2	0	2
Refrigeration - Custom	5	0	5
RTU Control - Advanced - Custom & Prescriptive	3	2	5
Unitary Equipment - Custom	5	6	11
Water Heater - Commercial - Custom	1	1	2
Window - Custom	2	2	4
Total Measures	**87**	**52**	**139**
C/I Lighting Grants			
Generic Measure - Prescriptive	50	0	50
Lighting - Custom	870	0	870
Lighting - Street - Custom	40	0	40
Total Measures	**960**	**0**	**960**

Table VII-2: (b) Highlights of Commercial/Industrial Contracted Program Measure Categories

Highlights of Measure Categories by Program	Count of Measure Categories		
	Electric	Natural Gas	Total Measure Count
Contracted Programs			
Energy Smart Grocer Program			
Control - Anti Sweat	4	0	4
Control - Floating Head Pressure	2	0	2
Control - Floating Suction Pressure	2	0	2
Control - HVAC	2	7	9
Control - Refrigeration	1	0	1
Display Case - Replacement	2	0	2
HVAC System	30	30	60
Lighting - Display Case	20	0	20
Lighting - General	9	0	9
Motor - ECM & VFD	10	0	10
Refrigeration - Open Case Door	10	10	20
Refrigeration System	2	0	2
Sealing - Gasket	4	0	4
Total Measures	**98**	**47**	**145**
ISOP			
Generic Measure - Custom	7	0	7
Total Measures	**7**	**0**	**7**
Total Measure Category Count	**1,152**	**99**	**1,251**

B. Commercial/Industrial New Construction

Schedules E/G 251

PSE works with designers and developers of any large or small new Commercial / Industrial facilities, or major remodels, to propose cost-effective energy efficient upgrades that exceed energy codes or standard practice where minimum efficiency requirements are not prescribed by code. Three paths may be followed to qualify for assistance and/or funding for New Construction energy efficiency Measures. New Construction Post-occupancy Commissioning is also offered in addition to the building paths.

1) Building Paths

The first path is similar to the retrofit program where component Measures are evaluated individually and funding is based upon cost-effectiveness. Under this approach, customers may receive up to 100 percent of the incremental cost over a code-compliant baseline. There is a streamlined process for lighting projects that have a lighting power density valued listed in the applicable code.

The second path is a whole-building approach that utilizes building energy simulation to demonstrate improvement over energy code requirements. PSE will work with designers to incorporate Measures that produce at least 10 percent overall savings beyond applicable energy code, including local jurisdiction amendments. Given the time required for planning and construction, these projects typically take several years to complete.

The third path includes Prescriptive Basis incentives for Measures that are eligible for rebates under Schedule E262/G262, Business Rebates. The incentive amount for a Measure is the same as that which is available under Schedule E262/G262, but energy savings may be calculated based on actual Site-Specific conditions and Code Baseline adjustments, if necessary.

A complete listing of available incentives is provided in Exhibit 4 of the 2016-2017 Biennial Conservation Plan.

Customers assume full responsibility for utilizing their design teams and contractors to provide information to PSE for evaluation of grant funding. Projects must be approved for funding prior to installation/implementation to be eligible.

2) 2017 Accomplishments

The New Construction (NC) program team applied rigorous continuous improvement methodology to adaptively manage implementation of substantial service enhancements. In 2017, the team:

- Updated the NC Lighting Power Density (LPD) incentive, aligning with the Business Lighting program changes. The incentive changes were primarily due to decreasing cost of LED products. The program also added a LLLC fixture bonus incentive ($50/LLLC LED fixture), which also aligned with Business Lighting program.

- Updated the LPD worksheet for incentive changes, along with other minor improvements.
- Began an effort to create new construction early-design incentives and services. Possible services being explored include: providing experienced leadership for project energy charrettes; providing incentives for the design team to attend charrettes; providing early design "shoebox" modeling for the evaluation of energy alternatives; among others.
- Began planning for proactive outreach and marketing initiatives. Due to longer new construction project lifecycles (often 1-4 years), this initiative will be focused on longer-term outreach efforts that will impact program success in the 2018-2019 biennium and beyond.
- Selected a third-party vendor for program outreach support and early design services implementation. This contract work will begin in the first quarter of 2018.
- Updated NC program guidelines based on the feedback of PSE EMEs that have had the opportunity to work through one or more NC projects. This effort streamlined project processing and evaluation work.
- Continued training EMEs on NC program process, with most EMEs participating an NC program training sessions in 2017.
- Continued to align the Multifamily NC custom grant process with C/I New Construction grant process, in order to improve procedure clarity and to better leverage EME resources. NC staff modified the process to have an EME assigned to Multifamily NC projects earlier in the project cycle. This allows the EME to be available for the customer to answer critical design questions.
- Began working with the Northwest Energy Efficiency Council (NEEC) to create an online grant application, which will be integrated with NEEC's upcoming online code compliance submission. NC staff will continue this effort in 2018-2019.

3) Pilot-Like Initiatives

C/I New Construction staff developed a project early design services, including facilitating design charrettes and providing early design "shoe-box" modeling in 2017. This is a new approach and can be considered a pilot-like initiative.

For the first few customer projects that utilize these new services/incentives, PSE will gather feedback in order to better understand how to tailor the program to provide the most customer value and maintain cost-effectiveness. These new services will also provide an opportunity to increase overall program awareness in the new construction design industry.

4) Adaptive Management

Program staff continue to focus on creating a culture of collaboration and transparency with their customers participating in the new construction programs, and actively seek feedback on the grant project process. Staff also continue to seek EME feedback to update program guidelines, especially EME training and increased project experience.

5) Hard-to-Reach and/or Proportionately Underserved Segments

The new-for-2017 Lighting Power Density incentive approach serves the program's small business customers by allowing PSE to provide grants for smaller projects that are pursuing energy efficiency but do not qualify for whole-building incentives. The continued development of LED and lighting control technology, along with decreasing LED costs are making this a cost-effective measure for more small businesses.

By continuing to collaborate and align with the Multifamily New Construction program, the C/I New Construction team is enabling increased small business awareness and enrollment in all of Energy Efficiency's programs.

6) Key Variance Drivers

The Puget Sound region continues to be in the midst of a significant new construction boom, leading to an increase in New Construction grant projects. Due to the unprecedented scale of this construction boom, the program's 2017 electric savings significantly exceeded the 2017 goal. The program realized increased savings while the program cost-effectiveness was better than forecasted.

The advancing LED technology, along with lower LED prices is driving adoption of LED at an accelerating rate. This is increasing the number of New Construction program lighting grant projects, even with a more stringent lighting baseline in the 2015 Washington State Energy Code.

The program's natural gas savings variance was the result of one large gas savings project not being completed as expected in 2017. This project accounted for approximately 90 percent of the natural gas savings target and will be completed in January 2018. The New Construction natural gas savings typically has only a few large projects that provide the majority of the natural gas savings. The schedules for these larger NC projects often changes throughout the project, and can impact which year the grant project closes.

In addition to this one large project's timeline shifting, there were additional drivers for the natural gas spending variance. A key driver is the latest energy code, enacted in July 2017, which has more stringent requirements for gas water heater efficiency. This increased baseline for gas water heating equipment has led to fewer natural gas grants.

Also, in 2016, there were grant amounts refunded to PSE because the customer began purchasing natural gas on the open market and converted to a transport rate schedule, but these were incorrectly credited to the New Construction gas program in November and December, 2016. These two erroneous credits were corrected with matching debit transactions in January 2017, and were attributed to the correct program (Commercial/Industrial Retrofit).

7) 2017 Project and Measure Type Summary

The C/I New Construction representative number of projects completed in 2017 are shown in Table VII-3. PSE rounds figures over 10 for this Report.

Table VII-3: Commercial/Industrial New Construction Projects

Commercial New Construction	Number of Custom Grant Projects		
Program Project Classification	Electric	Natural Gas	Both Electric & Natural Gas
Commercial/Industrial New Construction			
Commercial/Industrial New Construction	100	1	2
ESG New Construction	7	0	2
Total Project Count	107	1	4

PSE presents the number of electric and natural gas measures installed in Table VII-4.

Table VII-4: Commercial/Industrial New Construction Measure Categories

Highlights of Measure Categories by Program	Count of Measure Categories		
	Electric	Natural Gas	Total Measure Count
Commercial/Industrial New Construction			
(All custom grants)			
Boiler - Hot Water - Custom	0	1	1
Chiller - Custom	1	0	1
Commissioning - Custom	2	2	4
Compressed Air System - Custom	1	0	1
Compressor or Dryer or Receiver - Custom	2	0	2
Energy Recovery System - Custom	1	0	1
Fan - VFD - Custom	1	0	1
HVAC Control - Only - Custom	1	1	2
Lighting - Custom	90	0	90
Lighting Power Density Reduction - Custom	7	0	7
Motor - Custom	1	0	1
Pump - VFD - Custom	1	0	1
Refrigeration - Custom	1	0	1
Total Measures	**109**	**4**	**113**
Contracted Programs			
ESG New Construction			
Control - Refrigeration	3	0	3
Display Case	7	0	7
HVAC System	4	0	4
Lighting - General	8	0	8
Refrigeration System	10	2	12
Total Measures	**32**	**2**	**34**
Total Measure Category Count	**141**	**6**	**147**

C. Resource Conservation Management

Schedules E/G 253

1) Description

PSE offers Resource Conservation Management Services (RCM) to any school district, public-sector government agency, and Commercial or Industrial (C/I) customer with a minimum portfolio baseload to meet cost-effective thresholds. The RCM program targets larger customers with multiple facilities such that the cost of implementation can be recovered through savings achieved. Schedule 448, 449, 458, and 459 customers may utilize their Schedule 258 funding allocation for Resource Conservation Manager Services (RCM).

Customers qualify for the RCM program based on their annual PSE energy purchases. A typical customer baseline for maximum program funding is 20,000,000 kWh for electric only or 2,700,000 therms for gas-only service from PSE. Funding levels are prorated based on the amount of staff a customer would need to allocate in order to achieve cost-effective savings from RCM efforts. At a minimum, the customer needs to use 1,000,000 kWh or 135,000 Therms, or the equivalent to participate in the program.

An RCM customer employs, contracts, or designates existing staff to implement RCM responsibilities, including accounting for resource consumption, assessing facilities, recommending actions, monitoring progress, calculating savings and communicating program information to organization stakeholders.

Monetary grants include a "start-up" grant for completion of deliverables associated with building the program foundation. The start-up deliverables include identifying an RCM, setting up an energy-accounting database, writing a company resource management plan, and completing facility action plans. Once start-up deliverables are complete, the customer may qualify for "performance grants" based on achieving energy savings associated with RCM practices and “target grants” for meeting or exceeding pre-established energy-reduction targets.

The RCM agreement is valid for three years. Over this time, PSE anticipates a 10-12 percent reduction in overall energy use. Savings are calculated using industry standard practices and energy accounting methodologies. Reported annual savings are a variance from a fixed baseline. PSE may elect to renew a customer's RCM agreement in three-year increments to provide continued support and additional performance incentives.

Puget Sound Energy's RCM support program is comprised of a "menu" of services, which can be tailored to meet the specific needs of the customer. Typical RCM services include, but are not limited to, the following assistance and support:

a. Program Start Up

- Designing and implementing an RCM program.
- Hiring or contracting a Resource Conservation Manager.
- Developing baselines, policies and guidelines, and facility action plans.

b. Resource Accounting Software

- Purchase and/or implementation of Resource Accounting Software.
- Audits of existing databases to review for inclusion of all facilities, accounts, meters, etc., sufficient facility details, missing data, and overall data integrity.

c. Technical Assistance

- On-site walk-through audits to train customer staff to identify waste and opportunities for improved efficiency.
- Analysis and reporting of savings relative to established baseline.

d. Education & Training

- Training in fundamental concepts for designated RCM and support personnel such as custodial, maintenance, and facilities staff.
- Educational materials for classroom or building occupant use including checklists, fact-sheets, and calculators.
- Training stipend to support professional development in Building Operation or Energy Management.

e. Energy Data Services

- Historical and on-going monthly PSE billing data and access to Resource Accounting Software.
- Energy Interval Services for internet viewing of facility gas and electric interval meter data.

f. Cash Incentives

- ”Start-up” incentive intended to share the cost of program start-up that is paid upon satisfactory completion of deliverables.
- Performance grants for customers who achieve energy savings after completing their deliverables.
- Target grants for customers who achieve a pre-established targeted amount of energy savings after completing their deliverables.

The RCM program has also assisted customers in establishing Energy Star Benchmarks for their facilities using EPA’s Portfolio Manager. PSE will continue to help customers to identify potential targets, improve energy efficiency to meet award qualifications, coordinate the application and inspection process, and submit material to EPA for Energy Star awards.

Additionally, access to energy accounting software has allowed PSE RCM customers to facilitate greenhouse gas accounting and other climate change and sustainability initiatives. The value of this service routinely exceeds those stated in the RCM program scope of work.

PSE continues to explore ways to make the RCM program cost-effective for smaller customers. PSE efforts will continue to work with RCM consultants, customers, and other support agencies to develop this market.

2) 2017 Accomplishments

In 2017 the RCM program continued to implement the program changes developed in the previous evaluation, contributed to the energy savings target, and provided five webinars and three in-person trainings for participating customers.

The PSE RCM Team also held an annual meeting and awards ceremony for participating customers, which allows them to learn from their peers and participate in program discussions. Over the course of the summer, the team also held geographic cohort[35] meetings to provide further opportunities for nearby RCMs to connect and exchange information.

Program Savings: The RCM and Urban Smart Bellevue programs achieved their electric and natural gas savings from 48 projects.

- Electric Savings – The Urban Smart Bellevue program savings are included in the overall Rate Schedule 253 target, and contributed 10 percent to the program's 2017 achievement. The savings expected from the Urban Smart Bellevue program were significantly reduced based on a preliminary analysis in March of 2017. Of the original savings target of 30.8 million kWh, the two programs together achieved only 47% of the target. Actual savings was 86% of the revised target.

- Natural Gas Savings – The RCM program surpassed (135 percent) the total gas savings target for the RCM program for 2017. Many of the O&M and behavior-based improvements implemented by RCM customers resulted in lower heating loads, leading to reductions in the use of natural gas. The higher-than-expected gas savings is also a result of the implementation of the program's plan to reward persistence of savings. The Urban Smart Bellevue program was an electric-only program, and no gas savings were achieved through that program.

PSE continues to provide training opportunities to RCM customers, a strategy that provides excellent customer service as well as achieving energy savings for the RCM programs resulting from the new ideas RCMs are able to bring back to their facilities.

[35] RCM Cohorts are groups of customers/business owners starting in a program simultaneously. The Cohort structure provides them an environment where they can go through program start-up together and act as peer support for each other.

Trainings completed in 2017 were:

In-person Customer Trainings:

- Social Marketing and Behavior Change
- Energy Savings Calculator
- Conducting an Energy Walkthrough

Customer Webinars:

- Pay for Performance Lunch and Learn
- Non-PSE Utilities and MyDataManager (or "Automated Benchmarking System")
- Managing Solid Waste and Recycling
- Financing Energy Efficiency
- Dedicated Outside Air Systems

2017 also saw the beginning of a third party evaluation of PSE's RCM program. The RCM team worked collaboratively with the third party evaluator to ensure that the end product of the evaluation provides meaningful information to improve the program.

3) Adaptive Management

The RCM team is committed to meeting the needs of its customers at the same time that they use best practices to measure and verify program savings. The program's offerings are adjusted accordingly as new information is available. In addition to the continued implementation of the RCM program, program staff updated the Resource Accounting Software throughout 2017 to meet the needs of customers.

Some additional RCM adaptive management initiatives completed in 2017 include:

- Enhanced the ability of RCMs to use incentives to support use of external energy management software products as well as PSE software;
- Continued to work with customers to develop forms of reporting that are less burdensome for customers, yet meet the requirements of the program;

- Met with customers in geographic cohort groups to foster customer relationships and sharing of resources and best practices; and
- Continued to refine methods for calculating energy savings that conform to the standards proposed by ASHRAE and IPMVP Option C.

4) Key Variance Drivers

a. Gas Savings Higher than Expected

In 2017, The RCM program saw higher-than-expected natural gas savings. Many of the O&M and behavior-based improvements implemented by RCM customers resulted in lower heating loads, resulting in reductions in the use of natural gas. The higher-than-expected gas savings is also a result of the implementation of the program's plan to reward persistence of savings. Expenses did not increase in step with the increased gas savings mostly due to efficiencies gained using in-house software rather than external software.

b. Electric Savings and Spending Lower than Expected

The reduction in savings was due in large part to the Urban Smart Bellevue program. The savings target developed during program design was not representative of achieved savings. While the impact of the program on other key performance indicators, such as energy awareness and awareness of PSE programs was significant, the program did not achieve the electric savings staff anticipated. A key variance of electric spending was due in large part to leave taken by two RCM team members.

5) Urban Smart Bellevue Description

The Urban Smart Bellevue program used an Energy Management Information System (EMIS), Strategic Energy Management (SEM), and community-based social marketing (CBSM) to drive energy savings in the downtown Bellevue urban core. SEM is a holistic approach to energy efficiency that includes strategic implementation of O&M best practices, behavioral energy reduction programs, and capital projects to achieve maximum energy savings.

This program sought to prove that these combined strategies can produce cost-effective savings, while creating more strategic customer relationships. With this design, PSE partnered with the City of Bellevue to take proven program elements of the RCM program to a community scale.

Based on Market Characterization work done during the program design, the program targeted all businesses in the core downtown Bellevue area with customized outreach to four target markets: (1) office (private & government); (2) hospitality; (3) retail; and (4) healthcare. This concentration does not minimize the importance of other market sectors or businesses outside the geographic area, but focuses program resources on populations with the greatest energy savings opportunities. All other market sectors fall into an "other" category that includes food service, agriculture, construction, non-tech manufacturing, assembly, and education among others.

Specific program goals include saving 16,000,000 kWhs through a combination of low/no cost O&M and behavior changes and increased participation in PSE's existing EE programs. The program plan ran through the end of 2017.

a. Program Accomplishments

In 2017 the program continued recruitment as well as facilitating the journey of participating customers. This included providing one-on-one coaching, holding workshops, hosting energy saving events, and sending energy tips and reminders to participating customers.

Highlights of 2017 accomplishments include:

- Enrollment of 100 businesses in Urban Smart,
- Logging of almost 5,500 energy saving actions by building occupants,
- An average of 6 percent energy savings by large facility program members,
- An average of 9 percent energy savings by small and medium business participants,
- 4 in-person workshops, 4 webinars, 12 energy treasure hunts, and a Celebration Event.

b. Hard-to-Reach and/or Proportionately Underserved Segments

By focusing on a specific geographic zone, Urban Smart Bellevue encourages participation by several customer segments, including the hard-to-reach Small/Medium Business (SMB) segment and Commercial Tenant segment. Urban Smart delivery staff used the blitz approach to reach out directly to SMBs in the target area. This personalized attention resulted in enthusiastic participation by customers enrolling in the program.

c. Pilot-Like Initiatives

The Urban Smart Bellevue concept is a blend of two of PSE's most successful efficiency programs – Resource Conservation Management and Small Business Direct Install. By blending the customer/tenant engagement of the RCM program with the geography-based engagement of the SBDI program, Urban Smart Bellevue pilots a new method for engaging PSE customers while achieving savings targets. Lessons learned from this first iteration could be applied to similar community programs across PSE's service territory.

d. Adaptive Management

As a pilot-like program, Urban Smart Bellevue sought to be nimble in its approach to engaging customers. Program staff found that different customers responded to different outreach techniques. To meet these needs, staff personalized the approaches ranging from one-on-one coaching, to building occupant events, to monthly emails.

6) 2017 Results by Customer Sector

Table VII-5 below shows the number of RCM program projects. Table VII-6 presents a representative summary view of 2017 measures categories installed. PSE rounds totals over 10 for this Report.

Table VII-5: Number of RCM Projects

	Project Count Per Program			
	Electric	Gas	Both Electric & Gas	All Projects Combined
Urban Smart Bellevue	100	0	0	100
Resource Conservation Manager	20	6	30	56
Total Measure Count:	120	6	30	156

Table VII-6: Representative RCM Measures Installed

	Measures Per Sector
	Customer Count
Urban Smart Bellevue	
Large Facilities	20
Small to Medium Businesses	60
Tenants	20
Total Customers	**100**
Resource Conservation Manager	
Government	10
Higher Education	6
Hospitals	4
Non Profit	2
School District	20
Retail/Other	3
Total Customers	**45**

D. Large Power User/Self Directed

Schedule E258

This program solicits electric energy efficiency upgrades through a Request for Proposal (RFP) process. C/I customers receiving electric service under Schedule 40, 46, 49, 448, 449, 458, or 459 receive a funding allocation based on their electric usage and are responsible for proposing cost-effective project(s) to utilize their allocation.

1) Description

The Large Power User/Self-Directed program operates in a 4-year cycle, with two phases in each cycle. The current program cycle spanning January 1, 2015 to December 31, 2018. The above-noted RFP process is the first phase, and is classified as the non-competitive phase. Customers are given until April of the third year of the cycle to propose projects that utilize their incentive allocations under the non-competitive phase. Customers who do not designate projects that fully utilize their allocation by April of the third year forfeit their remaining balance to a competitive phase, in which remaining funds are available to all program participants via competitive bid.

Proposals are evaluated by PSE Engineering staff for technical soundness, cost-effectiveness and compliance with energy code and tariff requirements. Customers sign a standard PSE Conservation Grant Agreement, defining project cost, PSE incentive amount, and verification requirements prior to installation of project Measures.

In the Competitive Phase, eligible customers respond to an RFP in order to obtain remaining incentive funding that was unclaimed during the non-competitive phase. In this phase, eligible customers may have access to funds beyond their original allocation. The competitive phase RFP is issued in May of the third year of the cycle. PSE ranks proposals received based on cost-effectiveness and other criteria specified in the RFP. Funding is awarded in order of project ranking, until either all competitive phase funds are allocated, or all qualified proposals are funded, whichever happens first. Any remaining money is transferred to the general Energy Efficiency program budget at the end of the program cycle.

2) Program Accomplishments

Forty projects were completed and incentivized in 2017, representing annual electrical savings of approximately 53 percent more savings obtained and 51 percent more incentives paid than in 2016. The results follow the long-established Large Power User program trend of more projects completed in the later years of the 4-year program cycle. 2017 was the third year of the current program cycle.

Following the Non-Competitive Phase, PSE issued the Competitive Phase RFP on in May. It attracted significant customer interest in the remaining $9 million in unclaimed allocations. Nearly all of that money was claimed by the end of the review process, and PSE issued grants to each customer with an approved project.

3) Key Variance Drivers

Program spending for 2017 was overall lower than anticipated. This was primarily due to lower than anticipated completed projects, with savings being lower than anticipated. Program staff base savings estimates on previous cycles' history. Fewer completed projects then drive incentive spending down, which is the largest component of program spending.

With the selection of the competitive phase projects in 2017, program staff project that the final year of the current program cycle (2018) will be the largest in terms of both savings and spending, and will in essence contribute the expected spending and savings that fell short of anticipated figures in the first three years of the cycle.

4) 2017 Project and Measure Type Summary

There were 40 projects completed in 2017. Table VII-7 shows the distribution of projects by customer rate schedule.[36] Table VII-8 indicates a representative number of measure types installed to provide a sense of program scale. PSE rounds totals more than 10 for this Report.

[36] It is important to note that listed "O&M" or "Operations & Maintenance" projects do not indicate these were funded by PSE O&M. Rather, these are projects that address and improve the customer's operations and maintenance functions within the project's structure(s).

A project may include substantially more than one measure.

Table VII-7: Large Power User/Self-Directed Number of Projects

PROGRAM	Project Count Per Program
	Electric Only
High Voltage Sch 40, 46, 49	29
High Voltage Sch 449	11

Table VII-8: Large Power User/Self-Directed Measure Classifications

PROGRAM MEASURE CATEGORY	Count
VFD Fan - Custom	1
HVAC Central Equipment Custom	4
HVAC Control Only Custom	3
Lighting Custom	30
Motor Custom	2
Process Modification Custom	3
Pump VFD Custom	1
Total Measure Count	**44**

E. Energy Efficient Technology Evaluation

Schedules E/G 261

The purpose of Energy Efficiency Technology Evaluation is to identify new, energy efficient technologies and products for PSE program offerings. Ideally, PSE would identify cost effective technologies and measures with significant savings potential, which are commercially available. However, there are many emerging technologies that range from "commercially available, but not used in the Northwest," to "conceptual" or "prototypical" technologies still in the development phase.

It is relatively simple to determine whether new, commercially available technologies are suitable, as long as generally accepted engineering calculations can be used, and manufacturers can provide reliable data. For example, vendors frequently approach PSE with new, improved products, claimed to save more energy than their older models, or their competition. Usually these proposals are evaluated by the Energy Management Engineer who is managing the project, who then shares his/her experience with others in the group.

Some technologies are not so simple to evaluate. Those that are truly new typically have little experiential history, or there is no generally accepted method to calculate the performance. Clearly, it would be risky to broadly offer incentives through PSE's programs - risky with regard to uncertain savings and risky for its customers due to unforeseen product issues. If the potential savings look significant, PSE may try the technology on a limited quantity of projects, especially if it is working with a customer who understands the risks and would like to be an "early adopter." Sometimes the most prudent approach is to monitor the progress of the technology, especially if the savings potential appears limited. PSE's effort is not intended for basic research, or product development, but to identify technologies that are available and suitable for its programs.

The most challenging situations arise when vendors propose products that are "too good to be true." Often their savings claims are supported by testimonials from satisfied customers, with little or no reliable test data. Many technologies, such as transient voltage suppressors, power factor correction devices and paint with high R-Value, have been known for years to save little or no energy, but the vendor may insist their product is different, even though it may only have a different name on the box.

Fortunately, PSE has experience with many of these products, or can readily find others who have had experience. It is important, however, to distinguish between inaccurate claims and those that might truly be the new emerging technology that deserves attention.

1) 2017 Accomplishments and Activities

In 2017, the Energy Management Information System (EMIS) pilot resulted in several engaged commercial customers, who realized relatively small efficiency savings through their respective BEM programs. Although there were more customer with savings potential that expressed interest in the program, less than half engaged an EME in the custom grant process or completed the initiatives in 2017.

PSE staff has had several discussions with NEEA staff about the high efficiency heat recovery ventilation for dedicated outside air system initiative. PSE staff will be looking for opportunities at customer facilities to leverage this NEEA initiative to improve efficiency of existing system converting to a dedicated outside air systems.

F. Business Rebates

Schedules E/G 262

1) Description

The following Measure categories are managed in-house by PSE Staff:

- Commercial HVAC (retrofit, demand control ventilation and advanced rooftop controls);
- Commercial Kitchen Equipment;
- Commercial Laundry Equipment;
- Commercial Retail Lighting – Lighting To Go.

PSE also contracts with industry experts to implement cost effective Measures tailored to the unique needs of target markets. The following additional Measure categories are offered through contracted programs:

- Premium HVAC Service,
- Direct Install Measures (Lighting, Refrigeration, Plug Load, Basic HVAC and Water Saving) for Small Businesses, Lodging and Small Agriculture customers.

PSE program staff develops program design, monitors program performance, results, and trends. Programs are coordinated closely with the electric and gas C/I Retrofit program.

Staff review program refinements and cost-effectiveness with Engineering Staff, the Evaluation Team, and the Manager of Business Energy Management as necessary on an ongoing and adaptive basis. Incentive measures, marketing and the fulfillment process may be modified, as needed, to respond to developments in technology, market conditions, customer acceptance and/or changes in supplier/contractor delivery and pricing.

2) 2017 Accomplishments and Activities

Similar to the Residential Sector's Single Family Existing Schedule (E/G 214), the Business Rebates organization is comprised of several separate programs. Therefore, PSE presents a savings and expenditure breakout (Table VII-9 and Table VII-10, respectively) of the overall Schedule 262 programs to facilitate the appropriate level of reporting transparency.

The Commercial Rebates program continued offering its successful prescriptive rebates in lighting, kitchen, commercial HVAC, hospitality and other programs. It also contracted the delivery of specialty programs such as the Small Business-, Lodging-, and Small Agriculture Direct Install Programs, as well as Premium HVAC Service.

Table VII-9: Business Rebate Programs, 2017 Savings

		2017 Savings		2017 Goal
Schedule	Programs	Total	YE % of Goal	
Electric	Electric			Electric
Gas	Gas			Gas
E262	Business Rebates			
	Lighting to Go (AKA Business Lighting Markdowns)	16,374	156.7%	10,448
	Commercial Kitchen & Laundry	515	46.2%	1,113
	Commercial Direct Install (NON-SBDI)	0		
	Commercial HVAC	1,801	52.2%	3,449
	Business Lighting Express	0		
	Small Business Direct Install	9,942	99.0%	10,043
	Small Agriculture Direct Install	578	20.1%	2,880
	Lodging Direct Install	4,591	90.0%	5,099
	Business Lighting - Rebates	0		0
Subtotals		**33,800**	**102.3%**	**33,032**
G262	Business Rebates			
	Commercial Kitchen & Laundry	104,845	46.4%	225,939
	Commercial Direct Install (NON-SBDI)	0		
	Commercial HVAC	41,933	60.8%	69,010
	Small Business Direct Install	1,516	6.4%	23,505
	Small Agriculture Direct Install	0		
	Lodiging Direct Install	5,968	2.3%	258,211
Subtotals		**154,262**	**26.8%**	**576,665**

Table VII-10: Business Rebate Programs, 2017 Expenditures

2017 Expenditures				2017 Budget
Schedule	Programs	Total	YE % of Budget	
Electric	Electric			Electric
Gas	Gas			Gas
E262	Business Rebates			
	Lighting to Go (AKA Business Lighting Markdowns)	$ 1,719,588	140.8%	$1,221,230
	Commercial Kitchen & Laundry	$ 155,503	66.1%	$235,203
	Commercial Direct Install (NON-SBDI)	$ -		
	Commercial HVAC	$ 802,684	68.9%	$1,164,986
	Business Lighting Express	$ -		
	Small Business Direct Install	$ 2,938,969	92.0%	$3,192,914
	Small Agriculture Direct Install	$ 162,988	26.6%	$613,806
	Lodging Direct Install	$ 833,863	48.8%	$1,707,133
	Business Lighting - Rebates	$ -		$0
Subtotals		**$ 6,613,595**	**81.3%**	**$8,135,272**
G262	Business Rebates			
	Commercial Kitchen & Laundry	$ 282,623	65.5%	$431,248
	Commercial Direct Install (NON-SBDI)	$ -		
	Commercial HVAC	$ 90,833	43.9%	$206,944
	Small Business Direct Install	$ 84,318	63.3%	$133,263
	Small Agriculture Direct Install	$ (292)	-0.8%	$36,778
	Lodiging Direct Install	$ 63,334	7.1%	$887,091
Subtotals		**$ 520,817**	**30.7%**	**$1,695,324**

a. Hard-to-Reach and/or Proportionately Underserved Segments

Business Rebates are designed to target hard-to-reach customers who do not traditionally participate in energy efficiency programs. Program design focuses on bringing the opportunity to the customer, whether this is at the place of business, through a trusted community partner, or through a trade ally (for example, contractors and distributors).

b. Pilot-Like Initiatives

In late 2016, PSE launched the Agriculture Direct Install program. Over 2017 PSE established relationships with conservation districts and performed assessments at small farms which led to an increased understanding of the how customers use energy at these locations and how our programs can best be targeted to this customer segment. The information gained will be used to streamline the processes and improve the customer outreach going forward.

The hybrid measure approach described under the Lodging Direct Install program is another pilot-like initiative, which utilizes the commercial rebate program design approach to develop and offer small and medium lodging customers deeper, more comprehensive rebates using a custom energy efficiency process.

c. Key Variance Drivers

Overall, the Business Rebates group performed below target in 2017 for savings and spending. The majority of the savings and spending variance came from the service provider programs. These programs slightly under-performed from a savings perspective due to limited lighting technician resources and HVAC contractor participation as a result of the strong economy which is driving construction jobs to more lucrative new-construction projects. Spending variance was greater, with expenditures much less than anticipated, as PSE transitioned to a performance-based payment system in which vendors were paid based on savings that were achieved. PSE developed several adaptive management strategies in late 2017 to better attain savings targets in this sector such as midstream rebates and consolidation of direct install efforts.

3) Lighting To Go

PSE's Lighting to Go program provides instant point-of-sale rebate savings to lighting contractors who purchase qualified equipment from approved distributors for use in commercial customers' businesses. The Lighting to Go program covers screw-in LED measures as well as plug-and-play Tubular LED (TLED) measures.

a. Program Accomplishments

The program exceeded savings goals this year due to several program changes implemented to make participation easier for contractors and customers. Simplifying the program requirements has also increased customer and contractor satisfaction and willingness to participate in the program.

b. Key Variance Drivers

The Lighting To Go program had a variance in both savings and budget, exceeding initial forecast.

There were 2 main reasons for this:

1. The proliferation and market acceptance of TLED plug and play lamps was much quicker than forecast.
2. The Lighting To Go program made significant changes to increase the ease and acceptance of the program. These included changing the requirements for customer information collected for purchases of 50 lamps or less. PSE also removed the requirement for meter and account numbers on sales of more than 50 lamps.

These changes resulted in higher uptake and satisfaction with the program according to sales data and surveys of distributor partners.

4) Commercial Kitchens & Laundry

PSE continued the historical regional delivery method of this program; offering a joint utility application across multiple participating utilities, shared qualifying product lists, a single point of contact (PSE), engaging consistent midstream distributors, as well as outreach for the program across all territories, making it easier for customers to navigate more complex measure offerings. The program also gained a seventh utility participant with the addition of Tacoma Water in late 2017.

The midstream aspect of the program also continued to award customers cost-effective prescriptive instant rebates in the store, where the customer is actively making a purchasing decision around energy efficient kitchen equipment. The unique regional delivery and midstream option of this program also garnered the attention of the EPA who completed a case study focused on PSE's delivery model that is included in a nationwide "Toolkit" distributed through Energy Star®. The program also began formulating a coordinated distributor outreach and education plan that closely aligns with the look and experience the residential customer has through the larger Residential Retail Programs, allowing for a cohesive experience and consistent PSE presence in the field.

The Commercial Laundry program continued to offer a fuel-specific, pro-rated option to laundromat customers for upgrading their washing machine equipment.

a. Program Accomplishments

The Commercial Kitchen program completed significant research in 2017 to identify new and more complex measures to add to the industry-leading portfolio that covers nearly all energy-saving equipment in a restaurant kitchen. PSE also initiated discussions to offer these more complex measures with the same regional approach with the pertinent participating utilities.

b. Hard-to-Reach, and/or Proportionately Underserved Segments

Most restaurant customers are considered underserved or hard-to-reach due to many factors including lack of upfront capital, renting of their space, uncertainty as to the longevity of their business, and reduced awareness of energy efficiency.

This program continued to reach these customers in unique ways that work for them. This included door-to-door outreach through small business community outreach, attendance and/or tabling at various expos and conferences, presentations to regional and segmental association, as well as the continued midstream rebate delivery through local equipment distributors. The kitchen program also continued to partner with the Small Business Direct Install blitz activities, allowing for direct face time with over 50 individual restaurant customers. A direct mailer was also developed to reach out to customers, mailing lists for which were coordinated with distributors.

c. Pilot-Like Initiatives

The Kitchen program continued to benefit from the distributor partnership and fryer promotion that was implemented at the end of 2016. Participation in the measure doubled from previous years.

d. Adaptive Management

PSE continued research to determine savings potential and regional interest in a deemed Demand Control Kitchen Ventilation (DCKV) measure, in addition to other attractive energy-saving measures.

e. Key Variance Drivers

Due to fluctuating market conditions and the high cost of new equipment, electric and natural gas savings and expenditures for the Commercial Kitchen & Laundry sector came in under target. Most restaurant customers make purchasing decisions on a reactive basis, creating uncertainty around program planning. Data is continuously being gathered to better inform future program planning.

5) Small Business Direct Install

a. Program Accomplishments

During 2017, PSE successfully completed five small business blitzes in six cities, closely coordination with the Community Outreach teams. Small business blitzes bring the Small Business Direct Install (SBDI) program to a community, through partnership with City and Chamber of Commerce staff, offering free and low cost energy efficiency projects to all of the small businesses in the downtown corridor over the course of three days. In 2017, program staff increased the number of Blitzes over 2016 from 4 to 5 and increased the number of businesses touched through blitzes from 300 to 373. By combining two smaller communities into one blitz that are geographically close to each other PSE reached 6 cities versus 5. Staff also successfully integrated Agriculture Outreach Days into the third day of those blitzes to reach an additional 45 customers that are particularly hard to reach.

b. Hard-to-Reach and/or Proportionately Underserved Segments

The Small Business Direct Install program serves a unique set of customers who may be in rural areas, have limited access to resources, may be in difficult-to-access areas (for instance, Point Roberts), or be skeptical of efficiency services.

c. Pilot-Like Initiatives

As blitzes move further into rural areas, the cities are becoming smaller and they do not take the full three days to complete. To maximize our resources and touch as many customers during the three days, staff piloted pairing geographically close cities and adding Agriculture outreach into the blitzes.

d. Adaptive Management

Traditionally, the SBDI program relies on "in-house installers" – electricians and journeymen who are employees of the third party provider. As qualified labor has been increasingly difficult to hire with the current boom in new construction starts, SBDI has successfully subcontracted local lighting and refrigeration contractors through the CAN Network to assist with installations. Those subcontractors have contributed 5.2 million kWh in savings for 2017.

There has been high demand from customers for LED fixtures since the technology has improved dramatically in recent years. While LED screw-in lamps have been cost effective for this program, fixtures have been too costly to offer them as a free direct install measure. To meet the desires of customers, the co-pay option was developed and coordinated with the Business Lighting incentives to offer the latest technology to customers while keeping the program cost effective.

e. Key Variance Drivers

In the electric sector, the program came within 1 percent of the savings target, and spent less than anticipated due to the performance-based payment. Utilizing the CAN contractors was a key factor in achieving the savings target under budget.

On the natural gas side of the program, PSE believes that the key drivers of the substantial shortfall were a combination of UES value reductions on aerators, the removal of the employee-only restroom aerator, and the saturation of aerator products in the market. Specifically, the higher-efficiency aerators are already installed, or customers were dissatisfied with previous installations. Program staff added a new 1.0 gallon per minute (GPM) aerator in 2017, but this was not enough to add to the savings achieved for 2017.

6) Agriculture Direct Install

a. Program Accomplishments

The Small Agriculture Direct Install (AGDI) was created to provide a unique outreach approach to small farmers and agriculture customers. The vendor is the same as the SBDI implementer, who has been serving small, hard-to-reach customers for five years.

The purpose of the program is to coordinate with Community Outreach and partner with agencies that support agriculture customers, such as the Farm Bureau, local Conservation districts, and extension offices to bring free energy assessments and low and no cost energy efficiency measures to the farming community. During 2017, PSE successfully developed and is leveraging partnerships with Kittitas, Whatcom, Pierce, and King Conservation Districts to perform assessments and complete projects. The program completed 50 small farm assessments in 2017.

b. Hard-to-Reach and/or Proportionately Underserved Segments

The small-to-medium agriculture customers are, to a larger extent than small business customers, geographically diverse. Farms are typically in outlying areas that are rarely targeted for conservation by other vendors. This customer base is also skeptical about the utility motivations around energy efficiency programs. Additionally customer interest is seasonal- farms aren't able to address energy efficiency upgrades during growing seasons; they typically address upgrades during late fall and winter.

c. Pilot-Like Initiatives

Due to the distinctiveness of this customer segment, it is believed that traditional methods of outreach and engagement would not be the best fit for this customer segment. PSE is trying an approach of coordinating with area Conservation Districts to connect with these customers and deliver the program. To date, the leads for all of the customer assessments completed have come from the conservation districts. An additional benefit to this approach is developing a stronger partnership with the organizations that support many of PSE's hard-to-reach customers.

d. Adaptive Management

Many of the farms have a single meter for home and business, and some customers may not have changed their rate to a commercial rate. PSE bases eligibility on gross sales, rather than on rate schedule, and performing installations within the home that are primarily used for farm-related activities, such as an in-home office, or second kitchen used for value-added products.

e. Key Variance Drivers

The savings available from this program was less than anticipated, which also resulted in lower than anticipated spending. Much of available savings were derived from measure similar to residential measures. There is also a lot of do-it-yourself work performed by this customer segment that the program is unable to address. Additionally, some of the farm-specific measures do not have deemed measures available for direct install. Staff continues to research efficiencies in program delivery, and potential farm-specific measures that can be incorporated.

7) Lodging Direct Install

a. Program Accomplishments

Successfully launched as a new program in 2016, the Lodging Direct Install program design offers an important customer sector a new and streamlined avenue to interact with relevant energy efficiency offerings. The small-to-medium sized lodging customer receives a free, one-on-one, comprehensive energy assessment for their building as well as installation of free LED lighting and water saving measures where eligible. Customers can also opt-in for installation of “co-pay” measures, as well as take advantage of referrals for additional project opportunities through other PSE programs (for instance, HVAC, Premium Service, Kitchen or Laundry Equipment, etc.).

Customers are also now eligible to receive an engineering-grade audit, often termed an “investment-grade audit”, which focuses on more complex energy efficiency opportunities that might require significant capital to put into place. PSE offers the audit to the customer with 50 percent co-pay, to ensure that the customer is financially motivated to take action based on the findings.

In 2017 the program was able to speak directly to over 400 lodging customers, completing nearly 300 free assessments and following through to full installations with over 80 of those customers. This resulted in nearly 20,000 measures installed for the program in 2017. In addition, five customers expressed interest in the “investment-grade audit” portion of the program and one of those customers went through the new process, and completed significant work toward project completion during the year.

b. Hard-to-Reach and/or Proportionately Underserved Segments

The small-to-medium sized hotel customer has many barriers to participating in PSE's programs. A primary barrier includes limited access to the capital needed to make improvements. They also have many types of equipment which could qualify for rebates, and are often unsure where to start the process. This program brings the opportunity to these customers in a way that they can understand, providing a starting point on their energy efficiency journey.

With many no-cost installations available to the customer, investments can be spent on larger opportunities with the help of the program's co-pay structure. PSE helps the customer navigate the various measures they have access to and provides a go-to contact that will make that process simpler and more manageable.

Outreach for the program is also coordinated with the Small Business Direct Install program blitzes, so customers within predetermined underserved communities in PSE's service territory are targeted and educated on their new program opportunity.

c. Pilot-Like Initiatives

An engineering-grade audit is a much deeper dive than the typical assessment offered to customers through the program. Within the program design, a limited number of these audits are available to customers with interested and opportunity, at a 50 percent customer co-pay. This investment-grade audit includes the engineering analysis of more complex building systems and gives the customer a project manager a list of potential measures to inform them of their efficiency opportunities. Where previously this customer would work with various stakeholders at PSE to complete their next steps in its programs, they can now work through the Lodging program to address all opportunities, including complex custom analysis measures.

This approach is a completely new way to work with a customer, in comparison to historic program offerings, and its comprehensiveness will not only ensure PSE are capturing previously-lost savings opportunities but also providing excellent customer service.

The first customer completed their energy analysis and the majority of their installation work in 2017. Following measurement and verification in early 2018, customers will see immediate and significant savings from the project that, without the intervention of the Lodging Direct Install program, they would not have otherwise moved forward with.

d. Adaptive Management

This program is the first hybrid rebate approach (deemed measure offerings mixed with custom analysis) that PSE has offered to the business customer, and the program design ensures that all opportunities at a small hotel/motel can be addressed without requiring the customer jumping from program to program.

e. Key Variance Drivers

Natural gas and electric savings for this program were slightly below target due to lengthy decision-making timelines for participating customers throughout the year. Spending was significantly below target due to a lower-than-anticipated participation rate in investment-grade audits in combination with the performance-based payment structure.

8) Commercial HVAC

a. Program Accomplishments

In 2017, the Commercial HVAC program continued working on improving the commercial customer experience by giving PSE's customers more options to improve their energy efficiency. After considering research and market analysis, program staff determined that the Premium Service program would cease to function at the end of 2017. Primary drivers for this decision included a market transition to new technologies and significant challenges in program implementation, which resulted in reduced savings.

b. Hard-to-Reach and/or Proportionately Underserved Segments

The program spent much of 2017 researching new ways to reach small commercial customers. PSE focused efforts on the development of a new midstream program structure for launch in early 2018.

The program also participated in multiple Small Business Direct Install Blitzes to get the word out to customers about the importance of HVAC energy costs and ways to reduce them using PSE rebates.

c. Pilot-Like Initiatives

The program added a specific DHP Contractor Referral. PSE found an increased interest in this product and noted that many commercial customers were having trouble locating a contractor to give them bids. Commercial HVAC contractors are often focused on larger projects and residential contractors are hesitant to move into the commercial space. PSE overcame these hurdles by offering the referral product to its existing contractors and provided training to those contractors who chose to offer the commercial DHP referral product. Contractors are now successfully receiving customer referrals for this product.

d. Adaptive Management

In 2016, the program selected an outside implementer to run the program after determining that the change would improve program participation. In early 2017, it became apparent the implementation model would not improve program participation, so PSE made the decision to sunset the program at the end of the year.

e. Key Variance Drivers

The Commercial HVAC electric and natural gas savings performed below target. The HVAC retrofit rebate exceeded savings targets but the Premium Service program failed to reach goals due to lack of contractor participation.

9) Business Rebates 2017 Measure Highlights

PSE presents a high-level view of the Business Rebates projects managed in 2017 in Table VII-11.

It is interesting to note that in this organization, more than one measure type may be installed in a single project. PSE rounds figures greater than 10 for this Report.

Table VII-11: Number of Business Rebate Projects Managed in 2017

Business Rebates	Number of Projects		
Program / Project Classification	Electric	Natural Gas	Both Electric & Natural Gas
Business Rebates			
Commercial Kitchen Laundry	90	180	10
Commercial HVAC	110	0	20
Small Business Direct Install	780	40	0
Lodging Direct Install	40	40	0
Agriculture Direct Install	20	0	0
Business Lighting Markdown	780	0	0
Total Project Count	**1,820**	**260**	**30**

In Table VII-12, PSE indicates the number of measures, by category, installed in 2017 for three of the Business Rebates programs: Business Lighting Markdown (also referred to as "Lighting to Go"), Commercial Kitchen & Laundry, and Commercial HVAC. Some measures within this organization are calculated on a per-ton, by building type, (in the case of HVAC Retrofit, many variables factor into each measure) or by individual unit (such as the familiar "per lamp" for most lighting measures).

Table VII-12: Number of Business Rebate Measures Installed by Type

Business Rebates Measure Counts				
Program / Measure Type	Measure	Electric	Dual	Natural Gas
Business Lighting Markdown				
Lighting	LED Fixture	39,200		
	LED Lamp	81,700		
	TLED Lamp	160,000		
Commercial Kitchen & Laundry				
Clothes Washer	Commercial Clothes Washer			30
Commercial Kitchen	Food Cabinet	9		
	Fryer			120
	Ice Maker	20		
	Oven	40		60
	Steam Cooker	3		2
Dishwasher	Commercial Dishwasher	7	10	10
Water	Commercial Water Heater			5
Commercial HVAC				
Damper	Damper		150	
Economizer Controller	Economizer Replacement	20	3	
Gas Pack	Gas Pack	40	70	
Heat Pump	Commercial Heat Pump	60	30	
HVAC Sensor	Sensor Replacement	200	60	
Maintenance	Basic Maintenance	300	270	
Occupancy Sensor	HVAC Occupancy Control	400		
Thermostat	Thermostat Replacement	100		
Ventilation	Demand Control Ventilation		60	

Table VII-13 provides a summary of measure counts installed in 2017 for the Direct Install programs.

Table VII-13: Number of Business Rebate Measures Installed by Type, Direct Install Programs

Business Rebates Measure Counts - Direct Install Programs				
Program / Measure Type	Measure	Electric	Dual	Natural Gas
Agriculture Direct Install				
Aerator	Commercial Use Aerator	2		
Lighting	LED Fixture	200		
	Tubular Fixture	250		
	LED Lamp	920		
	T8 Lamp	40		
	TLED Lamp	260		
Signage	LED Sign	5		
Water	Commercial Use Sprayhead	5		
	Commercial Use Showerhead	5		
Lodging Direct Install				
Lighting	LED Fixture	1,400		
	Tubular Fixture	470		
	LED Lamp	14,500		
	T8 Lamp	170		
	TLED Lamp	1,500		
Occupancy Sensor	Lighting Control	20		
Refrigeration Control	Refrigeration Control	1		
Showerhead	Commercial Use Showerhead	200		220
Signage	LED Sign	150		
Thermostat	Programmable Thermostat	10		
Water	Commercial Use Sprayhead	6		6
	Commercial Use Aerator	200		530
Small Business Direct Install				
Lighting	Refrigeration Lighting	360		
	LED Fixture	4,200		
	Tubular Fixture	2,800		
	LED Lamp	20,000		
	T8 Lamp	1,700		
	TLED Lamp	16,100		
Motor	Electronically Commutated Motor	80		
Occupancy Sensor	Lighting Control	70		
Refrigeration Control	Refrigeration Control	80		
Sealing	Auto Closer	10		3
	Gasket	3		10
	Strip Curtain	700		
Signage	LED Sign	180		
Thermostat	Programmable Thermostat	1		
Water	Commercial Use Aerator	130		120
	Commercial Use Showerhead	5		3
	Commercial Use Sprayhead	20		10

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VIII. PILOTS

Schedule E249

A. Description

Pilot programs and demonstration projects may be undertaken to determine whether certain strategies and Measures are cost-effective in the long run. Pilots are employed to test cost-effective ways to demonstrate market opportunities for energy efficiency. Pilots may include tests of Measure cost and performance, customer acceptance and delivery methods. In compliance with condition (7)(d), pilots will only claim energy savings that achieve energy savings sufficient to demonstrate cost-effectiveness by passing the TRC test.

Although Pilots appears in Exhibit 1 after REM and BEM Sectors, it is presented in the Report at this point because both REM and BEM may share similar Pilot measures. PSE discusses pilots that have uncertain savings potentials in this Chapter. PSE discusses programs or measure offerings that could be considered analogous to pilots—but have a reasonable expectation of savings achievement—in applicable REM and BEM program sections in the previous Chapters.

Table VIII-1 presents 2017 pilot program expenditures.

Table VIII-1: 2017 Residential and Business Pilot Program Savings

2017 Savings				2017 Goal
Schedule	**Programs**	**Total**	**% of Goal**	
Electric	Electric			Electric
E249	Residential Pilot: HER Expansion	5,323	100.0%	5,323
E249	Business Pilot: Business Energy Reports	0		0
Subtotal		**5,323**	100.0%	5,323
G249	Residential Pilot: HER Expansion	316,885		316,885
G249	Business Pilot: Business Energy Reports	0		0
Subtotal		**316,885**		316,885

Table VIII-2 presents 2017 pilot program savings.

Table VIII-2: 2017 Residential and Business Pilot Program Expenditures

2017 Expenditures				2017 Budget
Schedule	Programs	Total	% of Budget	
Electric	Electric			Electric
E249	Residential Pilot: HER Expansion	$ 2,169,330	221.7%	$ 978,291
E249	Business Pilot: Business Energy Reports	$ -		$ -
Subtotal		**$ 2,169,330**	221.7%	$ 978,291
G249	Residential Pilot: HER Expansion	$ 403,799	212.1%	$ 190,369
G249	Business Pilot: Business Energy Reports	$ -		$ -
Subtotal		**$ 403,799**	212.1%	$ 190,369

B. Residential Individual Energy Report Pilot

In March 2014, the Residential Energy Management Sector launched a pilot based on its successful Home Energy Reports. The pilot is testing an expansion of individual energy reports in four classifications as listed below:

- Non-Urban Customers;
- High Relative User, Low Frequency;
- Electric-Only; and
- Refill.

PSE's second independent evaluation of this program showed strong savings growth year over year. Savings per household continue to trend upwards as expected, and are following a similar year over year growth path as the original legacy group. PSE will continue to conduct annual independent evaluations of the Residential Individual Energy report pilot, and will "true up" savings between forecasted savings and actuals.

Residential Individual Energy Report Pilot expenditures were 9 percent less than forecasted on the gas side, and 5 percent less on the electric side.

1) Report Marketing

Continuing the effort to market PSE energy efficiency programs across multiple media, PSE deployed marketing modules in the Home Energy Report program about other energy efficiency offerings. Programs include, but not limited to; Home Energy Assessment, Appliance Recycling, and Residential Lighting.

2) Report Engagement & Opt-Out vs Attrition

All segments of the expansion group saw some attrition due to customer accounts becoming inactive due to a move or cancellation of service. Attrition rates are in line with expectations established by previous program years, but were the reason behind adding a refill classification. Opt out rates remain well below 1 percent.

3) Variance Drivers

As a result of allocating expenses to an incorrect order number, approximately $900,000 of the Energy Report expansion charges should have been attributed to PSE's Customer Awareness Tools (see page 59) order number. An additional $162,000 should have been attributed to PSE's legacy Home Energy Report program. Had the correct order number(s) been referenced, the Individual Energy Reports pilot would have logged an expense of approximately $322,700, which is in line with the spending forecast. Since these programs are all administered by the same vendor there were no late or missing payment problems.

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IX. REGIONAL EFFICIENCY PROGRAMS AND RELATIONSHIPS

A. Overview

Table IX-1 and Table IX-2 provide savings and expenditure results for two programs that PSE classifies as Regional; the Northwest Energy Efficiency Alliance (NEEA) and Production and Distribution expenditures & savings. These programs are outside of the REM and BEM Sectors.

Table IX-1: NEEA and Production & Distribution 2017 Savings

2017 Savings				2017 Goal
Schedule	**Programs**	**Total**	**% of Goal**	
Electric	Electric			Electric
E254	Northwest Energy Efficiency Alliance	15,593	100.0%	15,593
E292	Production & Distribution Facilities	42	2.8%	1,500
Subtotal		**15,635**	91.5%	17,093
	NEEA Natural Gas Market Transformation Initiative	0		0
Subtotal		**0**		0

Table IX-2: NEEA and Production & Distribution 2017 Expenditures

2017 Expenditures				2017 Budget
Schedule	**Programs**	**Total**	**% of Budget**	
Electric	Electric			Electric
E254	Northwest Energy Efficiency Alliance	$ 4,032,680	77.6%	$ 5,200,000
E292	Production & Distribution Facilities	$0		$ -
Subtotal		**$ 4,032,680**	77.6%	$ 5,200,000
	NEEA Natural Gas Market Transformation Initiative	$ 1,749,284	125.9%	$ 1,389,079
Subtotal		**$ 1,749,284**	125.9%	$ 1,389,079

B. Northwest Energy Efficiency Alliance

(PSE uses the NEEA trademark with permission.)

Schedule E254

1) Description

NEEA is a non-profit organization working to maximize energy efficiency to meet the future energy needs of the Northwest. NEEA is supported by, and works in collaboration with, the Bonneville Power Administration, PSE and more than 100 Northwest utilities on behalf of 12 million electric customers.

PSE and its customers benefits from NEEA's market transformation work to accelerate the market adoption of energy-efficient products, services and practices, and to fill the Energy Efficiency "pipeline" with emerging technologies. NEEA works "upstream" to expand the market for energy efficiency and complements utility programs without duplicating efforts. NEEA's regional advantage allows PSE and other Northwest utilities to leverage the market power of the entire region to realize economies of scale.

PSE staff represent its ratepayers and Energy Efficiency programs on several NEEA committees, including the:

- Regional Portfolio Advisory Committee;
- Residential Advisory Committee;
- Commercial Advisory Committee;
- Regional Emerging Technology Advisory Committee;
- The cost-effectiveness committee; and
- The Natural Gas Advisory Committee.

Exhibit 10 of this Report summarizes NEEA's 2017 value delivery to PSE for both its electric transformation efforts, as well as the new Natural Gas Advisory Committee. PSE extends its sincere appreciation to the NEEA staff for their extensive work to provide this level of detailed information outside of its normal reporting cycle.

For additional information about NEEA's unique value to the region, history, structure and recent initiatives, please visit www.neea.org.

2) 2017 NEEA Savings

NEEA provided its savings forecasts during PSE's 2016-2017 Biennial Conservation Plan (BCP) development in the latter part of 2015. In consultation with the CRAG, PSE adapted the source figures provided by NEEA. NEEA's final 2017 electric savings results will include NEEA initiatives started in 2017 as well as impacts of codes and standards. The results from those initiatives aren't available at the time of this Report's publication, but will be finalized by NEEA by May 2018.

a. NEEA Expenses

Exhibit 1, Supplement 1 indicates an apparent under-spend in the NEEA category of approximately $1.17 million. However, actual payments that PSE made to NEEA totaled $4.945 million in 2017. One driver of the difference is a funder's share adjustment made by NEEA in March. Additionally, accounting transfers addressed expenses incurred for NEEA's end-use load research, PSE staff costs associated with NEEA committee participation, and a journal entry to transfer the 10 percent payments that Large Power User/Self-Directed customers pay to contribute to regional market transformation activities.

b. NEEA's Natural Gas Market Transformation Collaborative

NEEA provides a more comprehensive discussion of its 2017 natural gas market transformation activities in Exhibit 10. PSE ratepayers are major funders of NEEA's collaborative, with a 41.25 percent share of the overall 5-year budget of $18.3 million.

The NEEA Natural Gas Market Transformation 2017 expenses exceed the budget of $1.086 million by approximately $360,000: again, due to invoice timing. This amount reflects that the Q1 2017 invoice that NEEA issued in December 2016, wasn't paid until January 2017. PSE then paid the remaining three quarterly 2017 invoices, along with the Q1 2018 invoice, issued in December 2017.

Similar to the NEEA electric initiatives, Energy Efficiency staff who worked on NEEA's Natural Gas Market Transformation efforts charged their time to this order number in 2017.

NEEA works in concert with Energy Trust of Oregon, Avista Utilities, NW Natural, and Cascade Natural Gas Corporation. It coordinates the evaluation, testing, codes and standards initiatives, contacts with manufacturers, scanning for alternative measures, and developmental status of five pilot natural gas measures.

The measures included in NEEA's 2015-2019 plan are:

- Natural gas-fired heat pump water heaters,
- Efficient hearth products,
- Rooftop HVAC,
- Natural gas dryers, and
- Water/space heat combination systems.

c. Exhibit 10: NEEA 2017 Report of Activities and Initiatives

Exhibit 10 of this Report summarizes 2017 activities, regional initiatives, and outcomes in the areas of emerging technologies, residential, industrial, commercial, codes and standards, partner services and evaluation by the Northwest Energy Efficiency Alliance in PSE's service area.

C. Production and Distribution Efficiency

Schedule E292

1) Description

The Production and Distribution Efficiency program involves implementing energy conservation Measures within PSE's own production and distribution facilities that prove cost-effective, reliable and feasible.

Within production facilities, conservation Measures reduce ancillary loads at the site and exclude efficiency improvements made to the generating equipment itself. These Measures may include, but are not limited to, lighting upgrades, variable speed drives and compressor upgrades.

For transmission and distribution (T&D) efficiency, improvements are implemented at PSE's electric substations. These improvements can involve reducing the energy use within the substation itself and the distribution of energy from it. They can range from on-site Measures like lighting and heat pumps to system Measures like phase balancing and conservation voltage reduction (CVR) (also referred to as voltage optimization [VO]).

2) Adaptive Management

This program requires coordination between the Energy Efficiency program manager and staff in other PSE departments to collect project-specific details for program tracking and reporting. Maintaining a regular flow of communication has reinforced the energy-efficiency culture within PSE. These efforts included doing lighting quality and energy efficiency assessment at six power generation plants.

3) 2017 Accomplishments

PSE implemented lighting upgrades two generation facilities in 2017. Also, for the transmission and distribution grid, phase balancing analysis was done at four substations and the results of the study are being utilized to determine which substations are adequate for implementation of CVR in 2018.

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X. MEASUREMENT & VERIFICATION

PSE's Energy Efficiency department provides a discussion of Measurement & Verification (M&V) at this point in the 2017 Annual Report because M&V relates directly to the REM, BEM, Pilots and Regional savings programs just reviewed. This Report is the appropriate document for PSE to provide this discussion; Exhibit 3: *Program Details*, or Exhibit 4: *Measures, Incentives & Eligibility* do not lend themselves to an overview of these critical operational functions.

It is important that readers understand the rigor with which PSE manages its two fundamental conservation metrics—savings achievement and financial prudence—by applying stringent M&V principles. Energy Efficiency and its supporting organizations devote staffing, processes, training, and systems with an eye toward applying these observations, metrics, data, and process verification. Staff focus on consistently improving efficiencies, productivity and transparency, and ensuring the highest degree of savings and financial accuracy.

Supporting organizations that are also responsible for executing elements of these functions include Program Evaluation, Rebate Processing, Data and Systems Services, and the Verification Team. They are key supporting contributors to Energy Efficiency's success.[37] The Report discusses Rebate Processing and Data & Systems Services activities in Chapter 11: *Portfolio Support*. Verification Team and Evaluation activities and accomplishments are reviewed in Chapter 12: *Research & Compliance*. The remaining departments: Energy Advisors, Energy Efficient Communities, Strategic Planning, Marketing Research, etc., also apply a variety of M&V tenets to their work for Energy Efficiency.

This discussion provides general highlights of measurement and verification activities that Energy Efficiency staff regularly perform, including review, analyses, and vetting of:

- Data provided by vendors, contractors, customer rebate and grant applications, and reseller invoices;
- Program staff input, telephone surveys, and evaluations;
- The correct application of savings values indicated by evaluation studies, engineering analyses, or the RTF;

[37] The Budget, Evaluation, Administration & Regulatory Team also makes significant contributions to Measurement and Verification practices. That team's costs (primarily labor) assess to the overall Energy Efficiency organization, and are not separately budgeted.

- Savings values are properly archived;
- All tracking systems are accurately counting the number of measures installed, are applying the correct savings values; and
- When corrections are required, they are recorded using generally-accepted accounting procedures.

Energy Efficiency verifies electric and natural gas conservation savings and expenditures using a wide range of metrics, processes, tools, systems, and reports. Several groups within Energy Efficiency perform a comprehensive suite of measurement and verification processes. Program staff in particular review and verify measure installations, grant status, and sales reports[38] for measure type and measure count accuracy. The Verification Team's essential role in the overall M&V process is clearly indicated in the team's name. Data and Systems Services staff, rebate analysts, Budget, Evaluation, Administration & Regulatory staff, and third-party reviewers also perform critical measurement and verification tasks.

Some of the activities are unique to one particular team or function; the Verification Team is an example. Some departments, though, perform more than one measurement and/or verification activity throughout the course of managing Energy Efficiency operations.

This chapter discusses: savings accounting, tracking and verification; financial accounting and tracking of Conservation Rider expenditures; compiling and; reporting of Energy Efficiency information. This chapter will also discuss the implementation of Energy Efficiency's new system "DSMc", and the organization that that manages that system, Data and Systems Services.

D. Energy Efficiency Accounting and Tracking Infrastructure

Energy Efficiency employs a combination of proprietary and enterprise software applications and tools to accumulate, validate, report, and where necessary, adjust financial and energy savings figures with a high degree of integrity and accuracy. All are critical in Energy Efficiency's measurement and verification efforts. PSE references these systems in Figure X-1 on page 167. Readers will note that DSMc—often referenced in this Report—is central to Energy Efficiency data and information reporting.

[38] It is difficult to verify the installation of consumer lamps sold through retailers, for instance.

1) Demand Side Management Central (DSMc)

DSMc consolidated the different functionality (programs, measures, reporting, etc.) that were provided by disparate, largely custom in-house applications. As discussed in section III.B.2 on page 42, DSMc became the single system for Energy Efficiency tracking and reporting purposes in the third quarter of 2017, having incorporated all Energy Efficiency savings programs. Consistent with long-standing standard practices with other reporting systems, Energy Efficiency policies strictly limit access to DSMc to authorized staff only. The type of access ("reporting only", "data entry only", "approval only", etc.) is also limited according to PSE strict segregation of duties rules.

PSE plans that the EES Tracking & Forecasting Database will continue to be used for forecasting and aggregating reporting of project data, in conjunction with DSMc. CSY, CMS, and the Source of Savings Database—formerly employed to track projects, measure data, customer rebate application status, etc.—will continue to be available for historical archival reference.

2) SAP

SAP, PSE's enterprise financial accounting system, will continue to operate as it does today with respect to Energy Efficiency program operations, program spending, and incentive payment distribution. SAP interacts with DSMc to import and export financial data related to conservation projects.

3) CSY

CSY will continue to be available for historical reference when needed. As they do for DSMc, Energy Efficiency policies strictly limit access to CSY to authorized staff only. Following the successful transition to DSMc, all CSY access is now "Read Only".

4) Measure Metrics

In 2017, Energy Efficiency began the transition away from separate measure savings archival systems. DSMc now contains the master measure library, which provides all measure used for each applicable program. The Source of Savings database,[39] a Microsoft® Access™ file, was retired in 2017, but remains available for archival reference.

5) CMS

CMS (Customer Management System) is a proprietary system used to inform PSE customers as to the status of a rebate application, energy-efficiency measure installation history (as determined by rebates paid) and other useful, customer-centric information. As these functions are now addressed through DSMc, CMS will continue to be used for referrals, and may continue to be used for brochure disbursement and collateral inventory management, as well as archival reference.

6) Master Tracking Workbook

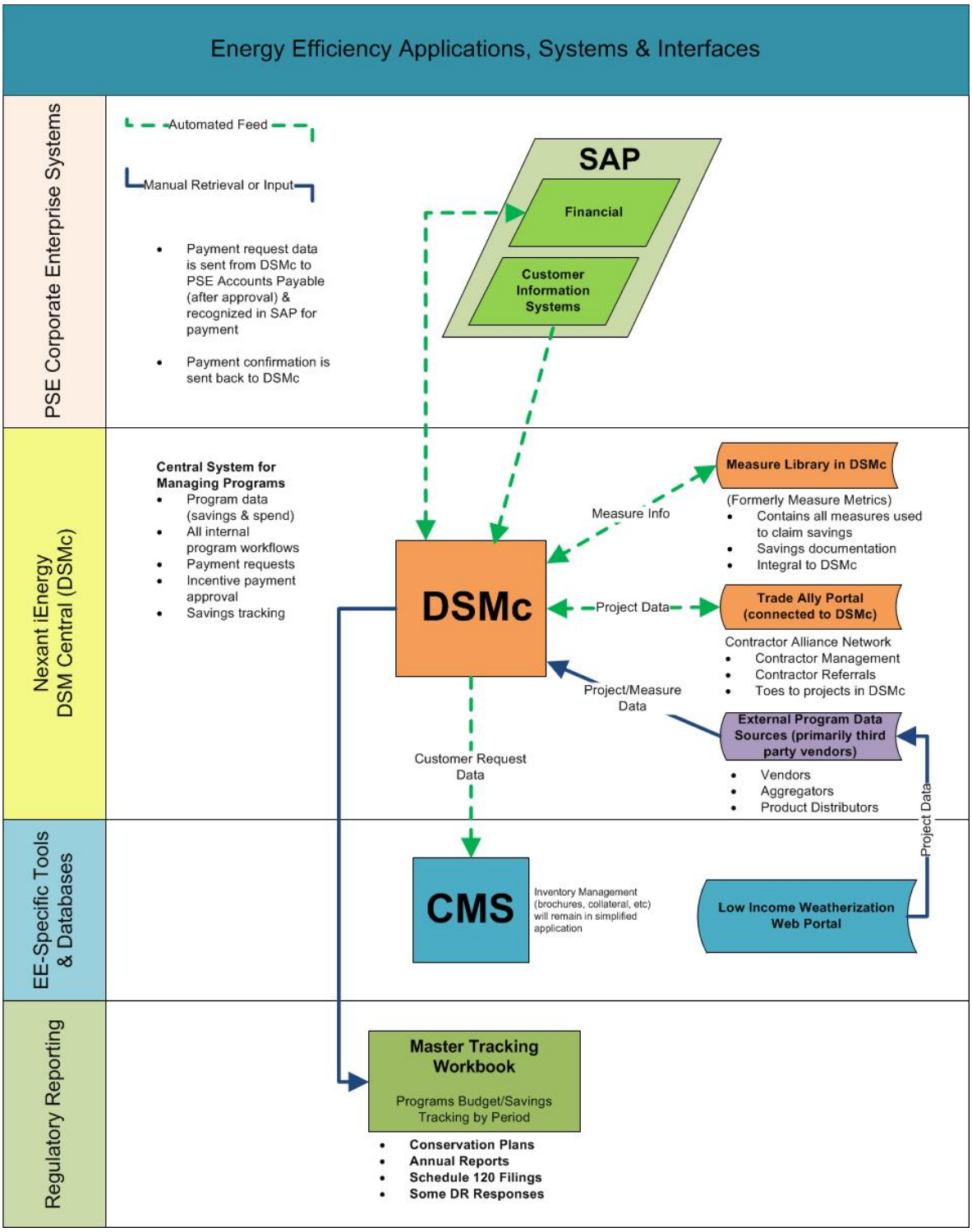
As the name implies, the Master Tracking Workbook is a Microsoft® Excel™ file, which Budget, Administration, and Regulatory (BAR) staff use to log all expense and savings data by month for internal Energy Efficiency reporting and external reporting. The majority of financial and savings tables in this Report, including Exhibit 1, are linked together in the Master Tracking Workbook. The Workbook is also the source of Energy Efficiency's annual Schedule 120 review with UTC Staff and CRAG members.

Maintenance of this workbook is one key to assuring segregation of duties and provides an additional review step in Energy Efficiency's reporting.

[39] It is important to note that the Source of Savings database archived only per-measure savings data, and was not used for tracking cumulative savings.

Energy Efficiency illustrates its system interfaces in Figure X-1.

Figure X-1: Energy Efficiency Management Tracking and Reporting Interface



B. Savings Accounting, Tracking, and Verification

Energy Efficiency's measurement and verification processes—most of which are long-standing embedded elements of its programs—are consistent with and often exceed the requirements outlined in condition (6)(c):

> "Puget Sound Energy must spend a reasonable amount of its conservation budget on EM&V, including a reasonable proportion on independent, third-party EM&V. Puget Sound Energy must perform EM&V annually on a four-year schedule of selected programs such that, over the EM&V cycle, all major programs are covered. (…)"

The following discussions highlight key areas of measurement and verification resources, tools, and processes implemented by Energy Efficiency staff to accurately measure and track electric and natural gas measure savings, along with their corresponding expenditures.

Where applicable and possible,[40] many conservation programs track the number of rebates processed, measures installed, grants paid, contracts or Memos Of Understanding (MOUs) executed, and invoices paid using tools built specifically for those programs. PSE intends that the following discussions provide general overviews, rather than comprehensive process reviews.

1) Accounting for and Tracking Conservation Savings

A key outcome of the Measurement & Verification function is the accurate representation of measures installed, and accounting for conservation savings as they are determined by:

- Prescriptively setting the savings value;
- Determining savings values using standard engineering calculations applied for a class of measures;
- Formally evaluating the actual savings realization rates or;
- Measuring savings at the customer meter or equipment locations (primarily associated with custom grants).

[40] Retail lighting is an example in which PSE received data feeds from certain retail establishments. The data consists of the number of particular units sold, rather than any specific customer information. Therefore, it isn't possible to indicate the number of lamps per household installed in all Residential programs.

Two of the most critical verification elements necessary to ensure savings accuracy are the verification of the savings associated with those measures, and the verification of measure installation.

a. Measure Savings Values

Exhibit 5[41] of this Report lists the savings values for all prescriptive measures, by program and fuel type. Prescriptive measure values fall into two categories: RTF Unit Energy Savings (UES) and PSE Deemed.

As applied by Energy Efficiency, both are consistent with WAC 480-109-100(5):

> (5) Energy savings. A utility must use unit energy savings values and standard protocols approved by the regional technical forum, unless a unit energy savings value or standard protocol is:
>
> (a) Based on generally accepted methods, impact evaluation data, or other reliable and relevant data that includes verified savings levels; and
>
> (b) Presented to its advisory group for review. The commission retains discretion to determine an appropriate value or protocol.

All deemed measure source of savings documentation is archived and is available for query in the Source of Savings database and DSMc. When necessary, program staff apply any measure savings revisions at the beginning of the year following the publication of the updated measure savings value, if that publication occurs prior to September 1 of a planning year. This is consistent with Energy Efficiency's *Measure Revision Guidelines*,

Calculated measures are similar to deemed measures, in that their savings value can be determined on a per-unit basis. The step that differentiates them from Deemed (or UES) values is that there are one or more additional calculations that must be completed before an accurate representation of their savings value can be determined. These calculations, based on engineering analyses, samples, and industry standards, etc., can range from hours of operation, tonnage (in the case of an HVAC measure), building type (for instance, school, retail, restaurant), etc.

[41] This year, PSE created Exhibit 5: *Prescriptive Measures*, from a report in DSMc.

Due to their complexity and variability, the source of savings for these types of measures aren't archived in DSMc.[42]

Measures installed as a part of Commercial/Industrial custom grants are unique, in that every grant project is evaluated by a PSE Energy Management Engineer (EME). EMEs use data loggers, meter data, engineering computations and other measuring tools to evaluate predicted savings. A senior EME verifies every project's calculations for savings prior to grant payment.

b. Measure Savings Verification

A key reference in the assurance of measure savings verification is PSE's reliance on the information archived in the Measure Metrics system, including the Source of Savings database and DSMc. Energy Efficiency staff regularly compare the savings figures indicated in the measure business cases against those archived in DSMc, which is the key source of accumulated and recorded year-to-date aggregate savings. When necessary, PSE follows a rigorous savings adjustment process if it is discovered that certain savings values disagree between the references.

Rebate application processing and analysis is another vital measure savings verification component. A complete discussion of the Rebates Processing organization's activities and accomplishments is included in Chapter 11: *Portfolio Support*, starting on page 179.

c. Savings Tracking

After vetting a prescriptive measure's savings value and obtaining the director of Energy Efficiency's approval, the measure value and source of savings data is archived.[43] Program staff then follow a meticulous process to verify and report their measures' monthly installations.

[42] For instance, certain Commercial HVAC measures in the past had more than 300 permutations, causing database management to become unwieldy.

[43] The primary source of savings archival database is DSMc. Savings are accumulated and reported as projects are completed in DSMc. Although DSMc is now fully on-line, PSE anticipates that DSMc will be the primary repository of savings tracking, with the EES Tracking Database being used as a vetting tool. Additionally, all financial data originates with SAP, which will continue to be the sole financial repository.

Program data is systematically uploaded and coupled to information in the measure library in DSMc, where the archived savings value is linked to the applicable measure quantity. Program staff check vendor/contractor invoices and reports for measure values and counts prior to payment to ensure entry accuracy, prevention of double-counting, etc.

To ensure accurate savings reporting,[44] program staff and Data and Systems Services staff confirm the monthly savings and expenditure figures in DSMc. After this check, the data is locked for entry, and is available for department-wide reporting (discussed in the Savings Reporting section). DSMc also tracks and reports on calculated and custom measure data, which is aggregated and logged into DSMc as a single number per project.

d. Business Energy Management Custom Project Verification

The full range of verification activities is conducted when an energy management engineer (EME) manages a custom grant, either in the Commercial/Industrial (C/I) Retrofit, C/I New Construction, Resource Conservation Management, or Large Power/Self-Directed programs. There are also custom grant projects in REM's Multifamily programs.

EMEs verify project elements such as measure quantity, baseline energy consumption, potential savings, projected and actual equipment performance, and actual conservation results.

Every custom grant project includes a peer review by a more senior EME. A large number of Business Lighting Rebate projects are also selected for EME review, and the Verification Team inspects a calculated number of projects and commercial prescriptive rebates at customers locations. Before a custom grant is authorized for payment, it must meet verification requirements.

Business Energy Management staff use DSMc to manage the processing steps for custom grants, from the initial customer discussion, through the grant creation, work progress and savings measurement, final verification, and grant payment.

[44] Measure data originates from a variety of sources, including contracted vendors, third-party administrators, Low-Income Agencies, direct install reports, rebate applications, etc. Entities outside of Energy Efficiency only report measure counts. Savings values are only archived and reported from within DSMc.

2) Savings Adjustments

Although Energy Efficiency's programs maintain robust processes and systems that undergo continuous improvements to ensure accurate savings and financial tracking, there are infrequent instances when an adjustment is necessary.

Exhibit 1, Supplement 2: *Savings Adjustments,* lists and describes every electric and natural gas savings adjustment, along with its respective adjustment value, and an aggregate total of all adjustments that were performed throughout 2017. Adjustments apply to all measure types. The savings adjustment process is outlined in the Energy Efficiency document *Guidelines for Ensuring the Accuracy of Electric and Natural Gas Savings Claims*.

All adjustments, once approved, are made in the current reporting month, even if making the adjustment results in a negative value in the current month. Although very rare, there may be multiple adjustments for a single program or multiple programs in a single month. Adjustments may apply to either electric or natural gas values and may be positive (indicating that the originally-reported value was understated) or negative (indicating that the originally-reported value was overstated).

Savings adjustments are approved by the Budget, Administration & Regulatory manager only after the applicable program manager has addressed five questions:

1. What was the reporting discrepancy?
2. How was the discrepancy discovered?
3. What was the effect of the discrepancy?
4. How was it corrected?
5. How did program staff ensure that the discrepancy is not repeated?

Once approved, an adjustment entry is made to the applicable tracking and reporting systems. Adjustments apply only to the ongoing reporting of cumulative savings values. They do not apply to archived, per-measure savings values.

Archived savings values[45] are revised only:

1. In the case of errors. If it is discovered that an archived savings value is incorrect (for instance, it is entered into a database as "43" kWh, when the actual savings is "34" kWh), the savings value is adjusted and all savings reported to that point—back to the beginning of the current year—are corrected.

   To maintain historical perspective, measures are never deleted from a Measure Metrics database.[46] Rather, they are retired.

2. In the case of an evaluation, industry study or RTF revision updating the savings value of a current measure. If a measure's UES value is adjusted mid-year (prior to September 1), PSE updates the value at the beginning of the following year, consistent with Energy Efficiency's *Measure Revision Guidelines*.

Since 2008, PSE has implemented several processes and guidelines to ensure that its savings reporting—both electric and natural gas—maintain the highest accuracy standards. One of these outlines the methods of vetting, justifying, counting and reporting measure savings: *Guidelines for Ensuring the Accuracy of Electric and Natural gas Savings Claims*.

This comprehensive document ensures consistency across programs and Sectors, outlines rounding rules for savings values and measure counts, discusses applicable reporting periods, and how retired measures are tracked, reported and archived.

3) Savings Reporting

When DSMc became fully operational in 2017, Energy Efficiency retired CSY (for the purposes of ongoing conservation project management). Once compiled and verified in DSMc and the EES Tracking Database, all program figures are copied to the Master Tracking Workbook, managed by Budget, Administration and Regulatory (BAR) staff.

[45] Versus savings values being actively tracked and reported.

[46] Including CSY, The Source of Savings database, and DSMc.

This step provides segregation of duties, and an extra opportunity for staff examination before the data are archived.

After BAR staff populate the Master Tracking Workbook (the final step noted in Figure X-1 on page 167) with the monthly savings and financial information, they forward the summary report to program staff for a last double-check and vetting. The aggregated monthly data is linked to the Energy Efficiency Exhibit 1: *Savings and Expenditures* spreadsheet, which also populates the various savings and financial tables within this Report.

A range of Energy Efficiency staff routinely reviews the department's key recording systems. The systems are regularly upgraded, improved, and double-checked by program staff and the Data and Systems Services team to validate their accuracy throughout the year.

C. Financial Accounting and Tracking of Conservation Rider Expenditures

Energy Efficiency staff are responsible for ensuring the accuracy of invoices and financial charges applied to their programs. These can include charges from other PSE departments: marketing department labor charges for Direct-to-Consumer Channel collateral development, for instance. Program staff are required to reconcile their program's SAP[47] records on a monthly basis to ensure accuracy.

Energy Efficiency staff also attend regular accounting training, including introductory sessions for newer employees, as well as refresher training made available throughout the year. Additionally, staff members who are authorized to approve invoices are required to attend annual training and sign a due diligence affirmation, consistent with PSE corporate accounting policies.

PSE employs SAP as its enterprise-level accounting system. PSE uses financial information collected and reported in SAP on conservation expenses in its annual Schedule 120 filing—PSE's funding mechanism for conservation programs. When PSE hosts UTC Staff and CRAG members to review Energy Efficiency Schedule 120 expenses in preparation for its annual Commission open meeting, Compliance staff[48] use SAP to satisfy reviewers' queries.

[47] PSE discusses SAP in more detail on page 165.

[48] Members of Energy Efficiency's Budget, Administration, and Regulatory department.

These reviews typically occur in the late March-early April timeframe—subsequent to PSE's Schedule 120 filing, and prior to the updated Schedule 120 rates going into effect on May 1.

As noted in the Conservation Savings discussion in the previous section, Energy Efficiency intends that the below-referenced process discussions only provide an overview, rather than a comprehensive process review. Financial accounting applies to PSE-internal expenses incurred as a part of executing conservation programs (labor, customer incentives, employee expense, etc.), and expenses incurred paying third-party evaluators, vendors, printers, etc.

1) Expense Tracking

SAP accumulates charges (or credits), and applies them to applicable Energy Efficiency order numbers.[49] Within each order number, there are cost elements (sometimes referred to as account numbers), that are used to log the specific type of account to which the expense is recognized.[50] SAP provides functionality that allows authorized users to "drill down" into expenses; accessing specific invoices or charges from supporting departments, etc.

2) Financial Adjustments

Similar to measure savings adjustments, expenses that have already been logged into SAP erroneously must be adjusted to reflect the correct accounting.[51] The process used to effect those infrequent adjustments is similar to that discussed in the measure savings adjustment section above, although controlled at a corporate level with strict policy guidance.

Moving expenses from an incorrect account to the correct account is accomplished by the use of a journal entry (JE).

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[49] The order numbers used by Energy Efficiency programs are listed in the "Sector Views" of the 2016-2017 Biennial Conservation Plan's Exhibit 1: *Savings and Budgets* workbook. Order numbers, formatted according to FERC accounting requirements, are used to account for program costs in SAP.

[50] Cost elements can include, but are not limited to categories such as labor, overhead, outside services, employee expenses, etc.

[51] An example may be where a natural gas rebate was entered into CSY as an electric rebate. In this case, a savings adjustment (reclassify therm savings as kWh savings) and a financial adjustment are required.

This process is strictly controlled by the Company, and has rigid segregation of duties requirements. For instance, in the two-step JE process, a staff member who "parks" a journal entry may not also "post" it in SAP.

3) Expenditure Data Assimilation

Each month, BAR staff download SAP financial records for all Energy Efficiency order numbers and enter them into the EES Master Tracking Workbook. The EES Tracking and Forecasting Database also archives expense data, using a feed from SAP.[52]

The Workbook and Database are intentionally separate to ensure segregation of duties, thus providing an additional point of reconciliation.

D. Final Assembly of Energy Efficiency Information

Once BAR staff load the electric and natural gas savings and expenditure data into the Master Tracking Workbook, the data is vetted by applicable Energy Efficiency staff. Any needed adjustments are made, and linked spreadsheets within the workbook are ready to be extracted into the many Annual Report tables and Exhibits reference herein. The assembled data is also used as a reference in the creation of Exhibit 2: *Cost-Effectiveness Results*. As previously noted, PSE creates Exhibit 5: *Prescriptive Measures* from a measure report in DSMc.

E. Data and Systems Services

Data and Systems Services perform an integral support role for all of Energy Efficiency, and is a key component of measurement and verification functions for the entire department. The group provides the department with the tools, data, reporting and analyses necessary for rigorous measurement and verification processes. This team manages system administration, technical support, and system enhancements for the DSMc project management application.

PSE provides a complete discussion of the team's 2017 activities and accomplishments in Chapter 11: *Portfolio Support*, in the Data and Systems Services section.

[52] Figure X-1 on page 167 illustrates these systems.

F. M&V Accomplishments, Continuous Improvement and Adaptive Management

The following points are illustrative of PSE's commitment to continuous improvement and adaptive management in all facets of its Energy Efficiency business—not just to program that generate conservation savings. Throughout 2017, Energy Efficiency organizations, while maintaining their focus on maximizing the accuracy of reporting savings and financial data, also met their customers' expectations, increased M&V efficiencies, prudently used ratepayer funds, and minimized the impact of increasing regulatory requests. Highlights of key M&V accomplishments include:

- In November, The Data and Systems Support team conducted a comprehensive review of year-to-date measure data reporting, and noted five discrepancies between DSMc and the EES Tracking and Forecasting Database. D&SS proactively adjusted the savings reporting. PSE provides those in Exhibit 1, Supplement 2: *Savings Adjustments*. Additionally, D&SS made programming improvements to DSMc to prevent similar occurrences.

- Data and Systems Services' monthly data reconciliation process captured and reconciled the majority of reporting errors before the errors made their way into the tracking systems. PSE streamlined the process to reconcile measure database reference numbers, providing for easier and more accurate measure savings cross-references used in reporting Exhibits.
- As a result of the continuous improvement efforts and focus of the D&SS team, program staff, and the BAR team, the number of savings adjustments continued the positive trends of the last several years. Although the 2017 overall total increased from the 2016 total of 11 to 20 savings adjustments (13 electric, and 7, natural gas), 7 were the result of data migration issues, rather than program discrepancies, such as vendor or contractor training issues.

  The Budget and Administration team collaborated with program staff to streamline the adjustment request process, enabling adjustments to be made in the same month that they're requested. PSE provide the details of these adjustments in Exhibit 1, Supplement 2: *Savings Adjustments*.

  This consistency continues PSE's positive trend of continuous improvement, reflecting customer-facing process and rebate application refinements, with continued emphasis on thorough data review prior to reporting.

  The overall savings reported in Exhibit 1 are reflective of those adjustments.

- The Budget and Administration team added several steps and worksheet lookups in the Master Tracking Workbook so that any data inconsistency is identified within the reporting month, eliminating the need for manual reconciliation and time-consuming review at year's-end.

PSE discusses additional M&V-specific 2017 accomplishments and continuous improvement initiatives in applicable Verification Team, Rebates Processing, Data and Systems Services, and Program Evaluation sections of the Report.

XI. EFFICIENCY PORTFOLIO SUPPORT

A. Overview

The organizations that comprise the Portfolio Support group play a critical role in Energy Efficiency's success of consistently achieving conservation targets within expected cost parameters. Much of what Residential Energy Management and Business Energy Management (who make up key elements of the Energy Efficiency department) implements and offers to customers depends on the work performed by these teams.

The teams' activities do not directly result in electric or natural gas savings, although the Portfolio Support activities expenses are spread over the portfolio for purposes of calculating cost effectiveness. The groups collaborate with program staff to ensure that (1) they engage and represent all customer classes, (2) that incentives are properly set, and (3) that program staff are targeting their efficiency communication effectively. Through market research and planning, the establishment of compelling messaging, easy-to-navigate and intuitive web content, and visible conservation presence within the communities that PSE serves and with its trade allies, the teams' contributions cannot be overstated.

1) Functional Group Performance

Table XI-1 provides a 2017 year-to-date summary of expenditures for the Portfolio Support organizations.

Table XI-1: Portfolio Support, 2017 Expenditures

2017 Expenditures				2017 Budget
Schedule	**Programs**	**Total**	**% of Budget**	
Electric	Electric			Electric
Gas	Gas			Gas
	Customer Engagement and Education	**$ 1,693,705**	***87.9%***	**$ 1,927,581**
	Energy Advisors	*$ 1,127,768*	*96.5%*	*$ 1,168,422*
	Events	*$ 501,874*	*77.2%*	*$ 649,765*
	Brochures	*$ 64,064*	*63.7%*	*$ 100,594*
	Education	*$ -*	*0.0%*	*$ 8,800*
	Electronic Medial Tools & Awareness	**$ 704,905**	***59.2%***	**$ 1,190,832**
	Customer Digital Experience	*$ 333,286*	*56.6%*	*$ 588,990*
	Customer Awareness Tools	*$ 24,600*		
	Automated Benchmarking System	*$ 155,166*	*109.1%*	*$ 142,243*
	Market Integration	*$ 234,103*	*50.9%*	*$ 459,599*
	ShopPSE	*$ (42,250)*		
	Rebates Processing	*$ 444,154*	81.2%	*$ 546,940*
	Programs Support	*$ 321,145*	45.9%	*$ 700,102*
	Data and Systems Services	*$ 1,758,849*	160.3%	*$ 1,097,134*
	Energy Efficient Communities	$ 802,495	89.6%	$ 895,611
	Trade Ally Support	$ 138,425	117.6%	$ 117,661
	Contractor Alliance Network	$ (47,753)	1077.0%	$ (4,434)
	Total Electric	**$ 5,815,924**	**89.9%**	**$ 6,471,427**
	Customer Engagement and Education	**$ 222,819**	**102.9%**	**$ 216,613**
	Energy Advisors	*$ 104,055*	*119.9%*	*$ 86,790*
	Events	*$ 110,056*	*97.6%*	*$ 112,790*
	Brochures	*$ 8,708*	*54.2%*	*$ 16,058*
	Education	*$ -*	*0.0%*	*$ 975*
	Electronic Medial Tools & Awareness	**$ 95,216**	**49.1%**	**$ 193,947**
	Customer Digital Experience	*$ 58,260*	*66.2%*	*$ 88,010*
	Customer Awareness Tools	*$ 4,341*		
	Automated Benchmarking System	*$ 27,283*	*32.7%*	*$ 83,541*
	Market Integration	*$ 34,944*	*156.0%*	*$ 22,396*
	ShopPSE	*$ (29,613)*		
	Rebates Processing	*$ 63,834*	77.8%	*$ 82,046*
	Programs Support	*$ 48,787*	46.6%	*$ 104,716*
	Data and Systems Services	*$ 268,840*	163.8%	*$ 164,146*
	Energy Efficient Communities	$ 130,110	90.6%	$ 143,617
	Trade Ally Support	$ 17,322	82.4%	$ 21,015
	Contractor Alliance Network	$ (51,615)	1148.3%	$ (4,495)
	Total Gas	**$ 795,313**	**86.3%**	**$ 921,605**

B. Customer Engagement and Education

This Energy Efficiency Sector performs functions and activities that are customer-facing: via telephone; PSE's web portal; literature; or various other forms of media. For a large part, the organizations and the staff initiatives discussed in the following sections are the first exposure that customers have to PSE's energy-efficiency programs.

1) Energy Advisors

The Energy Advisor Department is a unique, customer solution operation. This expert group brings efficiency into PSE's customer homes by guiding them in changing behaviors, understanding their energy use, and assisting them in using PSE's programs that are best suited for the customer's individual circumstances. Energy Advisors also promote and explain PSE's renewable energy programs, community challengers, available promotions and tax incentives. The Energy Advisors assist customers with these services over the phone, email, and in person.

Unlike transaction-based customer care departments, the Energy Advisors provide expertise and deliver solutions tailor-made for customers' homes. The Energy Advisors perform research, conduct analyses, provide resolution, and respond to customer inquiries. They follow-up on requests related to energy efficiency and conservation that inform customers, and make suggestions on how customers can reduce their energy use. They represent PSE in an effort to promote and cross-market energy-efficiency products and services by presenting and providing educational materials to employees, organizations and community groups.

Energy Advisors receive training and instruction in departmental procedures, current programs, building science, and customer service. They are expected to use good judgment in independently responding to recurring customer issues and/or complaints. Unique, difficult or unusual customer service issues are referred to Senior Energy Advisors**.**

Individual Energy Advisors are also located in several PSE Business Offices throughout PSE's service territory to provide direct support for energy-efficiency questions.

Customers have access to speak directly to an Energy Advisor through a toll-free number, **1-800-562-1482**, Monday through Friday, 8am to 5pm.

a. 2017 Accomplishments

As noted in Table XI-2, the number of customer phone calls into the Energy Advisor directory increased by 10 percent from 2016 levels. The number of email contacts remained fairly consistent from 2016 levels, and community/tradeshow events that energy advisors staffed increased by almost 50 percent from 2016 events staffed. Three energy advisors that staff PSE's regional offices managed nearly 700 personal customer interactions in 2017. These indices reflect customers' requirements for an increased level of self-service and in-person interactions with PSE. Table XI-2 presents highlights of key 2017 Energy Advisor metrics.

Energy Advisor staffing at events is particularly useful for customers, as Energy Advisors have the opportunity to review PSE's digital engagement experience directly with customers, alleviating any potential concerns and illustrating the simplicity of managing their energy use through PSE.com's Energy Center page.

Table XI-2: Key Energy Advisor Metrics

2017 Energy Advisors	
Calls Answered	89,000
Emails	6,800
Events Staffed	>160
Walk-in Customers Served	>660

The metrics noted in Table XI-2 denote:

- Calls Answered are both Residential Sector, and a portion of Business Sector incoming activity.
- Events staffed are those home shows, municipal gatherings, etc., where energy advisors are on-hand during all or a portion of the event to share a wide range of Energy Efficiency information directly with PSE customers. Event metrics are presented in the following section.
- Emails include a wide variety of actions taken by energy advisors in response to emails sent to the general energy advisor email link.

b. 2017 Adaptation and Continuous Improvement

New for 2017, energy advisors are utilizing the DSMc system to check rebate status for customers and contractors. They are also promoting the Public User Interface (PUI) so customer can submit their rebate applications and check rebate statuses online.

Energy Advisors continue to utilize a powerful online Billing Advisor tool to deliver an enhanced experience for customers. This internal-only interface offers a comprehensive view of each customer's unique energy situation. This includes deep insights and data exploration that makes energy usage diagnosis easier and faster. It is based upon the customer's actual energy usage and billing period coupled with external data, such as weather.

PSE continues to improve its information distribution to customers based on their evolving requirements. For example, PSE makes use of emails with PDF attachments and hyperlinks via its Energy Advisors, as well as mailed hardcopy brochures and rebate applications through its brochure fulfillment process.

2) Events

The Energy Efficiency department participates in community, local, and regional events throughout the year, including home shows, trade shows, seminars, corporate events and community events. The event audience consists of general public, businesses, builder/contractors, multifamily property owners, city leaders, home owner associations, and students/teachers. PSE maintains a presence at these venues to promote its residential and commercial energy efficiency programs in addition to the other communication methods PSE uses to educate customers about its offerings. This provides unique opportunities for Energy Efficiency staff to interact directly with customers and discuss a variety of products, programs and services that the department offers. Energy Efficiency staff will also match customer interests and needs with Energy Efficiency programs, as well as bring back customer feedback.

The event strategy team provides specific criteria for event participation that matches overall business and strategies of the programs supporting Energy Efficiency programs with emphasis on presence, affiliation, and relevance. Each event holds a particular value to stakeholders and relates to objectives of PSE Energy Efficiency programs.

The Events team organizes events using an event management data system to improve communication and customer experience. The team assesses event requests and reviews event opportunities in advance with a focus on tactical planning for and vetting events. PSE proactively seeks new audiences to deliver energy efficiency services, using available demographic data to identify harder to reach customer segments such as seniors, rural communities, small business owners, etc.

PSE employs a third-party vendor to augment its dedicated events staffing to ensure the maximum energy-efficiency exposure. The goal of this is to increase awareness and uptake of PSE Energy Efficiency programs, drive energy savings, and reach a broad and diverse audience base through door-to-door, open houses, and community events.

a. 2017 Accomplishments

In 2017, the Events team partnered with the Energy Efficiency team throughout PSE's service territory to have a presence at a substantial number of diverse community event opportunities. Through this internal partnership, PSE was able to reach out to over half a million people to share the message of Energy Efficiency programs.

b. Highlights of Residential Events

With broader resources provided by contract staffing, the team was able to reach into a great variety of community events in all of the PSE-served counties. Community events into which PSE expanded its participation include:

- Island County festivals;
- Whatcom, Skagit, Kitsap, Kittitas, Thurston Counties - Home Shows;
- Kittitas County Fair, Wild Horse REC events, Farmer Markets;
- King County festivals, Home Fair, low income community events;
- Kitsap community safety fairs;
- Multi-family Residential energy fairs.

c. Reaching into PSE Businesses

The Events team, in concert with the Energy Efficient Communities team, continued Energy Efficiency's ongoing practice of engaging PSE employees, its vendor partners, and key clients in extolling the customer benefits of energy efficiency. These efforts included events at:

- TechniArt Corporate Fairs (also termed "Pop-up events" in the Single Family Existing and Direct-to-Consumer program discussions) in PSE business campuses and offices;
- Customer Employee events: Boeing plants, Expedia, Microsoft, JBLM, and City Halls.

d. Hard-to-Reach and/or Proportionately Underserved Segments

The Events team was instrumental in targeting an increase of participation in Multi-Family Residential energy fairs. The goal was to reach more rental residents with direct-install information and tips for continued energy savings through on-hand education.

Table XI-3 provides a summary of 2017 events in which PSE presented energy-efficiency information. PSE rounds totals over 10 for this Report.

Table XI-3: Total Events

2017 Events	Count
REM	290
BEM	20
Residential Door-to-Door	10
Customer Outreach	330
Contractors, Partners in Community	80
Total	**730**

3) Energy Efficiency Brochures

PSE provides brochures and how-to guides on numerous energy efficiency opportunities, including low-cost equipment, weatherization measures, major weatherization improvements, and equipment upgrades.

This information includes investment and savings estimates where appropriate. The brochures provided as part of this program are general energy efficiency in nature, whereas program-specific (for example, business programs, residential heat pumps, or mobile home duct sealing), are budgeted within those specific programs. These brochures are available to customers in paper form and online at the PSE website. Where required by tariff, brochures are included as bill inserts.

a. 2017 Accomplishments

The brochures staff in collaboration with PSE's Communications Marketing group worked toward improving the customer experience by reducing the overall variety of available brochures. This reduction of over a dozen titles helped bring focus to those that are used most frequently.

b. Adaptive Management

PSE noted a significant change in customer behavior in 2017. Energy Efficiency brochure downloads from PSE.com increased to 14,600 from almost 6,500 items in 2016. This may be a result of more materials being available on its website, along with improvements to PSE's website navigation.

Conversely, mailed brochures increased only to 3,800 from 2,850 in 2016 following a significant decline from 2015. PSE is maintaining more brochure information for online access, but remains sensitive and responsive to customer need for hardcopies to distribute to those who don't have easy access to the internet.

Table XI-4 provides a view of 2017 brochure distribution.

Table XI-4: Brochures and Mailings Distributed

Energy Efficiency Brochures	Number
Brochures mailed	3,800
Brochures downloaded from PSE.com	14,600
2017 Energy Efficiency Brochures & Customer Referral Letters	
Sampling of EE Items Mailed via USPS	**Qty**
Post CAN *Thank You* completion letters	2,000
HomePrint & Home Energy Assessment letters:	340
Electric heating letters:	100
Natural gas heating letters: *(natural gas furnace)*	1,000
Gas & electric insulation letters:	2,000
Customer referral letters:	11,200
Energy efficiency brochures:	4,000
Customer natural gas & electric Thank You kits:	250

4) Energy Education

Schedules E/G 202

a. Description

The Energy Efficiency Education program provides opportunities to broaden knowledge of conservation and increase participation in efficiency programs. PSE's energy education program provides a forum for positive customer and community interaction and involvement that will inform, inspire, and empower with the understanding that individual choices do make a difference.

b. Adaptive Management

With limited staffing to bring education into the community, PSE focused on its successful relationship with the Independent Colleges of Washington (ICW). The ICW underwent an administrative leadership change in 2016. Working with their new Director in 2017, PSE advised ICW that it preferred school projects moving forward to reach larger audiences with its $10,000 grant dollars – both in number of students participating and in potential impact.

The Director brought this message to the schools and returned with a 2017 project from University of Puget Sound that engaged students within dormitories during Summer and Fall quarters. The project entailed tracking campus housing hot water usage to measure effectiveness of implementation of behavioral changes through education, inspiration, and social norming. Energy savings were not significant on a consistent basis, but student polling did show an overall increase in individual awareness that may carry over to future behaviors.

C. Electronic Media Tools & Marketing

The Electronic Media and Tools group implements services and activities that focus on PSE customer access to Energy Efficiency programs, via the internet or other forms of electronic media. This Electronic Media and Tools team is made up of Customer Digital Experience and Market Integration, which are detailed in the following sections. PSE also discusses the Automated Benchmarking System (MyData) later in the following section.

1) Description

Customer Digital Experience and Market Integration are designed to significantly improve Energy Efficiency's ability to communicate the "how and why" of energy efficiency, using new technologies and engaging interactive methods.

Customer Digital Experience manages and creates PSE's energy-efficiency web tools, with the intention of improving their effectiveness in delivering electricity and natural gas savings. Research has shown that PSE customers are more web-savvy than average and have high expectations when doing business on the web.

Customer Digital Experience provides ongoing support for the Energy Efficiency web pages, making changes as necessary and updating program pages for the new biennium. The Customer Digital Experience Team also supports interactive content development like the "Store Finder" map locating nearby places to find energy efficient appliances. Other content that the group supports includes online energy efficiency rebates, e-newsletters and the fees for other miscellaneous software applications. These include online forms, database and web hosting services, social media, multimedia and earned media content. It includes purchases made through ShopPSE, funded by the Residential Energy Management Direct-to-Consumer Channel (http://PSE.com/shoppse).

2) Customer Online Experience: Investment in New Online Tools

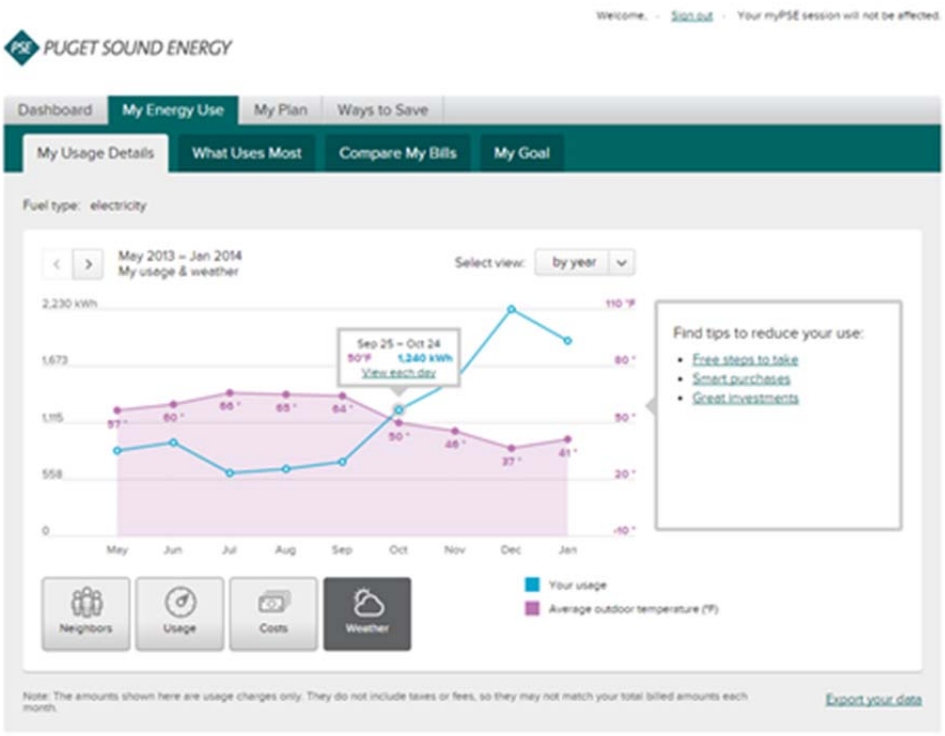
Since the pse.com re-launch in 2011, the “Savings & Energy Center” has seen a significant uptick in page traffic and overall engagement with customers. PSE provides several highlights of its 2017 online metrics in Table XI-5.

Table XI-5: Energy Efficiency On-Line Metrics

2017 Customer Online Experience Metrics	Web Page Views 2017
Savings & Energy Center	2,136,689
myPSE account Energy Center tools	367,848
Ask an Energy Advisor inquiry form page	16,971
Contractor Referral Service referral page	40,831

PSE proves a screen image of its myPSE Account Energy Center Tools in Figure XI-1.

Figure XI-1: Screen Images of myPSE Account Energy Center Tools



a. Program Accomplishments

In 2017, Customer Digital Experience updated the tools found in the myPSE Account Energy Center to help customers understand the specifics behind their energy usage, show neighbor comparisons (residential customers).[53] Tools also notify customers of higher than usual usage, and provide new ways to encourage efficient behaviors. These tools suggest personalized tips, tools, ideas and checklists, based on a customer's automated energy usage profile and self-assessment information.

Finally, Customer Digital Experience supported energy efficiency DSMc and rebate portal initiatives through their web design and implementation components.

[53] Specific customer details; addresses, names, account information, etc. is rigorously protected. Instead, only general, non-specific comparisons will be provided.

b. Hard-to-Reach and/or Proportionately Underserved Segments

Customer Digital Experience maintains technical and content design standards that support the accessible presentation of information about energy efficiency programs to customers with disabilities. The standards use assistive technology for browsing the web, referencing the Americans with Disabilities Act and W3C Web Accessibility Initiative Web Content Accessibility Guidelines (WCAG).

c. Adaptive Management

Digital Experience works closely with the Market Research function to improve use of the digital channel. In 2017, PSE made use of digital analytics and usability testing to improve the functionality of its digital tools and inform the design of capabilities to be deployed in the coming biennium.

3) Market Integration

Market Integration consists of salary costs of employees and contractors working on energy-efficiency marketing and promotional support activities. This is to make marketing efforts more transparent. Tasks include the enhancement of online energy-efficiency tools and features social media and media engagement. Other tasks include traditional marketing executions that center on promotional channels used across all programs, such as advertising, events, collateral, and websites.

To reinforce and broaden the impact of energy efficiency programmatic marketing, an energy efficiency awareness advertising campaign comprised of a series of clay animation shorts launched in February 2016, and continued through 2017. In 2017, PSE added two additional energy efficiency television and digital video ads to the series, promoting PSE's energy center tools and Home Energy Assessments.

The ads can be viewed here:

- I Dream of Savings, featuring "Nita" and "Sanjay": https://www.youtube.com/watch?v=sa_C8LNlABg
- Oblivious, featuring "Debbie" and "Sally": https://www.youtube.com/watch?v=1w99q4GbDtg

The two ads received more than 28 million impressions in PSE's service area over a five-month period and won three industry and professional awards for excellence:

- E Source Utility Ad Awards Best Overall Ad Campaign (Investor-Owned Utilities): Happy to Help, 2017,
- E Source Utility Ad Awards Broadcast Ad Award Second Place: I Dream of Savings, 2017,
- Public Relations Society of America Puget Sound Video Totem Award: Happy to Help, 2017.

Research conducted in October 2016 showed that PSE customers are more likely to associate PSE with "helping them to save money" since the advertising campaign launched, while those that saw ads are more likely to use PSE's energy efficiency information and tools. In the fall of 2017, PSE developed an additional energy efficiency awareness commercial to promote PSE's energy efficiency rebates. This commercial will premier to the public in 2018.

4) Automated Benchmarking System: MyData

This website, called *MyData* and launched in the autumn of 2013, provides building owners an easy to use, self-service portal that will allows users to set up automated monthly reporting of their building's usage.

MyData is a free web-based tool offered by PSE that allows building owners, managers and operators to track and assess energy consumption of their buildings. By registering their property, they will be a part of what is becoming an industry standard and will receive quick and accurate data on a monthly basis for their entire building.

This tool will enable enrollees to track energy usage for a portfolio of buildings, track the results of energy efficiency projects, develop Energy Star® ratings and comply with state regulations including required reporting in the City of Seattle via Energy Star Portfolio Manager.

Approximately 75 percent of the whole-building energy usage requests PSE received come from building owners (or their contractors) that were tracking their energy usage or tracking the results of energy efficiency projects.

a. Program Accomplishments

PSE continued to see an uptick in use of MyData in 2017. The intended audience was originally customers benchmarking their energy use, but now includes any customers wishing to track consumption of multiple sites or energy use at multiple sites as an aggregate unit. In 2016, PSE received 1,258 requests to use MyData. This number went up to 1,549 requests in 2017.

It is important to clarify that each customer may be responsible for more than one building or facility.

b. Hard-to-Reach and/or Proportionately Underserved Segments

The MyData software platform is available to all PSE customers. It is used extensively by Small-to-Medium Business (SMB) customers in Seattle to assist in compliance with the benchmarking regulations.

c. Adaptive Management

Program staff continue to use customer feedback to plan for future improvements.

5) Customer Awareness Tools

Please see the discussion on Energy Efficiency Awareness Tools in the Single Family Existing overview discussion on page 59.

D. Programs Support

Programs Support functions include data management, employee engagement, communications, and integration work by Programs Support staff, and all supporting implementation of Residential and Business Energy Management customer programs. The Programs Support budget is predominantly labor and includes training, planning and development costs projected by Programs Support staff.

Program Support roles include, but aren't limited to:

- Collaboration with Energy Efficiency stakeholders on internal employee and customer communications;
- Biennial and strategic program planning support;

- Customer experience – Energy Efficiency program participation surveys;
- Operational strategy and implementation;
- Organizational change management;
- Developing program manuals, policies, document control and department presentations;
- Integration liaisons with Marketing, Outreach, Digital Experience, and other PSE internal departments;
- Trade Ally support; and
- Best practices and continuous improvement.

1) 2017 Accomplishments and Activities

A key 2017 focus area for Programs Support staff was enhancing internal customer communications to customer-facing employees, and collaborating with program staff and marketing to provide talking points and monthly highlights. The organization also was a central contributor to developing and managing Energy Efficiency policies, enhancing document control, managing internal websites, and coordinating reports and presentations to various PSE staff. Staff also led streamlining processes and continuous improvement efforts.

2017 was a Year in which Energy Efficiency, and in particular, the Programs Support staff devoted much of the year to planning the next biennial program years (2018-2019).

Planning years are significant in that all program teams and Energy Efficiency support groups work together to develop and tailor their program portfolio mix for the next two years. Programs Support facilitated and managed the planning process—from beginning to end. Some of the key planning activities included:

- Schedule and adhere to timelines;
- Develop and distribute Request for Proposals/Information (RFPs/RFIs);
- Prepare internal and external communications (OCM activities—keeping all Stakeholders informed);
- Organize and lead regular planning meetings;
- Create working templates, forms and tracking documents; and
- Follow up with program leads to ensure key milestones have been met.

In addition to the biennial planning, a significant portion of staff's efforts focused on providing assistance to and support of the Data and Systems Services team on DSMc implementation and the customer self-serve online rebate application interface (also referred to as PUI), which launched in September 2017. Staff provided key coverage in the program data migration efforts throughout the latter half of 2017.

2) Key Variance Drivers

Programs Support's overall expenditures compared to budgets finished 2017 considerably lower than planned. Labor actual expenditures were approximately 44 percent lower than planned for both electric and natural gas functions. This was the result of personnel re-allocations occurring during the planning year (2016), causing the 2017 budgets to be somewhat over-estimated, by approximately 2 FTEs.

E. Data and Systems Services

The Data and Systems Services (D&SS) organization plays an important support role for all of Energy Efficiency. As noted in Chapter 10: *Measurement & Verification*, the Team plays a vital role in the department's measurement & verification functions.

This group provides the department with the right tools, resources, and people to assist in pro-actively managing their respective businesses, allowing program staff to make management decisions that optimize their business. Program data management, savings reporting, system development and ad-hoc analyses are some of the critical services this team provides.

1) 2017 Accomplishments and Activities

In 2017, the D&SS organization completed the implementation of PSE's new DSMc system that is used to process and track all Energy Efficiency-related program activity. In 2017, D&SS incorporated the commercial programs to the system, so now DSMc is processing PSE's more complex commercial grants as well as the traditional single-family rebate programs. Another notable change that the team made to the DSMc system in 2017 was enabling the online customer portal (Public User Interface: PUI).

This DSMc feature allows PSE customers the opportunity to submit their rebate application online (for those programs where PSE processes the rebates internally).

This portal also allows customers to monitor the status of their rebate application as it moves from submittal, to review, and finally to payment.

Over the course of 2017, DSMc processed the entire Energy Efficiency portfolio of over 200,000 projects across 32 energy efficiency programs. The consolidation of all Energy Efficiency project data under a single system has significantly simplified the organization's ability to analyze and report on the energy efficiency efforts of PSE customers.

The D&SS team had several additional accomplishments outside the work they did relative to DSMc:

- In 2017, the team completed the final reporting to the Georgetown Energy Prize Competition for Bellingham, Bellevue, and Port Angeles. (Bellevue and Bellingham were in the top ten cities of those competing across the nation).
- The team provided data and analytical support for many projects and initiatives throughout the year (Hard-to-Reach customer participation analysis, 2018-2019 Biennial Planning, Annual BECAR Audit, Evaluation Studies, etc.).

2) Adaptive Management

Following the completion DSMc system implementation in 2017, the Data and Systems Services team assumed full responsibility for system administration, troubleshooting, and enhancements.

The team implemented a support model where all internal users can submit their DSMc related questions, issues, and suggestions for improvements. Throughout the year, the team has implemented many changes to programs: to reduce processing errors; collect additional project data; and simplify the application-to-payment process.

3) Key Variance Drivers

DSMc implementation costs attributed to the D&SS organization in 2017. These costs exceed the 2017 budget by approximately $700,000. The additional costs were a combination of additional corporate IT labor, and contractor billing for the implementation of change requests through September 2017.

F. Rebate Processing

Rebates Processing functions include intake, qualification, payment and customer service, as well as process improvement in the customer experience. Improvements include, but are not limited to, redesigning rebate forms for clear instructions and qualifying criteria, analyzing rejection reasons for the root cause of non-qualified rebates, and simplifying the application process for customers.

The Rebates Processing budget is predominantly labor and includes training, planning and development costs projected by Rebate Processing staff.

Rebates Processing roles include:

- Intake, qualifying, data entry, and incentive payment processing;
- Communicating with customers regarding the rebate submittal, including status and payment;
- Collaborating with the Energy Advisors to provide a seamless and efficient customer experience;
- Demonstrating best practices and continuous improvement; and
- Coordinating timely customer payments with PSE Accounts Payable.

As noted in Chapter 10: *Measurement & Verification*, the Rebates Processing Team perform a critical verification step in Energy Efficiency. While a selected sample of applications are directed for onsite inspection by the Verification Team, all must go through several verification steps prior to payment authorization.

Key attributes include:

- Is the applicant a PSE customer?
- Is this the correct fuel type?
- Is the customer receiving service under the applicable Rate and Conservation Schedule?
- Did the customer submit a valid receipt (rather than one that's been used before)?
- Is the equipment eligible?
- Etc.

Table XI-6 provides a summary of rebates processed by Energy Efficiency Rebate Processing staff. The totals are not inclusive of all rebates, instant point of purchase markdowns, etc. paid within the REM sector.

As with program measure counts, the totals are rounded and are intended only to provide a sense of the scale of activity within the Rebates Processing group.

Table XI-6: 2017 In-House Residential Rebates Paid

Program	Count	Electric Incentives Paid	Gas Incentives Paid
Electric Home Heating	4,400	$4,070,000	$0
Electric Water Heating	600	$470,000	$0
Home Performance with Energy Star	10	$10,000	$0
Natural Gas Fuel Conversion	300	$410,000	$0
Natural Gas Home Heating	6,300	$0	$2,150,000
Residential Windows	1,900	$220,000	$560,000
Single Family Weatherization	3,300	$300,000	$1,580,000
Totals	**16,810**	**$5,480,000**	**$4,290,000**

1) 2017 Continuous Improvements and Accomplishments

The Rebate Processing team successfully managed over 16,500 customer rebates in 2017, all with a consistently low average turnaround time. In most cases, the team exceeded processing expectations. The implementation of the DSMc system has greatly improved rebate processing timelines for both instant contractor rebate reimbursements and direct customer submittals.

In addition, September's launch of the Public User Interface (PUI) tool allowed customer's to apply for rebates online for the first time. This significantly improved the customer's experience and allowed them to track their rebate status as well.

The team was also instrumental in mapping out DSMc processes, testing and overall input on critical "must-haves": rebate qualification guidelines; overall individual program guidelines; processing turnaround expectations; qualification look-up tools; and other critical, day-to-day business information for the PUI tool.

This substantial amount of effort occurred concurrently with the ramp-up of the heating season, when the team receives the vast majority of rebate applications. The team rose to the challenge and met its processing targets for the year.

G. Energy Efficient Communities

Energy Efficient Communities (EEC) is a program-support channel to deliver Energy Efficiency program information directly to residential and commercial customers and through partnerships with community organizations and municipalities.

1) Description

The program works to leverage community resources to connect with, educate and move customers to Energy Efficiency program participation. The team works to discover locally-appropriate ways of engaging with customers by leveraging PSE's resources, community knowledge and partner support.

The EEC team works closely with the Energy Efficiency programs to determine whether a broader partnership with a community organization or a more targeted, direct-to-customer approach is needed, such as a door-to-door initiative.

The key benefit that the organization provides is performing customer outreach for both residential and commercial programs at the local level, as the team is geographically located in the counties PSE serves. The team supports cross-program promotion, where appropriate.

Many of the organization's initiatives involve a high degree of focus on hard-to-reach and proportionately underserved segments of PSE customers. The Energy Efficiency Communities engages with stakeholders of these groups and program staff to ensure that the Energy Efficiency message is made available, and that customers are aware of their energy-efficiency participation opportunities. Most of the key initiatives discussed in the following sections contain some element of this focus.

The following discussions provide reviews of key 2017 Energy Efficient Communities' areas of focus.

d. Program Accomplishments

In 2017, the EEC team accomplished a variety of customer outreach initiatives in support of various EE programs, including the following:

- The team delivered eight multi-family energy fairs to engage with several thousand customers. For these fairs, the EEC team works with the program contractors and property managers to find appropriate times to set up an information table to discuss the upgrades happening as part of the multifamily retrofit program, and to share information about other energy-saving behaviors and applicable programs. It is a valuable way to connect with customers in ensuring they are fully aware of the value of energy efficiency efforts in their residences.
- EEC implemented door-to-door Home Energy Assessment (HEA) blitzes in 11 communities including knocking on more than 7,400 doors with a sign up rate[54] of over 40 percent. The HEA blitzes include engaging with the city council, home owners associations, or other community entities to find the appropriate time to deliver the initiative, including tying into other community initiatives happening at the same time, such as community fairs, neighborhood gatherings, etc.

- The team partnered with program teams to serve more than 325 small business customers through 6 small business direct install blitzes. These blitzes are similar to the HEA blitzes, but include integration with organizations that represent the business community. They include a preliminary door-to-door canvass to ensure that the customers are aware that PSE will be coming to conduct the assessments, if they are interested. Having this initial discussion allows for the owner, who many times is not on site, time to make the decision to participate when the contractor is working in the community.

  The team incorporates local business initiatives and partners, like downtown associations and chambers of commerce, into the blitzes to help ensure more collaboration and exposure. In addition, through the blitzes, the program reached nearly 50 agricultural/farm customers for the first time in 2017.

[54] If a customer indicates they would be interested in a home energy assessment at the time of the door-to-door visit, the customer outreach team classifies that as a “sign-up”.

- EEC delivered more than 100 presentations to a variety of organizations and community groups about PSE Energy Efficiency programs, including the Upgrades Campaign. Organizations include City Councils, libraries, civic clubs, Home Owners Associations, PSE retirees, colleges, corporate offices, and others.

e. Continuous Improvement and Adaptation

The Energy Efficient Communities team continued to work with its third-party contractor to better refine the timing for door-knocking for the Home Energy Assessment door-to-door blitzes to reach more customers when they are home.

f. Pilot-Like Initiatives

In 2017, the EEC team launched the new Powerful Partnerships program to strategically leverage PSE's corporate giving dollars to reach more customers with information about Energy Efficiency programs and services. As part of this partnership, the team engaged with 12 environmental organizations to bring forward program information to their employees, donors, volunteers and other audiences through social media, newsletters, tabling at events, conducting volunteer efforts and other applicable avenues.

These enhanced partnerships with local organizations allowed for a more targeted message to reach their audiences and increased the other voices talking about PSE's programs to customers.

The team also tested out some new outreach tactics to reach PSE's potentially underserved customers for promotion of the weatherization assistance program. The team worked primarily in two counties to engage with the non-profit and faith-based sectors to secure additional program sign-ups and leverage.

g. Key Variance Drivers

The EEC team underspent its budget in 2017 due mostly to staffing vacancies. A key team member was away on maternity leave for three months. The team also had one team member leave the Company, which resulted in the corresponding vacancy time while the supervisor worked to fill the role.

H. Trade Ally Support

Trade Ally Support manages PSE membership costs in Energy Efficiency (EE) trade associations. These organizations stand apart from other trade memberships managed in individual Energy Efficiency programs in that they provide comparatively broad-based EE research, training and/or implementation support services.

1) Description

Trade Ally Support organizations provide education, information and related services for:

- The adoption or expansion of energy-efficiency products, services, and practices; and
- Conducting research toward the development of new, or improved validation or delivery of existing conservation measures, programs and services.

The Trade Ally Support line item budgets and tracks only annual membership dues or Energy Efficiency services subscriptions PSE pays to broad-based industry trade and research organizations who perform and support ongoing development and implementation of Residential and Business Energy Management programs. PSE participates in and utilizes the services of many such organizations to support delivery, management, and promotion of energy efficiency services. Utility, customer, and service provider benefits primarily include education and information exchange on end-use technologies, energy legislation, efficiency services, and related industry trends.

Other Trade Ally expenses not related to dues, for example conference attendance by PSE Energy Efficiency staff, are budgeted and tracked with the pertinent efficiency program(s) receiving the benefit.

2) Memberships and Subscriptions

As discussed in Chapter 10: *Measurement & Verification*, PSE applies a great deal of rigor to ensure that Conservation Rider customer funds are used appropriately to add value to Energy Efficiency conservation offerings when considering memberships.

Memberships paid from the Trade Ally Support account in 2017 focused mainly on local or regional conservation efforts. 2017 memberships included:[55]

- Association of Energy Services Professionals – AESP;
- Building Owners and Managers Association of Seattle & King County – BOMA;
- Consortium for Energy Efficiency – CEE;
- Electric League of the Pacific Northwest;
- Energy Solutions Center – ESC;
- Northwest Energy Efficiency Council – NEEC; and
- Washington Association of Maintenance and Operation Administrators – WAMOA.

PSE also enhanced its resources by subscribing to eSource in 2017. This extensive industry database provides an additional insight for program staff to ensure that they maintain awareness in utility and efficiency developments. 2017's subscription included additional tools for technology assessment and eliminated access to customer journey mapping tools (essentially, a process flow diagram of the customer experience with a utility).

I. Contractor Alliance Network

The Contractor Alliance Network (CAN) connects PSE customers with pre-screened, independent contractors committed to helping customers make safe, dependable and efficient energy choices. This ensures their business and home energy improvement projects are successful and handled with a high level of customer service.

1) 2017 Program Review

In 2017, the Contractor Alliance Network (CAN) had 198 member contractors enrolled in the network. These contractors were responsible for closing almost 1,900 customer referrals which generated over $7.6 million in project costs for contractors installing energy efficiency equipment.

Another key focus of 2017 was the development of a trade ally network and associated strategy.

[55] These are included in Exhibit 1, Supplement 3 of this report, which provides a high-level view of 2017 expenditures for memberships and sponsorships.

This strategy is aimed to reach a broader range of trade allies who participate in, or are associated with the delivery of energy efficiency measures. These allies will include contractors, manufacturers, retailers, distributers, builders, and others. The goal of broadening the program's reach is to communicate, train, and educate all entities involved with Energy Efficiency programs and provide greater accessibility and communication paths to and from PSE.

a. Program Accomplishments

In 2017, the program team focused on development and implementation of a new trade ally portal. During the first quarter of the year, the program team worked closely with the Data and Systems Services team to draft the requirements of the system. However, the project has been put on hold while PSE investigates both external and internal system capabilities.

In alignment with the trade ally strategy outlined above, the CAN team worked in collaboration with the program staff to develop and support two unique limited time offers through local HVAC distributer networks. These special offers leveraged the cooperative marketing funds supplied by the distributers to either apply a discount for the customer for the purchase of the equipment, or leverage special financing options associated to a particular manufacturer.

b. Hard-to-Reach and/or Proportionately Underserved Segments

In 2017, the Contractor Alliance Network team, in collaboration with program staff, continued to support the Manufactured Home customer segment through dedicated referral products for both Weatherization and HVAC measures. The inclusion of these measures for CAN members provides greater accessibility and market rate options for customers in Manufactured and Mobile homes who need solutions to improve the efficiency and comfort of their homes.

c. Key Variance Drivers

CAN revenues generated from referral fees mainly underperformed in 2017. However, the program remained viable, generating enough revenue to cover general operations. The primary drivers impacting lower than anticipated revenue are primarily a result of three separate issues.

1. As PSE transitions to a new reporting system, additional revenue that is outstanding from the last quarter of the year will be realized in 2018.
2. The accrual of aging accounts resulting in write-offs associated with revised FTIP policies and procedures.
3. Program staff are researching the potential that there may be some remaining unreported referral fees in 2017. Associated projects will be vetted and reported in the 2018 program year.

It is important to note that all CAN revenue reported is integrated into the annual Conservation Rider (Schedule 120) filing—decrementing the expenses paid by PSE ratepayers.

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XII. EFFICIENCY RESEARCH & COMPLIANCE

A. Overview

Functions of this group include:

- Conservation Supply Curves,
- Strategic Planning,
- Market Research,
- Program Evaluations and
- Verification Team.

In addition to playing a critical role in Energy Efficiency's overall measurement and verification functions, the work of these teams assists Energy Efficiency program staff in designing innovative conservation offerings, evaluating processes and savings calculations, verifying cost-effectiveness, and building the Company's biennial IRP. They ensure that there is a regular schedule of program performance review, consistent with applicable requirements. Table XII-1 provides a 2017 summary of expenditures for the Research & Compliance Sector.

Table XII-1: Research & Compliance 2017 Expenditures

2017 Expenditures				2017 Budget
Schedule	Programs	Total	% of Budget	
Electric	Electric			Electric
Gas	Gas			Gas
	Conservation Supply Curves	$ 401,174	159.5%	$ 251,498
	Strategic Planning	$ 701,813	98.6%	$ 711,476
	Market Research	$ 242,067	82.9%	$ 292,170
	Program Evaluation	$ 2,215,699	124.6%	$ 1,777,721
	Verification Team	$ 475,434	83.4%	$ 570,118
	BECAR	$ 72,023	133.4%	$ 54,000
	Total Electric	**$ 4,108,209**	**112.3%**	**$ 3,656,983**
	Conservation Supply Curves	$ 49,142	130.8%	$ 37,580
	Strategic Planning	$ 88,437	175.9%	$ 50,278
	Market Research	$ 36,380	83.3%	$ 43,658
	Program Evaluation	$ 511,994	141.0%	$ 363,107
	Verification Team	$ 89,253	104.5%	$ 85,401
	Total Gas	**$ 775,207**	133.7%	$ 580,024

B. Conservation Supply Curves and Strategic Planning

Although separately listed in PSE's Exhibit 1: *Savings and Budgets*, the Conservation Supply Curves and Strategic Planning functions are managed in the same Energy Efficiency organization, and tend to have overlapping goals and focus.

1) Conservation Supply Curve Description

The purpose of the Conservation Supply Curve function is to complete a Conservation Potential Assessment for the company's Integrated Resource Plan (IRP). The Conservation Potential Assessment identifies the amount of energy savings potential that is technically and economically achievable over the 20-year planning horizon of PSE's IRP. The IRP, which is filed every two years, is the basis for PSE's electric and natural gas energy resource acquisition strategy, as well as the targets for its energy efficiency programs. The IRP analysis is also used to derive the ten-year conservation potential and two year electric conservation target required to comply with the Washington Energy Independence Act.

PSE completed its IRP and Conservation Potential Assessment in 2017. The CPA consisted of an assessment of the long-term market potential for electric and natural gas energy savings from energy efficiency and other demand-side resources, covering the twenty year period 2018-2037. PSE used a consultant to conduct the analysis of achievable technical potential, then performed an analysis of economic potential using its in-house resource portfolio model. The budget included costs to complete the conservation potential assessment and incorporate the results of that assessment in the resource portfolio analysis. This analysis was a key component for establishing program savings targets for 2018-2019.

2) Strategic Planning Description

The Strategic Planning function is responsible for providing support and guidance to a variety of regulatory and other strategic initiatives. Responsibilities include regulatory compliance filings, federal and state legislative review, policy analysis, end-use research, or other strategic efforts related to energy efficiency.

The Conservation Supply Curve and Strategic Planning roles include, but are not limited to:

- Internal and external research, planning and development,
- Biennial and strategic program planning support,
- Coordination with regional organizations including NEEA and RTF,
- Holistic assessment of Measurement & Verification protocols,
- Developing and managing IRP and related DSR bidding activities, and
- Programs Cost-Effectiveness.

3) Cost-Effectiveness

Cost-effectiveness modeling and calculations are also conducted within the Strategic Planning team. PSE comprehensively addresses program-level detailed views of electric and natural gas cost-effectiveness results for 2017 in Exhibit 2.

4) 2017 Accomplishments and Activities

PSE selected Navigant Consulting to conduct the Conservation Potential Assessment (CPA) for the 2017 Integrated Resource Plan (IRP) through a competitive bidding process. Navigant completed the final assessment of achievable technical potential in 2017, which was input to the resource portfolio modeling process to determine the amount of economic conservation potential in the IRP.

The Strategic Planning function provided management and oversight for supply curves, program planning, cost-effectiveness analysis, end-use data and research needs, and legislative review. The Strategic Planning function is also responsible for maintaining the company's primary relationship with the Regional Technical Forum. Notable accomplishments in 2017 included:

- Completion of an online survey of over 11,000 residential customers as part of a longitudinal Residential Characteristics Study to identify status and trends in residential energy use.
- Initiation of a study of the monetary value of the health benefits from reduction of wood smoke emissions associated with the installation of ductless heat pumps in homes that burn wood as the primary source of heat.
- Participation in the launch of a 5-year regional end use load research study.
- Fielding a supplemental sample of PSE customers as part of the regional Residential Building Stock Assessment.

5) Key Variance Drivers

Spending for Conservation Supply Curves was greater than the budget due to higher expenses in Outside Services. This is primarily a result of timing, where some consultant work performed in 2016 was not billed until 2017.

Strategic Planning expenditures included two FTE consisting of existing staff that were transferred from other Energy Efficiency functions.

C. Market Research

Market Research conducts a variety of research studies and analyses to support program design, marketing strategies, and development of effective program promotion and customer communications for Energy Efficiency.

1) Description

The focus of the Market Research function is on acquiring information about customers that is relevant for the development of energy-efficiency programs, educational materials, and promotional campaigns that will be effective in encouraging program participation.

Through various techniques such as surveys, focus groups, and analysis of existing databases, Market Research provides understanding of customer perceptions, motivations and barriers to adoption of energy-efficient applications and behavior, as well as tracking customer awareness of program offerings and satisfaction with non-program specific education and information services. Market Research is also called upon for analysis of localized characteristics, attitudes, behavior, and energy usage trends, necessitating more geographically targeted research. Market Research expenses are driven by the customized nature of the work and the large sample sizes required in quantitative studies for results to be valid for multiple market segments and geographic areas.

The Market Research staff works closely with program evaluation, marketing communications, and program implementation staff to identify research needs that support the effective development, delivery, and evaluation of energy efficiency programs.

These research needs are then coordinated and leveraged to result in a slate of research projects that are responsive to internal client needs, eliminate duplication of effort, and are cost-efficient.

PSE's conservation market research activities are divided into two basic components:

Baseline Research with Broad Applications: This type of research provides foundational information about PSE customers that will be a common source of knowledge for the general planning and design of all energy efficiency programs and promotional campaigns.

Application-Specific Research: This research is focused on specific programs or promotional initiatives. It includes research that supports specific energy efficiency program promotion and communications campaigns, such as message testing, target markets, and campaign effectiveness studies. Other research efforts will be focused on tracking customer satisfaction with information services, such as the Energy Advisors. Finally, research may be conducted to provide customer input on the design and implementation of specific programs, primarily using qualitative methods such as focus groups.

2) 2017 Results

In 2017, PSE Energy Efficiency Market Research efforts focused on: customer awareness of PSE energy efficiency offerings; preferred communication channels regarding energy efficiency products & services; and Customer satisfaction with PSE energy efficiency program details such as rebate submission and payment mechanisms. Energy Efficiency Market Research also participated in a number of spatial analyses to support energy efficiency programs.[56]

[56] Spatial Analysis is researching the distribution of conditions across PSE's service area. The variables could be: income level, education level, housing type, or age of housing. This past year, PSE examined questions for EES program staff through spatial analysis looking at the questions:

- Where are the low income/hard to reach customers located within the service area?
- What proportion of program delivery occurred in these areas?
- Where can EES market effectively to these customers?

a. Program Accomplishments

In 2017, the organization:

- Provided a dashboard standardizing satisfaction and performance across EES residential programs to guide program management throughout year. Comprehensive surveying of residential customers that either called for a referral of products and services offered, or participated and received a rebate.
- Continued surveying participants of Commercial/Business programs. Surveys have been returned at a slow pace due to response rate and number of participants. Market Research and program management are exploring improvements ranging from invitations being sent directly from PSE program managers or sending invitations on an automated basis from DSMc.
- (DSMc) Web Rebate Improvement – User Testing research to improve the online formatting and presentation of rebate information, clarity in the steps completed, and confirmation when process is completed.
- Conducted survey and provided baseline, web analytics, and monitoring metrics for the Energy Efficiency Services "Upgrades" campaign to gauge whether it raised awareness of PSE Energy Efficiency offerings.
- Supported MYE (Manage Your Energy) program web analytics. Created and updated web tagging for each iteration of the web page. Supported the measurement strategy of campaign performance and KPIs. Created dashboard for web metrics.
- Provided support to the Energy Efficient Communities campaign through GIS[57] analysis of appropriate scale of door to door and mailing campaigns for specified residential areas within PSE's service area.
- Conducted preliminary GIS research locating past participants of the small business program to assess locations for outreach in 2018.
- Value LED Bulb Survey – Determine whether there's a preference for less-expensive "value" LEDs and what LED features are desired relative to price.
- A number of smaller ad-hoc projects supporting specific inquiries into energy efficiency program attributes, technical support for survey design and data dashboards.

[57] Geographical Information System; used to perform spatial analysis.

b. Hard-to-Reach and/or Proportionately Underserved Segments

- Participated in NWPCC hard-to-reach regional analysis examining the proportion of customer participation by eight segments including: income, housing type, rural location, small business, and large commercial and industrial customers.
- Analyzed Low-income census block groups for demographic segment, communication channel preference, segment program participation, bill payment channel, and demographic traits.
- Provided analysis location of Spanish speaking household concentrations by census block groups for low income weatherization marketing efforts.

c. Adaptive Management

Several of the organization's accomplishments listed in the previous section were the result of staff's continuous improvement adaptive management efforts. In addition to those listed, the team provided a suggestion that low-income weatherization consider a train the trainer approach with social service/community of faith organizations within targeted low-income geographies for possible program uptake improvement over postcard mailers.

d. Key Variance Drivers

Market Research was planning to hire an additional staff member in 2017, and held a portion of its budget accordingly. After several interviews, management was unable to identify a candidate with the desirable skills to fill the position from the pool of applicants. This resulted in the function's 2017 budget variance. A portion of the budget for outside services was reserved for the purchase of third party market data, which was not spent in 2017.

D. Program Evaluation

The Program Evaluation function is focused on implementing PSE's overall Evaluation, Measurement & Verification (EM&V) function in compliance with applicable regulatory conditions to achieve the continual improvement of energy-efficiency service delivery to customers.

1) Description

PSE program implementation teams work together with the Evaluation Team to inform the development of evaluation scopes of work. The Evaluation Team then develops and maintains a strategic evaluation plan, in accordance with the guiding Evaluation Framework, ensuring that all programs receive review on a four-year cyclic basis. PSE also considers the level of energy savings, significant program changes, and whether a program is new or never been evaluated before in prioritizing programs for evaluation. Adjustments to the evaluation plan may be made during the biennium, with CRAG review and advice.

PSE frequently shares the results of its evaluations with the RTF to ensure continuous improvement of measure energy savings values that are widely used in the region. In addition, PSE monitors the Regional Technical Forum (RTF), NEEA, and the Northwest Research Group (NWRG), as well as directly reaching out to neighboring utilities, for opportunities to collaborate on common evaluation needs.

Along with Commission Staff, the Evaluation Staff also managed the 2016-2017 Biennial Electricity Conservation Achievement Review (BECAR).

2) Evaluation Studies

The Evaluation Team completed the following evaluations in 2017:

Residential

- Home Energy Reports
- Low Income Weatherization
- Single Family Existing Retrofits
- Residential Rebates
- Multifamily Air Sealing

Commercial//Industrial

- Commercial Rebates
- Commercial/Industrial New Construction
- Industrial System Optimization Program (ISOP)

Additional evaluation activities completed in 2017 were:

- Urban Smart Bellevue Evaluability Study
- Small and Medium Business Design

In 2017, the Evaluation team developed and released requests for proposal for evaluations of PSE's 2018-2019 residential and non-residential program portfolios. PSE selected Opinion Dynamics Corporation to evaluate both program portfolios after a rigorous competitive process.

3) Additional 2017 Activities and Accomplishments

In addition to the evaluation studies listed above, work continued on the 2016-2017 Biennial Electric Conservation Achievement Review (BECAR). SBW Consulting reviewed 2016 portfolio reported savings, application of 2017 deemed unit savings, and follow-up actions in response to previous program evaluations and BECAR recommendations. The review tasks completed in 2017 found no issues. .

4) Pilot-Like Initiatives

The Evaluation team launched a pilot effort, colloquially referred to as EM&V 2.0, to assess the applicability of new advanced analytical techniques, intended to improve the accuracy of program savings estimates and provide more timely EM&V results. By the end of 2017, PSE had assessed the applicability of these principles for the portfolio of programs. By modeling the energy consumption data for over 35,000 program participants in both residential and non-residential programs, PSE determined the predictability of energy consumption through statistical analysis. PSE collaborated with consultants from DNV-GL and researchers from Lawrence Berkeley National Laboratory on these efforts.

Using the results of the analysis, PSE identified several non-residential projects to explore two research questions:

1. Can PSE evaluation use advanced analytics to identify recent projects that are either over- or under-performing relative to savings estimates?
2. Can PSE shorten the M&V period for some projects based on the goodness-of-fit of daily energy consumption models?

In 2017, PSE identified several commercial and industrial projects that fit the criteria necessary for the research questions, and we have worked to incorporate the most recent energy consumption history into the analytical models. PSE expects to report results of the pilots in 2018.

5) Adaptive Management

In 2017, PSE began adopting a developmental evaluation approach that, in addition to evaluating program savings impacts, provides review of ongoing program performance and identifies improvement opportunities on a more timely basis.

Developmental evaluation was initially applied in the Multifamily Air Seal program by assessing project performance based on statistical analysis of pre-and post-air seal testing. Evaluation staff expanded this concept in the 2018-2019 evaluation RFPs that PSE issued in 2017, discussed above.

6) Key Variance Drivers

Evaluation spending was higher than budgeted in 2017, primarily because of payment of PSE's sponsorship of the Regional Technical Forum (RTF), which was inadvertently excluded from the 2017 budget. The higher spending was also affected by timing issues with Outside Services invoices, and some changes in evaluation project scope and timing, which caused more work to be done in 2017 than was originally planned.

The cost of the independent third party consultant for BECAR was higher than anticipated because some work was accelerated forward into 2017. Reviews of 2017 deemed unit savings and PSE follow-up on 2016 program evaluations and previous BECAR recommendations were conducted in 2017, rather than waiting until the end of the biennium to review.

E. Verification Team

Energy Efficiency's Verification Team serves as another key element of its EM&V efforts. The Verification Team provides PSE program staff with an overarching process to improve the quality of program implementation and validate energy savings with a high degree of rigor by incorporating higher levels of measurement and verification activities.

As the "V" in EM&V, PSE's Verification Team performs on-site inspections and confirmations of randomly-selected participating homes and businesses to assure energy efficiency measures are properly installed. Combined with other Evaluation and Measurement functions, the Verification Team seeks to secure both confidence in claimed energy savings and improvements in program quality.

The "Measurement & Verification: Policies, Guidelines, Protocols & Processes" document introduces M&V protocols to be used across the Energy Efficiency functions.

1) Composition

The Verification Team consists of three quality assurance specialists and one business analyst. The QA verification inspectors are responsible for conducting on-site inspections and related activities to verify installation of Energy Efficiency measures for rebated equipment. This team confirms installed measure quantities, model numbers, site qualifications, equipment settings, and other related installation parameters through review of primary documentation, phone surveys, and onsite inspections.

Energy Efficiency measures include those installed and reported by trade allies, PSE contractors, and other third parties. The team's Business Analyst is responsible for data and systems, forecasting and working closely with Energy Efficiency program staff on a regular basis. The Business Analyst is also responsible for preparing the reporting, tracking, and communicating program findings and other related information from the field verifications to the program staff.

2) Objective

The team strives to positively contribute to program quality implementation and validate energy savings by combining detailed and documented statistical methods of analysis and sampling[58] with individualized field inspection protocols and documentation requirements tailored to each specific program.

[58] Sampling methods for randomly identifying measures or projects for verification, and a sampling tool to determine sample size for verification of each program was developed in collaboration with DNV KEMA and deployed throughout 2015.

Additionally, the Verification Team assists with other quality assurance interests in residential and business efficiency programs; including non-random visits and reviewing retail stores' advertisements and inventory in the stores. Non-random visits, typically performed at the request of program managers for case-specific interests, are considered quality assurance reviews, and may also result in documented findings for program management follow-up.

When performing onsite inspections, QA verification inspectors routinely engage customers in several Energy Efficiency elements about which the customer may not have been aware. For instance, the QA verification inspector may provide a referral to a CAN contractor, alert the customer that they may be eligible for a weatherization rebate, etc. These efforts lead to increased customer satisfaction and raise customer awareness.

3) 2017 Team Accomplishments

The Verification Team completed over 2,100 site and phone verifications for over 20 unique energy efficiency programs; both residential and commercial. In addition, the team began to take on site verifications for PSE's single-family weatherization program, which had previously been the responsibility of a third-party contractor. All of this was accomplished while the team's usual three- person field staff was down to two individuals for three months of the year.

Table XII-2 represents a summary of on-site project inspections completed by the Verification Team through 2017. It is important to note that verification by a home, project, business or dwelling can involve a significant number of individual measures.

Please note that PSE rounds the indicated figures greater than 10 to provide a sense of scale and scope. The figures are not comprehensive; only key highlights are indicated. They are not intended to be comprehensive or used for audit purposes.

4) Adaptive Management

With such a vast service territory, often times it was challenging to schedule jobs within the same geographic location on the same day. The Verification Team worked with its third-party scheduling contractor (based in Portland, Oregon) to help the contractor better understand PSE's service territory. This helped to plan appointments according to realistic travel times, and continue to meet customer and program needs.

5) Pilot-Like initiatives

In 2017 the Verification Team continued discussions on the possibility of implementing a “virtual verifications” pilot. The goal of the pilot program is to provide PSE customers with a “virtual” option to complete program verifications by using a “smart” device (phone or tablet) that is capable of using virtual software applications (for instance, FaceTime or Skype) that will allow the team’s Quality Assurance Specialists to walk a customer through the verification process. A similar program is currently being implemented by Tacoma Power.

Due to IT concerns with certain social networking software applications needed to perform these tasks, this pilot is still being investigated. The team will continue to explore this effort and our hopeful to provide this service to our customers in 2018.

Table XII-2: Summary of Verifications by Measure Type

Measure Category	Count
Business Lighting Program	6
Commercial Cooking Equipment	20
Ductless Heat Pump	200
Forced Air Furnace to Heat Pump Conversion	100
Fuel Conversion	70
Gas Boiler	8
Gas Furnace	350
Gas Fireplace	70
Heat Pump Water Heater	80
Heat Pumps	180
Heat Pump-Lockout Control	130
High Efficiency Heat Pump & Air Conditioner	9
Hospitality Rebates	4
Integrated Space & Water Heat	20
Multifamily Retrofit	3
Single Family Weatherization- Windows	210
Single Family Weatherization- Insulation	600
Small Business Direct Install	50
TOTAL VERIFICATIONS	2,100

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XIII. OTHER ELECTRIC PROGRAMS

A. Overview

In 2017, there were four electric Energy Efficiency programs (partially) funded by the Conservation Rider, for which conservation savings are not claimed: Net Metering, Energy Renewable Energy Production Incentives, Demand Response, and the Electric Vehicle Charger Incentive programs. Net Metering and Renewable Energy Production Incentives primarily focus on customer-side generation, including solar, wind, anaerobic digesters (bionatural gas, etc.) and small-scale hydro. Net Metered systems are smaller than 100 kiloWatts (kW).[59] Only Other Electric Programs are excluded from Energy Efficiency's cost-effectiveness calculations.

1) Sector Performance

Table XIII-1 provides a 2017 summary of expenditures and energy savings for Other Electric Programs.

Table XIII-1: Other Electric Program 2017 Expenditures

2017 Expenditures				2017 Budget
Schedule	Electric			Electric
E150	Net Metering	$ 1,220,637	128.5%	$ 949,697
E195	Electric Vehicle Charger Incentive	$ 251,188	85.0%	$ 295,624
	Demand Response	$ 320,191	99.3%	$ 322,457
	Total Electric	**$ 1,792,015**		$ 1,567,778

[59] Larger systems fall under the considerations of PSE's Schedule 91: Cogeneration and Small Power Production.

B. Net Metering

Schedule E150

PSE's Net Energy Metering (NEM) program provides interconnection services for qualifying customer-generators in accordance with State legislation enacted into law in February 11, 1999 and amended June 8, 2000 (see RCW 80.60).

1) Description

PSE provides interconnection services to qualifying Customer-generators who operate fuel cells, hydroelectric, solar, wind, or bionatural gas generators of no more than 100 kilowatts (kW). PSE must offer at least 22.4 Megawatts (MW) of cumulative nameplate generating capacity under this Schedule, of which no less than 11.2 MW of cumulative nameplate generating capacity shall be attributable to renewable energy net metering systems that use as a fuel either solar, wind, hydroelectric power, or biogas from animal waste. In 2014, capacity moved from 11.2 to 22.4 MW. Customer generation can be used to offset part or all of the Customer-generator's electricity use under Schedules 7 through 49 of Electric Tariff G.

At the time a customer enrolls in the Net Energy Metering program, they are also provided the necessary information to receive annual benefits from the Production Metering, or WA State Renewable Energy Production Incentives, which is the state's performance based incentive described in Schedule 151.

While schedule 150 applies to customers who operate fuel cells or hydroelectric, solar or wind generators of no more than 100 kW, in 2017, 100 percent of new net metering systems were solar PV (photovoltaic) with a median size of 8 kW ac; and 7.2 kWh ac for residential systems alone.

No direct customer incentives are provided by PSE as a part of these programs. As described in the following section, the Conservation Rider only funds administrative expenses, as provided by the indicated requirements.

Energy produced by customer-generator systems directly reduces energy used in the home or business from the grid. When energy generated exceeds home or business electrical loads, the excess energy flowing to PSE is separately metered and credited to the customer at the retail rate.

The Net Metering program's year runs May 1 to April 30. Any excess credit each month is rolled forward to the following month. When the new program year ends on April 30, the credit is reset to zero.

2) Net Energy Metering Expenses

The 2002 Stipulation Agreement, Exhibit F, UE-011570 and UG-011571, Section H.25 provides the authority for PSE to charge reasonable Net Metering administrative costs to its Conservation Rider:

> "Tariff-rider funds shall only be used on programs and their associated administrative costs that result in energy savings through Energy Efficiency investments or fuel switching. This may include reasonable administration costs for PSE's net metering program."

Additionally, in January 1999, the UTC issued an accounting order under Docket UE-990016 which requires the collection of unbilled distribution costs from all customers through Schedule 120. In 2017, the actual costs collected under that order exceeded the program's budgeted amounts by 68 percent. The difference is due to a higher number of system installations than anticipated, as well as an increase in the average system size, which leads to a higher output of solar energy.

Exhibit 1, Supplement 3: Memberships and Sponsorships indicates that PSE is a member of the Smart Electric Power Alliance (formerly the Solar Electric Power Association). The number of customers interconnecting on-site generation to PSE's grid grows, as is the size and complexity of systems. This impacts how utilities plan, and meet customer tracking, accounting, and reimbursement expectations. Participating in SEPA allows the Net Metering team to stay informed on best practices, and to gain access to national experts to help address interconnection and net-meter billing challenges faced by a rapidly maturing market.

3) Program accomplishments

The program grew at a rate of nearly 19 percent in 2017, with the addition of over 1,000 new customers. That number is down slightly from 2016, due to uncertainty about the future of the WA State incentives in the first half of the year.

In mid-2016, the implementation of an online interconnection software tool known as PowerClerk®, allowed PSE to better manage the high number of applications coming in each month. In 2017, PSE continued to refine its use of PowerClerk, and transfer all of the older records into the tool's database. Today, all of the system records for PSE's Net Metered customers—over 6,000—are being managed through PowerClerk. This allows for:

- Greater efficiencies and data accuracy as program staff bring in new customers;
- Efficient management of records for customers who are moving out of a net metered property, or moving into a new metered property; or
- Streamline processes for customers making changes to their interconnected renewable energy system.

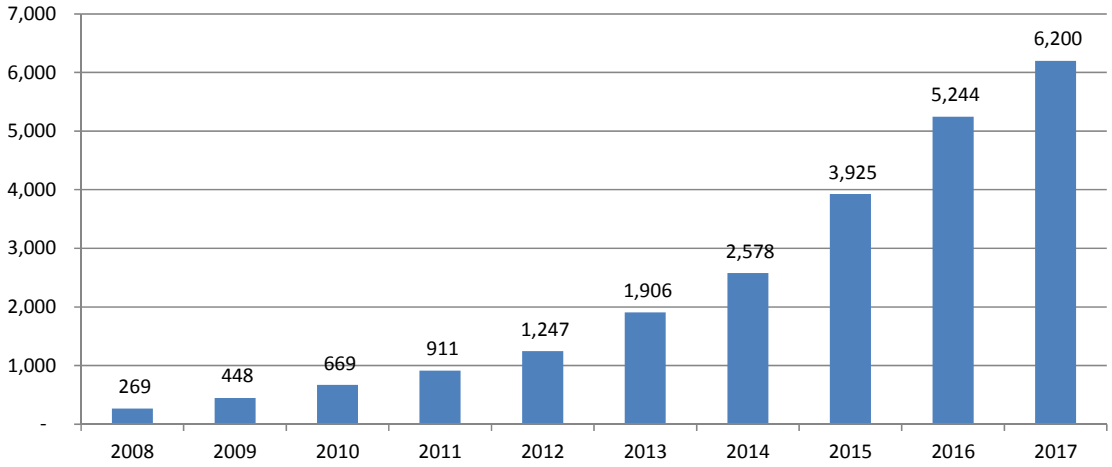
Figure XIII-1 provides a program view of the most recent 10-year cumulative year-end number of interconnected customer net metered systems.[60]

4) Adaptive Management

In 2017, PSE continued to refine its use of PowerClerk for customer-owned net metered systems. The tool streamlines the interconnection application process, and provides greater visibility into the status of an application for PSE, installers and customers. Today, PSE has over 6,000 records in PowerClerk, and program staff are better able to manage changes to each project's status. Program staff have seen more accuracy in its reporting, a reduction in the volume of hard copies, and a decrease in the time required to process each application.

[60] The Net Metering program started in 1999 with one interconnected system. Between 1999 and 2007, that figure grew to 176 systems.

Figure XIII-1: Net Metering Customer-Generator System Count, 2008-2017



C. Production Metering

Schedule 151

PSE administers the Washington State Renewable Energy Production Incentive Program, which provides qualifying Customer-Generators with production payments in accordance with State legislation and WAC 458-20-273. PSE receives tax credits for renewable production payments, as outlined in RCW 82.16.

The Production Incentive Program is operated in conjunction with, and in addition to, the Net Metering program. For the 2016-2017 State Fiscal Year, PSE paid 5,300 participating customers $13.2 million in production incentives.

On July 1 2017, WAC 458-20 was revised to lock in the current incentive rates for existing participants and to establish a new program for Customer-Generators going forward. PSE filed revisions to Schedule 151 in accordance with the program changes in the rule. PSE's role, under the revisions, is to: help inform customers and their installers of participation requirements; provide annual production data to Washington State University Energy Extension for state certified customers; and to make annual payments to participants. Eligibility, program terms and payment amount are determined by the state program administrator.

D. Electric Vehicle Charger Incentive

Schedule E195

PSE's Electric Vehicle Charger Incentive program (EVCI) is a pilot program to study charging use in PSE's electric service territory. The program collects data on charging behavior and patterns for PSE electric customers charging their electric vehicles at home, and compares this information against PSE's other load shapes and resources. Customers driving electric vehicles are provided a $500 incentive towards the purchase of a Level 2 charger for their home as an incentive to participate in the program and use Level 2 charging, which is more energy efficient than Level 1 charging.

1) 2017 Accomplishments and Activities

As of the end of 2017, there were an estimated 30,000 electric vehicles registered in Washington State, with approximately half of those in PSE's electric service territory. Data through the end of 2017 is anticipated to be released by Washington State in February 2018. Some customers are known to be using Level 1 charging, which is a wall outlet, while others are using Level 2 charging at home, which uses specific charging equipment that can use between 3 and 19 kW of power.

EVCI monitors the electric use of customers with electric vehicles to determine the amount of load and load shape that electric vehicles place on PSE's system, compare these loads to PSE's other loads and resources, and identify impacts to peak load on the system. Data collection is occurring using multiple sources including PSE's existing meter system and data loggers. PSE has started whole-house interval data collection for over 1000 customers. In 2017, PSE completed data collection from both data loggers and whole house interval metering data. PSE also completed customer enrollments in the program.

Overall, 1,996 customers were enrolled in the program. Customers were enrolled from across PSE's service territory, vehicle types, and charger types. Data collection of customers' anticipated driving and charging patterns shows that 53 percent of program respondents anticipate driving less than 40 miles per day, and that 67 percent of program respondents anticipate charging between 5 and 9 PM.

Initial data analysis of charging data shows impacts during the evening peak demand hours as predicted by respondent surveys. The charging data also shows diversity in charging patterns that limit the impact of electric vehicles to less than 1 kW of peak demand per vehicle. Analysis also shows that charging, renewable energy generation, and peak demand are generally not coincident. Complete analysis will be reported in 2018.

E. Demand Response

Schedule E271, E249a

PSE released two RFPs in September 2016 after obtaining approval from the UTC. The RFPs targeted technology and implementation services for Direct Load Control (DLC) for residential and small/medium business customers and Commercial/Industrial (C&I) Demand Response. The primary objective stated in the RFPs was to achieve PSE's winter load reduction target of at least 121 total megawatts (MW) by 2021. The target includes roughly 70 MW of load curtailment from residential and small/medium business customers and 51 MW of load curtailment from C&I customers.

PSE received 10 proposals for technology and implementation services for Direct Load Control, and 8 proposals for Commercial/Industrial demand response. A broad internal stakeholder group scored all proposals. Analysis and final vendor selections took place in 2017. During final analysis, PSE determined that demand response was not cost-effective as proposed. As a result, full scale demand response programs were not implemented in 2017.

While continuing to discuss cost-effectiveness methodologies and cost-recovery of program expenses with UTC staff, PSE decided to move forward with a demonstration demand response project with the commercial/industrial demand response vendor selected during the RFP process. The work on this demonstration project began in late 2017, and was not funded via the Conservation Rider.

The current processes for establishing prudence related to acquiring power plants or contracts and recovering costs through a Power Cost Only Rate Case (PCORC) do not fit for a portfolio of demand response programs that build over time. The UTC has begun exploring these issues. PSE will be fully engaged, as this is a critical path item for being able to execute demand response to meet resource need and an essential component for postponing the need to build fossil fuel generation.

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XIV. 2017 COMPLIANCE

By the end of 2017, PSE achieved expectations in meeting its regulatory requirements, including laws, rules, Commission Orders, CRAG requests, and conditions. This chapter presents an overview of PSE's compliance with conservation-specific requirement deliverables provided in 2017.

A. RCW 19.285

In 2017, consistent with RCW 19.285.040, the Company filed its 2018-2019 Biennial Conservation Plan with the Commission on November 1, 2017. PSE collaborated with CRAG members and Commission staff to develop this comprehensive Plan, which addressed several key focus areas for the coming biennium. The Plan also identified PSE's ten-year conservation potential and its two-year conservation target.

B. WAC 480-109

PSE complied with all applicable WAC 480-109 requirements in 2017. Key among these are the requirement to provide the CRAG with drafts of all conservation filings 30 days in advance, CRAG meeting frequency, and the annual reporting and annual planning filings timeframes.

C. Commission Orders

PSE seamlessly incorporated the updated 2016-2017 conditions, outlined in Attachment A of Order 01 in Docket UE-152058 into its standard business operations. These are the first set of conditions that reflect the updated WAC 480-109 requirements by removing duplicate deliverables (for instance, reporting requirements and CRAG deliverables). Other 2017 Commission Orders included the acceptance of PSE's updated 2017 Annual Conservation Plan, and PSE's accounting petition for treatment of excess savings, among others.

D. 2017 Compliance Results

PSE tracks and reports compliance with Commission requirements outlined in the documents listed in Table XIV-1.

In addition to notations and references in PSE's reporting and planning compliance filings, Energy Efficiency's key compliance reporting vehicle is Exhibit 9: *Requirement Compliance Checklist*. Each requirement type (according to docket number) is highlighted in a different color in the Exhibit for easier reference.

PSE highlights several key deliverables that were satisfied in 2017 in Table XIV-2. Please note that PSE only listed key or significant deliverables satisfied in that table. Exhibit 9 contains the comprehensive list of satisfied requirements.

Table XIV-1: Tracking Compliance Requirements

Requirement Documents Tracked in Exhibit 9: Requirement Compliance Checklist			
Docket Number	Name	Pertains To	Exhibit 9 Color Code
UG-011571	2001 General Rate Cast, Exhibit F to Settlement Stipulation	Original set of conservation conditions; only natural gas requirements now apply.	Lime
U-072375	Multiparty Settlement Stipulation	2008 Merger Agreement: two low-income requirements pertaining to conservation.	Lilac
UE-100177	Conditions for Approval of PSE's 2010-2011 Conservation Targets and Settlement Terms	2010 electric settlement agreement: Sections A - J and L still apply.	Green
UG-121207	Commission Policy Statement on the Treatment of Natural Gas Cost-Effectiveness	Three recommendations for IOUs.	Blue
UE-121697 and UG-121705 (consolidated) and UE-130137 and UG-130138 (consolidated)	Order Granting Decoupling Petition	Two conservation-specific requirements.	Orange
UE-131723	WAC 480-109 revisions	2015 requirements updates.	White
UE-152058	Order 01 Attachment A	2016-2017 conditions.	Yellow

Table XIV-2: Highlights of Key 2017 Completed Requirements

Section	Requirement, UG-011571	Applicable Compliance Vehicle
H.21	Completed -- Annual budgets will be built up from the bottom.	2017 Exhibit 1: Savings and Budgets
H.25	Completed -- (Rider) funds may include reasonable administration costs for PSE's net metering program.	2017 Exhibit 1: Savings and Budgets
Section	**Requirement, UE-100177**	**Applicable Compliance Vehicle**
C.6	Completed -- In general each individual energy efficiency program shall be designed to be cost-effective.	2017 Exhibit 2: Cost-Effectiveness Estimates
F.11	Completed -- The annual budget of the program will be built up from the bottom.	2017 Exhibit 1
G.14	Completed -- PSE will continue to honor Commitments 22 and 23 from U-072375 with regard to future funding levels.	2017 Exhibit 1
Section	**Requirement, UE-130137 & UG-130138**	**Applicable Compliance Vehicle**
pgs. 76, 77, ¶178	Completed -- PSE will add $500,000 in Rider funding and $100,000 shareholder funding annually to its Low Income Weatherization program	2017 Exhibit 1, LIW program detail pages
Section	**Requirement, UE-121697 & UG-121705**	**Applicable Compliance Vehicle**
pg. 17, G.31	Completed -- PSE will agree to achieve electric conservation 5 percent above the Commission-approved biennial target.	Exhibit 1, "Building the Electric Target"
Section	**Requirement, UE-152058**	**Applicable Compliance Vehicle**
(4)(a)	Completed -- PSE must submit annual budgets that include program-level detail	2017 Exhibit 1
(5)	Completed -- PSE must maintain its program descriptions on file with the Commission.	2017 Exhibit 3: Program Details
(6)(c)	Completed -- PSE must spend a reasonable amount of its conservation budget on EM&V.	2017 Exhibit 1, line bl indicates EM&V budget amount
(7)(c)	Completed -- Puget Sound Energy may spend up to 10 percent of its conservation budget on programs whose savings impact has not yet been measured	2017 Exhibit 1, line bi indicates non savings-specific anticipated spending

Table XIV-2, Continued

Section	Requirement, WAC 480-109	Applicable Compliance Vehicle
100(5)	Completed -- A utility must use unit energy savings values and protocols approved by the regional technical forum [sic], unless it is based on reasonable analyses and evaluations.	2017 Exhibit 5: Prescriptive Measure Savings Values
100(10)	Completed -- A utility may fund low-income measures based on TREAT models that achieve an Savings to Investment Ratio of 1.0.	2017 ACP Overview, page 61
110(2)	Completed -- A utility must meet with its advisory group at least four times per year.	2016 CRAG meeting summary notes.
120(2)	Completed -- On or before November 15th every even-numbered year, a utility must file with the Commission an annual conservation plan, containing any changes to program details and annual budget.	2017 ACP: Volumes 1 and 2

E. Exhibit 9: Requirement Compliance Checklist

Exhibit 9: *Requirement Compliance Checklist* demonstrates PSE's adaptive management through the application of continuous improvement principles by providing Stakeholders with a single representation of compliance deliverables status. Exhibit 9 includes all unique electric and natural gas portfolio requirements, sorted by classification, over the current two-year period. PSE updated the Checklist in 2016 to reflect inclusion of the updated 2016-2017 conditions. The Exhibit is a "living" document. It is periodically updated and reconciled throughout its applicable biennium.

It is interesting to note that PSE classifies some requirements as "Standard Business Practice" in Exhibit 9. These requirements include obligations such as describing the need for line extension policies, requiring PSE to continue to honor Commitments 22 and 23 from U-072375,[61] describe the makeup of the Conservation Resource Advisory Group (CRAG), etc.

[61] This requirement is regarding funding levels for Low Income Weatherization programs in the 2008 PSE Merger Agreement.

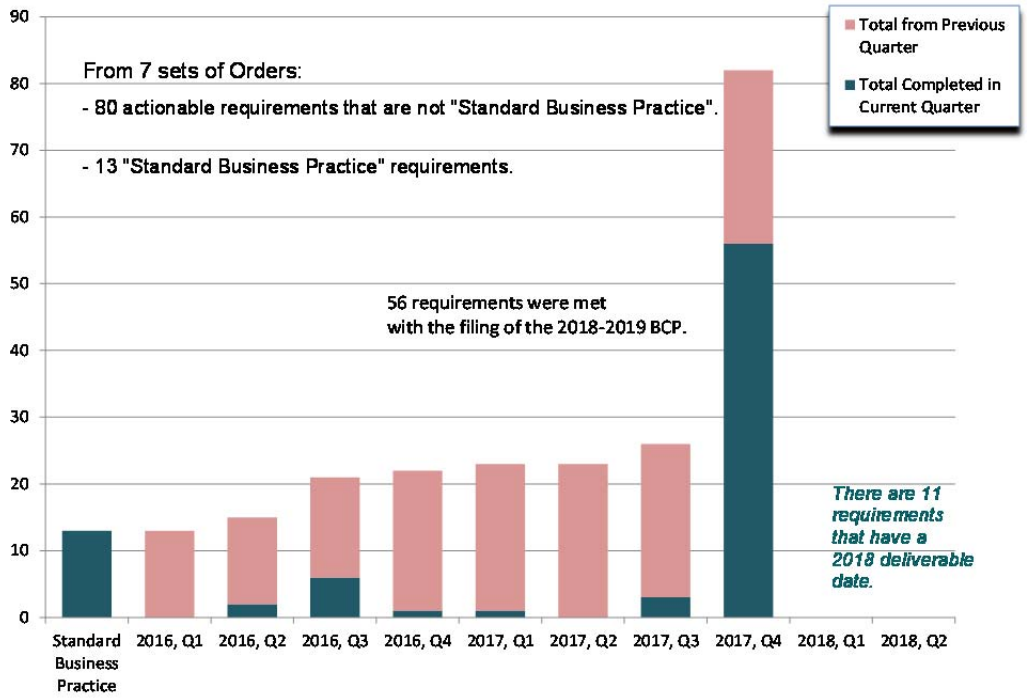
They describe no set deliverable date, or have no specific CRAG role. Energy Efficiency routinely reviews these to ensure that there are no updates or revisions. Where there are none, the conditions are notated as “completed”. In the attached Exhibit 9, these are noted in the “Deliverable Provided Date” column as “ongoing,” or “No specific deliverable—ongoing business practice.”

Readers may quickly ascertain the status of any deliverable through the use of these icons:

As readers will note in Figure XIV-1, there are many requirements that aren’t completed until the final quarter of the biennium. This is due to the nature of many of the deliverables. Readers should not infer from this that PSE delays requirement completion until the end of the biennium; rather, most of these are “In Progress” (noted by the hourglass symbol in the iterative Exhibit 9 publications) throughout a portion of the biennium. One example is the requirement that PSE maintains its program details on file with the Commission in the same docket as the current BCP. Since PSE updates the “living” Exhibit 3 document regularly throughout the biennium, it doesn’t classify the requirement as “completed” until the end of the biennium.

Figure XIV-1 indicates that PSE completed all of its biennial requirements by the end of 2017. The only remaining requirements pertinent to the 2016-2017 biennium (11 total) are those associated with the final delivery of the 2016-2017 reported electric savings results and subsequent acceptance by the Commission of those savings results.

Figure XIV-1: 2016-2017 Requirement Completion Status



F. Compliance Controls

Energy Efficiency's application of compliance controls reflects its use of adaptive management through continuous improvement. PSE sustains its emphasis on regulatory compliance throughout the biennium. Energy Efficiency management and staff regularly review and discuss regulatory requirements, whether RCW, WAC, or Commission Orders.

Energy Efficiency staff consider compliance elements during CRAG meeting planning, staff meetings, and especially throughout the year-long biennial planning process. Energy Efficiency's regulatory compliance staff actively participate in planning functions, and ensure that program staff are familiar with tariffs and rules that pertain to their programs.

Regulatory compliance staff also monitor the compliance progress throughout the biennium and alert management of upcoming key deliverables to ensure that the deliverables are met in a timely fashion. In addition to the publication of Exhibit 9 throughout the year, the regulatory compliance staff also provides an annual calendar, with key regulatory deliverables highlighted for quick reference.

It is also important to consider that Energy Efficiency staff must also operate their programs within PSE corporate guidelines and policies: SoX reporting requirements; safety processes; cyber-security; and Purchasing department requisites, for instance.

The successful follow-through on several significant 2017 filings (the 2016 Annual Report, Schedule 120, Biennial EIA Report, Petition for treatment of excess savings, the 2017 ACP, for example) is a reflection on Energy Efficiency's strict attention to regulatory requirements.

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XV. 2017 STAKEHOLDER RELATIONS

PSE, along with its primary constituents, the Commission Staff and the Conservation Resource Advisory Group (CRAG) sustained the momentum that this Collaborative established in 2010. In keeping with PSE's emphasis on meeting customer expectations, Energy Efficiency staff continuously maximized the clarity, timeliness, and transparency of information provided to Commission Staff and the CRAG throughout 2017.

A key accomplishment was tailoring PSE's required filing documentation to the needs of its Stakeholders. PSE received feedback, both directly and through casual reference, that its efforts were recognized and appreciated. Similarly, PSE recognizes that Commission Staff and the CRAG expended significant effort to understand, become involved with, and help resolve strategic and policy issues in 2017.

A. Washington Utilities and Transportation Commission

Energy Efficiency values its working relationship with Commission staff and appreciates their level of thoroughness, thoughtfulness, and adaptability. PSE was able to complete its 2017 initiatives as a result of the cooperation between its Energy Efficiency staff and Commission Staff.

The following discussion outlines the key conservation-related UTC filings that PSE made in 2017. In the list, PSE presents the date and description of each filing the UTC Docket number for straightforward reference.

All conservation-specific filings complied with WAC 480-109-110(3); CRAG members received draft copies of each of the filings[62] indicated in XIII.A.1 below.

[62] Schedule 120, PSE's cost-recover adjustment filing, is the exception, as also noted in WAC 480-109-110(3).

1) Energy Efficiency-Specific Filings

- March 1, 2017: Filed electric Schedule 120, UE-160265. Effective May 1, 2017, the updated Schedule 120 represents an average increase of the electric Conservation Rider portion of affected customer bills by 0.99 percent.
- March 1, 2017: Filed natural gas Schedule 120, UE-160267. Effective May 1, 2017, the updated Schedule 120 represents an average decrease of the natural gas Conservation Rider portion of affected customer bills by 0.1 percent.
- March 31, 2017: Filed 2016 Annual Report of Conservation Accomplishments, UE-152058. Consistent with requirements in WAC 480-109-120(3), this report represented the evolution and continuous improvement in providing Energy Efficiency program accomplishments, activities, and value-add information for PSE's Stakeholders.
- May 18, 2017: Filed an updated Exhibit 4-Measures, Incentives & Eligibility, UE-152058. This revision updated several measure offerings and eligibility criteria.
- June 1, 2017: Filed the mid-cycle 2016-2017 Biennial Conservation Report, UE-152058. Consistent with WAC 480-109-120(4). The BCR was also provided to the WA Department of Commerce, consistent with RCW 19.285.070(1).
- August 17, 2017: Filed the second quarter update to Exhibit 4 and Exhibit 3-Program Details, UE-152058. These are the final revisions to these documents for 2017. The next update was the 2018-2019 Biennial Conservation Plan versions.
- November 1, 2017: Filed 2018-2019 Biennial Conservation Plan, UE-171087 and UG-171088. The plan indicates a 2018-2019 electric savings target of 520,456 MWh, and 6.155 million therms.
- November 1, 2017: Filed Conservation tariff revisions for Schedules 83, 183, and applicable efficiency programs, UE-171094 and UG-171095.
- December 11, 2017: Filed BCP replacement pages, pursuant to the Commission's ruling on PSE's 2017 IRP, UE-171087 and UG-171088.

B. Conservation Resource Advisory Group

PSE acknowledges and is very appreciative for the amount of work and committed engagement demonstrated by the Conservation Resource Advisory Group (CRAG) throughout 2017. Through PSE's collaborative process, it achieved significant milestones during the past year, as discussed throughout the Report and in the following sections.

1) Background

PSE formed the CRAG in response to Section D of Exhibit F in the 2001 General Rate Case Stipulation Agreement, Dockets UE-011570 and UG-011571. The CRAG consists of approximately 12 Stakeholders and represents a wide variety of interests, including consumers, industry, and regional concerns. It also includes a member of the UTC staff. The CRAG works closely with Energy Efficiency on a variety of conservation initiatives, most notably conservation tariff filings, savings goal setting and long-term conservation strategies.

2) CRAG Vision

Throughout 2017, CRAG members consistently demonstrated qualities of the CRAG vision, established in May 2010:

> Members actively participate in CRAG processes and advise on PSE decisions so that ratepayer funds are being used to achieve all cost-effective energy conservation in the most prudent, beneficial manner.

In order to ensure its applicability and value, PSE and the CRAG reviewed the Vision Statement at the first CRAG meeting of the year, March 15, 2017. PSE also provides laminated copies of the Statement at each CRAG meeting. PSE and CRAG members conducted all CRAG interactions with the utmost respect for potentially alternative views, and participants were engaged, with the clear vision of customer benefit and continuous improvement uppermost in mind.

3) 2017 Adaptation Through Continuous Improvement

Consistently building on efficiencies that PSE initiated in 2010, Energy Efficiency continued to execute a number of steps to maximize transparency and improve efficiencies for CRAG members including:

- Emails formatted to immediately call attention to the desired level of action;
- Incorporated CRAG member suggestions for Annual Report and Conservation Plan documents, including section outline references;
- Adapting project management database sites to accommodate reference needs;
- All electronic filing and large files are now posted on PSE's secure FTP site for convenient access.

4) CRAG Activities

In 2017, PSE welcomed three new permanent CRAG members. PSE also welcomed a number of guests to CRAG meetings at various meetings during the year. Apart from CRAG meetings and various sub-committee meetings, PSE provided filings background and workpapers, data, opinions, references, comments, and data request responses to CRAG members throughout the year. PSE facilitated ad-hoc meetings, including a Biennial Conservation Plan development overview in July.

5) Publication Updates

PSE provides the CRAG with several document drafts prior to filings. For instance, the *List of Measures, Incentives & Eligibility* (Exhibit 4) and the draft 2018-2019 Biennial Conservation Plan, as required by WAC 480-109-110(3).

It has been a long-standing practice to provide the CRAG with a mark-up version and clean version of the documents, which enhances the ability to quickly view the applicable modifications. PSE also provides a summary of the changes in the notifying email.

As required by WAC 480-109-130(6), PSE updates these documents on the PSE.com website following Commission acknowledgement or issuance of an approval order.

6) CRAG Meetings

In 2017, PSE met the requirements of WAC 480-109-110(2) and condition (3)(e) by convening five CRAG meetings during the year. PSE places emphasis on ensuring that it maintains an accurate meeting record, where meeting attendees can reference agreements, action items, and issue resolutions. PSE also provides a very long lead time for meeting schedules to avoid potential scheduling conflicts. Every CRAG meeting includes several standing agenda items, including:

- Activities that have occurred since the previous meeting;
- CRAG meeting action item status;
- Marketing and program updates; and
- PSE emails meeting materials to attendees participating via conference call prior to the meeting call to order.

All of the meetings coincided with the development of the 2018-2019 Biennial Conservation Plan; the BCP development therefore represented a year-long engagement with the CRAG. All 2017 CRAG meetings were hosted by the Smart Buildings Center. PSE is most appreciative of their gracious hospitality and assistance with any technical difficulties that presented themselves.

The following discussions are very high-level "snapshots" of the five 2017 CRAG meetings. They are intended only to provide a general sense of the meeting topics. All CRAG members received a full meeting summary document shortly after each CRAG meeting.

a. March 15 Meeting Highlights:

Consistent with PSE's long-established practice, during the first CRAG meeting of the year, the attendees reviewed the CRAG Vision Statement, Meeting Guidelines and Measures of Success. Everyone agreed that each were still valid and had merit to be carried forward.

The key topics of this meeting were the Schedule 120 filing, an Annual Report highlight review, general program updates, a status review of the Demand Response Initiative, and a progress report on the Biennial Electric Conservation Achievement Review. PSE reviewed its understanding of the 2018-2019 key focus areas—including on-bill repayment, hard-to-reach/proportionately underserved segments, EM&V 2.0, and pay-for-performance. The attendees agreed that these represented CRAG and UTC critical interests that needed to be addressed in the BCP.

Key Outcomes

The attendees agreed that:

1) The four key focus areas that PSE identified as important to Stakeholders for inclusion in the 2018-2019 BCP were accurate and comprehensive.
2) It was a good idea for PSE to develop a "BCP 101" overview session for newer CRAG members.
3) Funding for the development of the Demand Response program should continue to proceed off-line.
4) PSE would continue to gather data and anecdotal information relative to on-bill repayment.

b. May 31 Meeting Highlights:

The May 31 meeting's primary focus was on the development of the 2017 Integrated Resource Plan and its corresponding Conservation Potential Assessment. PSE presented considerations that were factors in the development of the 2018-2019 BCP, and the group discussed additional funding that will be applied to its Low Income Weatherization program via a recently-settled Special Contract. PSE also shared the progress of its RFP/RFI process.

PSE presented its Building the Electric Target table, outlining the target elements that it added to the CPA baseline, as well as those that it excluded from the EIA Penalty Target calculation. A key exclusion, to which no CRAG member objected, was NEEA savings.

Key Outcomes

The attendees agreed that:

1) A discussion of PSE's Fuel Conversion program in a future CRAG meeting was warranted.
2) PSE should investigate the possibility of proposing a utility incentive mechanism for 2018-2019.
3) PSE should investigate LED savings values that were potentially updated subsequent to the development of the Conservation Potential Assessment.

c. July 26 Meeting Highlights:

PSE provided its draft EIA Penalty Target calculation, meeting the first requirement of condition (3)(e). As a follow-up to the May 31 action item, PSE provided an overview of its Fuel Conversion program. CRAG members were generally supportive of PSE retiring the Fuel Conversion program. During this discussion, PSE shared that the Investor Owned Utilities' (IOUs') efforts to ensure consistent treatment of the NEEA savings exclusion from the Penalty Targets were underway. No attendee objected to the NEEA savings exclusion. PSE also shared market and channel conditions that resulted in some key programs' differences from prior biennia, and that PSE will not pursue a utility incentive mechanism in the coming biennium. Lastly, PSE provided a review of key finding from the EV Charger Incentive pilot program.

Key Outcomes

The attendees agreed that:

1) There were no surprises in the draft 2018-2019 savings targets.
2) PSE should address its plan to retire the Fuel Conversion program in the BCP.
3) In its BCP, PSE should also address its plan to put an on-bill repayment system on hold.
4) PSE should provide the actual-vs-planned Fuel Conversion participants for the last three years.

d. September 7 Meeting Highlights:

Originally scheduled for August 30 to provide the CRAG a preview of PSE's draft program plans and budgets,[63] this CRAG meeting focused on the Residential Energy Management and Business Energy Management portfolio plans. PSE indicated that, based on portfolio reviews in previous biennia, it wouldn't be possible to discuss all of Energy Efficiency's Portfolio in a single CRAG meeting. Attendees agreed that it would be appropriate to discuss Portfolio Support, Research & Compliance, and Other Electric Programs in the October 11 meeting.[64]

[63] Consistent with the second deliverable in condition (3)(e). In order to comply with the September 1 requirement, PSE provided CRAG members with the September 7 Powerpoint™ slide deck on August 30.

[64] This CRAG meeting was also re-scheduled: from its originally-planned September 27 date.

Key Outcomes

1) The attendees gained a more comprehensive understanding of the programs that are planned to generate PSE's 2018-2019 electric and natural gas savings.
2) The attendees also received a brief overview of the Portfolio Support, Research & Compliance, and Other Electric Programs 2018-2019 budgets.

e. October 11 Meeting Highlights:

This CRAG meeting's primary purpose was to fulfill the last deliverable of condition (3)(e): review tariff revisions. PSE also provided outlines of the remaining Portfolio Sectors and summarized the overall pending BCP,[65] and reviewed the research and finding associated with a request to pursue on-bill repayment of conservation measures. The attendees also discussed potential plans for filing updated documents when the Commission ruled on the 2017 General Rate Case. This was the only CRAG meeting conducted via conference call.

Key Outcomes

The attendees generally agreed that:

1) It would be helpful for PSE to provide a link to its Conservation Schedules.
2) With a few exceptions (immediately resolved following the meeting), PSE's FTP site worked well.
3) The strategy for filing updated documentation following the GRC ruling was sound.

[65] PSE provided the complete draft BCP package to the CRAG via its secure FTP website on October 1, consistent with WAC 480-109-110(3).

XVI. GLOSSARY OF COMMONLY-USED TERMS

Unless otherwise noted in a specific Conservation Schedule, the following commonly-used terms, used throughout and applicable only to this document[66] have the below noted meanings. Definitions or glossaries contained in other Energy Efficiency documents, policies or guidelines referring to specific processes or unique functions shall have the meanings noted in those documents, policies or guidelines.

A. Definitions

A-line or A-Lamp	A bulb with a rounded cover that has the same basic appearance as a standard incandescent bulb. A-line/A-Lamp bulbs are a good option if you have a light fixture that doesn't conceal the bulb or a lamp with a shade that attaches directly to the bulb. A-Line bulbs disperse light at a wide angle and are ideal for fixtures used to spread light throughout the room. LED A-line bulbs are a good choice for: • Room area lighting • Reading lamps • Hallways The "A" itself stands for arbitrary.
Calculated Savings	This savings type is different than deemed or UES values (described below). This term indicates that there is a pre-approved, stipulated input savings value (or cost) per measure. This value (or cost) is then multiplied by site-specific input values to arrive at the overall savings value (or cost). This term is used in the Savings Type field in Appendix B, List of Measures.
Channel	Within an Energy Efficiency Residential or Business sector, an organization that is established to focus on the value chain—consisting of manufacturer distributor, dealer, contractor to the end-use customer—with the most similar market, delivery methods and ultimate purchasers or product users.

[66] Some acronyms, such as "ECM" have a different connotation outside the purview of PSE or conservation activities. For instance, beyond Energy Efficiency, "ECM" may mean "Electric Conservation Measure". In context of PSE conservation programs, though, it means "Electronically Commutated Motor".

Definitions, continued

Conditions	Also "2010 Electric conservation Settlement Agreement Terms conditions", "Energy Independence Act conditions" or "Order 01, Docket No. UE-152058 conditions". Specific deliverables and stipulations by which the Company must operate or produce through the course of operating and managing Energy Efficiency programs during a specified biennium. In addition to compliance requirements outlined in Sections A through J and L, of the 2010 Settlement Agreement, the conditions are listed under Attachment A of Order 01 in Docket No UE-152058.
Custom Savings	This savings type applies to conservation projects where a PSE EME performs specific evaluation and review of a unique customer site to determine savings values—therms or kWh—that apply only for that site. For this type of measure, there is insufficient information, the occurrence is too infrequent or it cannot be specifically defined to justify development of a Calculated or Deemed protocol.
Deemed Measure	As in a measure's deemed value; A savings (or cost) value that applies to a unit of specific measure, regardless of where or how the measure is installed. Measures for which it is possible to "deem" per unit energy savings, cost and load shape based on program evaluation data and engineering estimates. (For instance, one residential interior CFL lamp has a hypothetical deemed value of 23 kWh per year.) This classification applies to both RTF and PSE deemed.
Direct Benefit to Customer (DBtC)	A PSE-specific term, indicating rebates, grants, credits or services that are of value to customers. Services can include, but aren't limited to, credits on a monthly bill, upstream incentive provided to channel partners or trade allies—either within PSE's service territory or regionally—and free energy efficient devices available by mail.
Direct-Install Measure	A conservation measure that is installed by a PSE representative; either a PSE staff member, a PSE contractor or PSE contractor—rather than a PSE customer—into a qualifying structure.
Electric Savings	Savings are defined and reported as those recognized in the first year of a measure's total expected life. PSE reports the total savings for the year that the measure was implemented, regardless of when it is installed. Savings are counted at the customer meter, not the busbar.
Energy Efficiency	A department of Puget Sound Energy that implements energy conservation programs. Formerly referred to as Energy Efficiency Services or Customer Solutions.
Hydronic	A system of heating using fluid (usually water) as the conductive material to transfer heat to the desired area. This type of system is usually applied in a radiant floor system.

Definitions, continued

Measure	A product, device, piece of equipment, system or building design or operational practice used to achieve greater Energy Efficiency or to promote Fuel Conversion and Fuel Switching. Unless specifically enumerated in a specific Energy Efficiency program, all measures, proposed by Customers or otherwise, shall meet or exceed the efficiency standards set forth in the applicable energy codes, or, where none exists, "standard industry practice" as determined by the Company. Measures will meet common construction practices, and meet industry standards for quality and Energy Efficiency.[67] Measures must also meet cost-effectiveness standards.
Program	Programs may consist of a single measure, an assortment of related measures or a suite of measures that are related strictly by delivery type or customer segment.
PSE Deemed	Relative to measure savings types (Custom, Calculated, PSE Deemed or RTF Deemed), these measures are supported by PSE engineering calculations or evaluation studies, in compliance with condition (6)(c). This term is used in the Savings Type field in Appendix B, List of Measures.
RTF Deemed	Former reference to the RTF's UES (Unit Energy Savings).
System	In this document, System may have the following meanings: 1) Any software program—supported by PSE's IT department or otherwise—or physical apparatus used to record, track, compile, report, archive, audit energy savings claims or financial data. 2) Electrical, and/or natural gas equipment that is either attached together or works in concert to provide space conditioning, plumbing functions or other end-uses associated with structures, such as HVAC systems, pumping systems, etc.

[67] Schedule 83, section 4, Definitions, #m. Schedule 183, section 4, #l.

B. Acronyms

The below-listed acronyms are found throughout program discussions in this report. Where possible, PSE has defined these acronyms within the discussion. As a courtesy, PSE also provides them in the below list for easy reference.

AESP	Association of Energy Service Professionals
aMW	Average MegaWatt. An expression of energy (versus "power"). It is used to express very large amounts of energy. The term represents an average of power (Megawatts [MW]) used over time (the standard term being one year or 8,760 hours). Thus, 1 aMW = 8,760 MWh.
ASHRAE	American Society of Heating, Refrigerating, and Air-Conditioning Engineers
BOMA	Building Owners and Managers Association
BPA	Bonneville Power Administration
CEE	Consortium for Energy Efficiency
CMS	Customer Management System. A PSE proprietary software application that tracks customer activities, inventory and rebate processing.
CRAG	Conservation Resource Advisory Group
CVR	Conservation Voltage Reduction
DSM	Demand-Side Management. Typically used as an acronym for energy conservation.
EC Motor (ECM)	Electronically Commutated Motor
EME	Energy Management Engineer
EM&V	Evaluation, Measurement and Verification
ERR	Evaluation Report Response. A form used to complete an evaluation study's resultant actions.
GPM	Gallons Per Minute
HVAC	Heating, Ventilation and Air Conditioning
IR	InfraRed. A technology typically used in remote-control devices.
kWh	Kilowatt Hour. 1,000 watt-hours = 1 kWh, which is equivalent to 10 100-watt incandescent lamps being turned on for one hour.
LED	Light Emitting Diode (lamp type)
MWh	Megawatt-hour. 1,000 kWh = 1 MWh
NEEA	Northwest Energy Efficiency Alliance
NEEC	Northwest Energy Efficiency Council

Acronyms, continued

NWPCC	NorthWest Power Conservation Council
O&M	Operations & Maintenance
PV	PhotoVoltaic. Primarily applies to solar renewable energy generation systems. PV converts solar energy into Direct Current (DC) electricity.
RCW	Revised Code of Washington
RTF	Regional Technical Forum, an advisory committee and a part of the Northwest Power and Conservation Council. The RTF develops standardized protocols for verifying and evaluating conservation.
SAP	Systems, Applications, Products in data Products. A very large, enterprise-wide financial, HR, workflow-tracking accounting system.
TRC	Total Resource Cost: The cost to the customer and/or other party costs to install or have installed approved Measures plus Utility Costs and minus Quantifiable Benefits (or Costs).[68]
UC	Utility Cost: The Company's costs of administering programs included, but not limited to, costs associated with incentives, audited, analysis, technical review and funding specific to the Measure or program and evaluation.[69]
VO	Voltage Optimization
WAC	Washington Administrative Code
WAMOA	Washington Association of Maintenance and Operations Administrators
WSEC	Washington State Energy Code
WUTC	Washington Utilities and Transportation Commission. Also referred to as UTC.

[68] Schedule 83, section 4, Definitions, #z. Schedule 183, section 4, #x.

[69] Schedule 83, section 4, Definitions, #bb. Schedule 183, section 4, #z.

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CONCLUSION

This concludes the Energy Efficiency 2017 Annual Report of Energy Conservation Accomplishments.

Please refer to the Report's Exhibits and Supplements for additional Energy Efficiency details:

A. Exhibits Included in the 2017 Report of Conservation Accomplishments

Exhibit 1: Conservation Targets and Budgets versus Actual Achievements and Spending
Exhibit 2: Program Cost Effectiveness
Exhibit 5: Prescriptive Measures
Exhibit 9: Requirement Compliance Checklist
Exhibit 10: NEEA 2015 Report of Activities and Initiatives

B. Supplements

Exhibit 1 *(Table of savings and expenditures)*
- Supplement 1: Expenditures by Cost Element Group
- Supplement 2: 2017 Savings adjustments
- Supplement 3: 2017 Sponsorships and Memberships
- Supplement 4: Portfolio Measure Category Counts

Exhibit 6 *(The Evaluation Plan is excluded from this report)*
- Supplement 1: Evaluation studies with their associated Evaluation Report Responses (ERRs) performed in 2017

Energy Efficiency looks forward to a productive and successful 2017.

Respectfully submitted,

The Men and Women of Energy Efficiency

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Exhibit 5

2016-2017 Measure Values

Program Name	DSMC ID	Measure Name	Description	Measure Category	Measure Type	Version Start Date	Version End Date	Unit Savings - kWh	Unit Savings - Therm	Savings UOM Type	Unit Type	Source of Savings Type	PSE-Deemed Type	Unit Incentive - kWh	Unit Incentive Therm	Measure Life	End Use
Appliance Replacement	10773	APPR: Aerator - Bath - Engagement - C - Any WH - 1.0 gpm	1.0 gpm engagement bath aerator: combined territory, any water heating	Water Heating	Aerator	1/1/17		25.93	1.18	Dual	per unit	PSE-deemed	Evaluation Study	$1.70	$0.30	10	Res Water Heat
Appliance Replacement	10775	APPR: Aerator - Kitchen - Engagement - C - Any WH - 1.5 gpm	1.5 gpm engagement kitchen aerator: combined territory, any water heating	Water Heating	Aerator	1/1/17		15.11	0.69	Dual	per unit	PSE-deemed	Evaluation Study	$1.70	$0.30	10	Res Water Heat
Appliance Replacement	10111	APPR: Showerhead - Engagement - C - 1.5 gpm	1.5 gpm engagement showerhead: combined territory	Water Heating	Showerhead	1/1/17		109.20	4.80	Dual	per unit	PSE-deemed	PSE Regional	$6.67	$3.33	10	Res Water Heat
Agriculture Direct Install	11986	SBDI: Aerator - EWH - Commercial Kitchen - 1.0 gpm	1.0 gpm aerator: commercial kitchen use; electric water heating	Water Heating	Aerator	1/1/17		270.50		kWh	per unit	PSE-deemed	Engineering	$13.09		10	Comm Space Heat
Agriculture Direct Install	11319	SBDI: Aerator - EWH - Restaurant	Aerator: electric water heating; restaurant	Water Heating	Aerator	1/1/17		215.10		kWh	per unit	PSE-deemed	Engineering	$13.09		10	Comm Water Heat
Agriculture Direct Install	12053	SBDI: Fixture - LED - 100w - from 400w HID	100w LED fixture: replace 400w high-intensity discharge lamp	Lighting	Fixture	2/1/17		1,181.00		kWh	per unit	PSE-deemed	Engineering	$239.32		12	Comm Lighting
Agriculture Direct Install	10958	SBDI: Fixture - LED - Recessed Can - Assembly Church	Recessed can LED: assembly or church	Lighting	Fixture	1/1/17		62.00		kWh	per unit	PSE-deemed	Engineering	$70.00		12	Comm Lighting
Agriculture Direct Install	10959	SBDI: Fixture - LED - Recessed Can - Exterior	Recessed can LED: exterior	Lighting	Fixture	1/1/17		138.00		kWh	per unit	PSE-deemed	Engineering	$70.00		12	Comm Lighting
Agriculture Direct Install	10960	SBDI: Fixture - LED - Recessed Can - Grocery	Recessed can LED: grocery	Lighting	Fixture	1/1/17		180.00		kWh	per unit	PSE-deemed	Engineering	$70.00		12	Comm Lighting
Agriculture Direct Install	10961	SBDI: Fixture - LED - Recessed Can - Office	Recessed can LED: office	Lighting	Fixture	1/1/17		103.00		kWh	per unit	PSE-deemed	Engineering	$70.00		12	Comm Lighting
Agriculture Direct Install	10962	SBDI: Fixture - LED - Recessed Can - Other	Recessed can LED: other	Lighting	Fixture	1/1/17		77.00		kWh	per unit	PSE-deemed	Engineering	$70.00		12	Comm Lighting
Agriculture Direct Install	10963	SBDI: Fixture - LED - Recessed Can - Other Health	Recessed can LED: other health	Lighting	Fixture	1/1/17		151.00		kWh	per unit	PSE-deemed	Engineering	$70.00		12	Comm Lighting
Agriculture Direct Install	10964	SBDI: Fixture - LED - Recessed Can - Restaurant	Recessed can LED: restaurant	Lighting	Fixture	1/1/17		123.00		kWh	per unit	PSE-deemed	Engineering	$70.00		12	Comm Lighting
Agriculture Direct Install	10965	SBDI: Fixture - LED - Recessed Can - Retail	Recessed can LED: retail	Lighting	Fixture	1/1/17		113.00		kWh	per unit	PSE-deemed	Engineering	$70.00		12	Comm Lighting
Agriculture Direct Install	10966	SBDI: Fixture - LED - Recessed Can - School K12	Recessed can LED: school K-12	Lighting	Fixture	1/1/17		78.00		kWh	per unit	PSE-deemed	Engineering	$70.00		12	Comm Lighting
Agriculture Direct Install	10967	SBDI: Fixture - LED - Recessed Can - Warehouse	Recessed can LED: warehouse	Lighting	Fixture	1/1/17		81.00		kWh	per unit	PSE-deemed	Engineering	$70.00		12	Comm Lighting
Agriculture Direct Install	10971	SBDI: Fixture - T8 - 17w - 2x - from Multi-Lamp Fixture 80w NBF	2-lamp 17w T8 fixture: replace multi-lamp normal ballast factor 80 watt fixture	Lighting	Fixture	1/1/17		152.00		kWh	per unit	PSE-deemed	Engineering	$127.54		12	Comm Lighting
Agriculture Direct Install	10972	SBDI: Fixture - T8 - 17w - 2x - NBF - from 120w Multi Lamp	2-lamp 17 watt T8 fixture; normal ballast factor: replace 120 watt multi-lamp fixture	Lighting	Fixture	1/1/17		284.00		kWh	per unit	PSE-deemed	Engineering	$127.54		12	Comm Lighting
Agriculture Direct Install	10973	SBDI: Fixture - T8 - 25w - 2x - NBF - from 160w Multi Lamp	2-lamp 17 watt T8 fixture; normal ballast factor: replace 160 watt multi-lamp fixture	Lighting	Fixture	1/1/17		356.00		kWh	per unit	PSE-deemed	Engineering	$149.94		12	Comm Lighting
Agriculture Direct Install	10974	SBDI: Fixture - T8 - 28w - 2x - NBF - from 240w Multi Lamp	2-lamp 28 watt T8 fixture; normal ballast factor: replace 240 watt multi-lamp fixture	Lighting	Fixture	1/1/17		634.00		kWh	per unit	PSE-deemed	Engineering	$179.34		12	Comm Lighting
Agriculture Direct Install	10976	SBDI: Fixture - T8 - 4 ft - 2x - from 8 ft T12 HO F96 1x	2-lamp 4' T8 fixture: replace 1-lamp 8' high output F96 T12	Lighting	Fixture	1/1/17		188.00		kWh	per unit	PSE-deemed	Engineering	$127.20		12	Comm Lighting
Agriculture Direct Install	10977	SBDI: Fixture - T8 - 4 ft - 4x - from 8 ft T12 HO F96 2x	4-lamp 4' T8 fixture: replace 2-lamp 8' high output F96 T12	Lighting	Fixture	1/1/17		376.00		kWh	per unit	PSE-deemed	Engineering	$74.79		12	Comm Lighting
Agriculture Direct Install	11315	SBDI: Aerator - EWH - All Others	Aerator: electric water heating; all other business types	Water Heating	Aerator	1/1/16		151.60		kWh	per unit	PSE-deemed	Engineering	13.09		10	Comm Water Heat
Agriculture Direct Install	10979	SBDI: Fixture - T8 - DLR - 4 ft - 2x - from 4 ft T12 3x	2-lamp 4' T8 fixture; delamp and reflector: replace 3-lamp 4' T12	Lighting	Fixture	1/1/17		208.00		kWh	per unit	PSE-deemed	Engineering	$61.56		12	Comm Lighting
Agriculture Direct Install	10980	SBDI: Fixture - T8 - DLR - 4 ft - 2x - from 4 ft T12 4x	2-lamp 4' T8 fixture; delamp and reflector: replace 4-lamp 4' T12	Lighting	Fixture	1/1/17		330.00		kWh	per unit	PSE-deemed	Engineering	$62.01		12	Comm Lighting
Agriculture Direct Install	11321	SBDI: Aerator - EWH - Retail	Aerator: electric water heating; retail	Water Heating	Aerator	1/1/16		151.60		kWh	per unit	PSE-deemed	Engineering	13.09		10	Comm Water Heat
Agriculture Direct Install	11323	SBDI: Aerator - EWH - School	Aerator: electric water heating; school	Water Heating	Aerator	1/1/16		189.50		kWh	per unit	PSE-deemed	Engineering	13.09		10	Comm Water Heat
Agriculture Direct Install	11317	SBDI: Aerator - EWH - Small Office	Aerator: electric water heating; small office	Water Heating	Aerator	1/1/16		46.60		kWh	per unit	PSE-deemed	Engineering	13.09		10	Comm Water Heat
Agriculture Direct Install	10952	SBDI: Controls - ASH - Compressor - Low Temp	Anti-sweat heater control: controlling compressors; low temperature	Controls	Refrigeration Control	1/1/16		369.00		kWh	per unit	RTF-deemed		42.40		8	Comm Refrigeration
Agriculture Direct Install	10953	SBDI: Controls - ASH - Compressor - Mid Temp	Anti-sweat heater control: controlling compressors; mid temperature	Controls	Refrigeration Control	1/1/16		230.00		kWh	per unit	RTF-deemed		42.40		8	Comm Refrigeration
Agriculture Direct Install	10954	SBDI: ECM - Display Case	Electronically commutated motors: display case	Motors	Motor	1/1/16		685.00		kWh	per unit	RTF-deemed		133.28		15	Comm Refrigeration
Agriculture Direct Install	10955	SBDI: ECM - Walk In - 23w	Electronically commutated motors: walk-in refrigerator; 23 watts or less	Motors	Motor	1/1/16		1,458.00		kWh	per unit	RTF-deemed		225.40		15	Comm Refrigeration
Agriculture Direct Install	10956	SBDI: ECM - Walk In - More than 23w	Electronically commutated motors: walk-in refrigerator; more than 23 watts	Motors	Motor	1/1/16		592.00		kWh	per unit	RTF-deemed		225.40		15	Comm Refrigeration
Agriculture Direct Install	10981	SBDI: Fixture - T8 - DLR - 4 ft - 2x - from 8 ft T12 delamp 2x	2-lamp 4' T8 fixture; delamp and reflector: replace 2-lamp 8' T12 delamp	Lighting	Fixture	1/1/17		297.00		kWh	per unit	PSE-deemed	Engineering	$62.01		12	Comm Lighting
Agriculture Direct Install	10957	SBDI: Fixture - LED - Area - Photocell - 35w	35 watt LED area fixture with photocell	Lighting	Fixture	1/1/16		685.00		kWh	per unit	PSE-deemed	Engineering	153.17		12	Comm Lighting
Agriculture Direct Install	10982	SBDI: Fixture - T8 - DLR - 4 ft - 3x - from 4 ft T12 4x	3-lamp 4' T8 fixture; delamp and reflector: replace 4-lamp 4' T12	Lighting	Fixture	1/1/17		251.00		kWh	per unit	PSE-deemed	Engineering	$48.55		12	Comm Lighting
Agriculture Direct Install	10983	SBDI: Fixture - T8 - DLR - 4 ft - 3x - from 4 ft T12 HO 4x	3-lamp 4' T8 fixture: replace 4-lamp 4' high output T12	Lighting	Fixture	1/1/17		713.00		kWh	per unit	PSE-deemed	Engineering	$48.55		12	Comm Lighting
Agriculture Direct Install	11988	SBDI: Fixture - T8 - Split 17w 28w - 2x - LBF - Bi Level Stair	2-lamp split 17 and 28 watt T8 fixture: low ballast factor; installed in bi-level stair corridor	Lighting	Fixture	1/1/17		457.00		kWh	per unit	PSE-deemed	Engineering	$174.50		10	Comm Flat
Agriculture Direct Install	10985	SBDI: Fixture - T8 Retro Kit - 2 ft - 1x - from 2 ft T12 HO 1x	1-lamp 2'; T8 fixture: replace 2'; 1 lamp high output T12 fixture	Lighting	Fixture	1/1/17		158.00		kWh	per unit	PSE-deemed	Engineering	$38.14		12	Comm Lighting
Agriculture Direct Install	10986	SBDI: Fixture - T8 Retro Kit - 3 ft - 1x - from 3 ft T12 1x	1-lamp 3'; T8 fixture: replace 3' 1-lamp T12 fixture	Lighting	Fixture	1/1/17		79.00		kWh	per unit	PSE-deemed	Engineering	$38.14		12	Comm Lighting
Agriculture Direct Install	10989	SBDI: Fixture - T8 Retro Kit - 4 ft - 2x - from 4 ft T12 HO 2x	2-lamp 4' T8 fixture: replace 2-lamp; 4' high output T12 fixture	Lighting	Fixture	1/1/17		317.00		kWh	per unit	PSE-deemed	Engineering	$39.33		12	Comm Lighting
Agriculture Direct Install	10990	SBDI: Fixture - T8 Retro Kit - 4 ft - 3x - from 4 ft T12 HO 3x	3-lamp 4' T8 retrofit fixture: replace 3-lamp 4' high output T12 fixture	Lighting	Fixture	1/1/17		475.00		kWh	per unit	PSE-deemed	Engineering	$44.25		12	Comm Lighting
Agriculture Direct Install	10991	SBDI: Fixture - T8 Retro Kit - DLR - 4 ft - 2x - from 4 ft T12 HO 3x	2-lamp 4' T8 fixture retrofit kit; delamp and reflector: replace 3-lamp; 4' high output T12	Lighting	Fixture	1/1/17		554.00		kWh	per unit	PSE-deemed	Engineering	$61.56		12	Comm Lighting
Agriculture Direct Install	10995	SBDI: Fixture - TLED - 4 ft - 2x - from 8 ft T12 F96 1x	2-lamp 4' tubular LED fixture: replace 1-lamp 8' F96 T12	Lighting	Fixture	1/1/17		142.00		kWh	per unit	PSE-deemed	Engineering	$64.90		12	Comm Lighting
Agriculture Direct Install	10996	SBDI: Fixture - TLED - 4 ft - 2x - from 8 ft T12 HO F96 1x	2-lamp 4' tubular LED fixture: replace 1-lamp 8' high output F96 T12	Lighting	Fixture	1/1/17		261.00		kWh	per unit	PSE-deemed	Engineering	$65.48		12	Comm Lighting
Agriculture Direct Install	10968	SBDI: Fixture - LED - Wall Pack - Photocell - 60w	60 watt LED area fixture with photocell	Lighting	Fixture	1/1/16		937.00		kWh	per unit	PSE-deemed	Engineering	209.03		12	Comm Lighting
Agriculture Direct Install	10969	SBDI: Fixture - LED - Wall Pack - Photocell - Less than 19w	Less than 19 watt LED wall pack with photocell	Lighting	Fixture	1/1/16		181.00		kWh	per unit	PSE-deemed	Engineering	70.73		12	Comm Lighting

Exhibit 5

2016-2017 Measure Values

Program Name	DSMC ID	Measure Name	Description	Measure Category	Measure Type	Version Start Date	Version End Date	Unit Savings - kWh	Unit Savings - Therm	Savings UOM Type	Unit Type	Source of Savings Type	PSE-Deemed Type	Unit Incentive - kWh	Unit Incentive Therm	Measure Life	End Use
Agriculture Direct Install	10970	SBDI: Fixture - LED - Wall Pack - Photocell - Less than 30w	Less than 30 watt LED wall pack with photocell	Lighting	Fixture	1/1/16		601.00		kWh	per unit	PSE-deemed	Engineering	153.17		12	Comm Lighting
Agriculture Direct Install	10997	SBDI: Fixture - TLED - 4 ft - 4x - from 8 ft T12 F96 2x	4-lamp 4' tubular LED fixture: replace 2-lamp 8' F96 T12	Lighting	Fixture	1/1/17		284.00		kWh	per unit	PSE-deemed	Engineering	$84.30		12	Comm Lighting
Agriculture Direct Install	10998	SBDI: Fixture - TLED - 4 ft - 4x - from 8 ft T12 HO F96 2x	4-lamp 4' tubular LED fixture: replace 2-lamp 8' high output F96 T12	Lighting	Fixture	1/1/17		521.00		kWh	per unit	PSE-deemed	Engineering	$54.05		12	Comm Lighting
Agriculture Direct Install	10999	SBDI: Fixture - TLED - DLR - 4 ft - 2x - from 4 ft T12 3x	2-lamp 4' tubular LED fixture; delamp and reflector: replace 3-lamp 4' T12	Lighting	Fixture	1/1/17		281.00		kWh	per unit	PSE-deemed	Engineering	$60.93		12	Comm Lighting
Agriculture Direct Install	11000	SBDI: Fixture - TLED - DLR - 4 ft - 2x - from 4 ft T12 4x	2-lamp 4' tubular LED fixture; delamp and reflector: replace 4-lamp 4' T12	Lighting	Fixture	1/1/17		403.00		kWh	per unit	PSE-deemed	Engineering	$61.22		12	Comm Lighting
Agriculture Direct Install	10975	SBDI: Fixture - T8 - 4 ft - 2x - 28w - from 8 ft T8 F96 1x	2-lamp 4' 28 watt T8 fixture: replace 1-lamp 8' F96 T8	Lighting	Fixture	1/1/16		20.00		kWh	per unit	PSE-deemed	Engineering	127.20		12	Comm Lighting
Agriculture Direct Install	11001	SBDI: Fixture - TLED - DLR - 4 ft - 2x - from 4 ft T12 HO 3x	2-lamp 4' tubular LED fixture; delamp and reflector: replace 3-lamp; 4' high output T12	Lighting	Fixture	1/1/17		627.00		kWh	per unit	PSE-deemed	Engineering	$43.73		12	Comm Lighting
Agriculture Direct Install	10978	SBDI: Fixture - T8 - 4 ft - 4x - from 8 ft T12 F96 2x	4-lamp 4' T8 fixture: replace 2-lamp 8' F96 T12	Lighting	Fixture	1/1/16		40.00		kWh	per unit	PSE-deemed	Engineering	74.79		12	Comm Lighting
Agriculture Direct Install	11002	SBDI: Fixture - TLED - DLR - 4 ft - 2x - from 4 ft T12 HO 4x	2-lamp 4' tubular LED: replace 4-lamp 4' high output T12	Lighting	Fixture	1/1/17		865.00		kWh	per unit	PSE-deemed	Engineering	$43.73		12	Comm Lighting
Agriculture Direct Install	11003	SBDI: Fixture - TLED - DLR - 4 ft - 2x - from 4 ft T8 28w NLO 4x	2-lamp 4' Tubular LED fixture; delamp and reflector: replace 4-lamp 4' 28 watt normal light output T8	Lighting	Fixture	1/1/17		231.00		kWh	per unit	PSE-deemed	Engineering	$68.87		12	Comm Lighting
Agriculture Direct Install	10993	SBDI: Fixture - TLED - DLR - 4 ft - 2x - from 4 ft T8 32w HLO 3x	2-lamp 4' tubular LED fixture; delamp and reflector: replace 3-lamp 4' 32 watt high light output T8	Lighting	Fixture	1/1/17		271.00		kWh	per unit	PSE-deemed	Engineering	$60.93		12	Comm Lighting
Agriculture Direct Install	11004	SBDI: Fixture - TLED - DLR - 4 ft - 2x - from 4 ft T8 32w HLO 4x	2-lamp 4' tubular LED fixture; delamp and reflector: replace 4-lamp 4' 32 watt high light output T8	Lighting	Fixture	1/1/17		389.00		kWh	per unit	PSE-deemed	Engineering	$68.87		12	Comm Lighting
Agriculture Direct Install	10992	SBDI: Fixture - TLED - DLR - 4 ft - 2x - from 4 ft T8 32w LLO 3x	2-lamp 4' tubular LED fixture; delamp and reflector: replace 3-lamp 4' 32 watt low light output T8	Lighting	Fixture	1/1/17		152.00		kWh	per unit	PSE-deemed	Engineering	$60.93		12	Comm Lighting
Agriculture Direct Install	11005	SBDI: Fixture - TLED - DLR - 4 ft - 2x - from 4 ft T8 32w NLO 4x	2-lamp 4' tubular LED fixture; delamp and reflector: replace 4-lamp 4' 32 watt normal light output T8	Lighting	Fixture	1/1/17		271.00		kWh	per unit	PSE-deemed	Engineering	$68.87		12	Comm Lighting
Agriculture Direct Install	11006	SBDI: Fixture - TLED - DLR - 4 ft - 2x - from 8 ft T12 F96 2x	2-lamp 4' tubular LED fixture: delamp and reflector: replace 2-lamp 8' F96 T12	Lighting	Fixture	1/1/17		370.00		kWh	per unit	PSE-deemed	Engineering	$65.93		12	Comm Lighting
Agriculture Direct Install	10984	SBDI: Fixture - T8 Retro Kit - 2 ft - 1x - from 2 ft T12 1x	1-lamp 3' T8 fixture: replace 2'; 1 lamp T12 fixture	Lighting	Fixture	1/1/16		33.00		kWh	per unit	PSE-deemed	Engineering	38.14		12	Comm Lighting
Agriculture Direct Install	11007	SBDI: Fixture - TLED - DLR - 4 ft - 3x - from 4 ft T12 4x	3-lamp 4' tubular LED fixture; delamp and reflector: replace 4-lamp 4' T12	Lighting	Fixture	1/1/17		360.00		kWh	per unit	PSE-deemed	Engineering	$55.31		12	Comm Lighting
Agriculture Direct Install	11008	SBDI: Fixture - TLED - DLR - 4 ft - 3x - from 4 ft T12 HO 4x	3-lamp 4' tubular LED fixture; delamp and reflector: replace 4-lamp 4' high output T12	Lighting	Fixture	1/1/17		822.00		kWh	per unit	PSE-deemed	Engineering	$37.51		12	Comm Lighting
Agriculture Direct Install	10987	SBDI: Fixture - T8 Retro Kit - 4 ft - 1x - from 4 ft T12 1x	1-lamp 4' T8 fixture: replace 1-lamp 4' T12 fixture	Lighting	Fixture	1/1/16		43.00		kWh	per unit	PSE-deemed	Engineering	38.14		12	Comm Lighting
Agriculture Direct Install	10988	SBDI: Fixture - T8 Retro Kit - 4 ft - 2x - from 4 ft T12 2x	2-lamp 4' T8 fixture: replace 2-lamp; 4' T12 fixture	Lighting	Fixture	1/1/16		86.00		kWh	per unit	PSE-deemed	Engineering	39.33		12	Comm Lighting
Agriculture Direct Install	11010	SBDI: Fixture - TLED - DLR - 4 ft - 3x - from 4 ft T8 32w LLO 4x	3-lamp 4' tubular LED fixture; delamp and reflector: replace 4-lamp 4' 32 watt low light output T8	Lighting	Fixture	1/1/17		188.00		kWh	per unit	PSE-deemed	Engineering	$51.61		12	Comm Lighting
Agriculture Direct Install	11017	SBDI: Lamp - LED - Decorative - Assembly Church	Decorative LED lamp: assembly or church	Lighting	Lamp	1/1/17		35.00		kWh	per unit	PSE-deemed	Engineering	$10.82		3	Comm Lighting
Agriculture Direct Install	11018	SBDI: Lamp - LED - Decorative - Exterior	Decorative LED lamp: exterior	Lighting	Lamp	1/1/17		79.00		kWh	per unit	PSE-deemed	Engineering	$10.82		3	Comm Lighting
Agriculture Direct Install	11019	SBDI: Lamp - LED - Decorative - Grocery	Decorative LED lamp: grocery	Lighting	Lamp	1/1/17		102.00		kWh	per unit	PSE-deemed	Engineering	$10.82		3	Comm Lighting
Agriculture Direct Install	11020	SBDI: Lamp - LED - Decorative - Office	Decorative LED lamp: office	Lighting	Lamp	1/1/17		58.00		kWh	per unit	PSE-deemed	Engineering	$10.82		3	Comm Lighting
Agriculture Direct Install	11021	SBDI: Lamp - LED - Decorative - Other	Decorative LED lamp: other	Lighting	Lamp	1/1/17		44.00		kWh	per unit	PSE-deemed	Engineering	$10.82		3	Comm Lighting
Agriculture Direct Install	11022	SBDI: Lamp - LED - Decorative - Other Health	Decorative LED lamp: other healt	Lighting	Lamp	1/1/17		86.00		kWh	per unit	PSE-deemed	Engineering	$10.82		3	Comm Lighting
Agriculture Direct Install	11023	SBDI: Lamp - LED - Decorative - Restaurant	Decorative LED lamp: restaurant	Lighting	Lamp	1/1/17		70.00		kWh	per unit	PSE-deemed	Engineering	$10.82		3	Comm Lighting
Agriculture Direct Install	11024	SBDI: Lamp - LED - Decorative - Retail	Decorative LED lamp: retail	Lighting	Lamp	1/1/17		64.00		kWh	per unit	PSE-deemed	Engineering	$10.82		3	Comm Lighting
Agriculture Direct Install	11025	SBDI: Lamp - LED - Decorative - School K12	Decorative LED lamp: school K-12	Lighting	Lamp	1/1/17		45.00		kWh	per unit	PSE-deemed	Engineering	$10.82		3	Comm Lighting
Agriculture Direct Install	11026	SBDI: Lamp - LED - Decorative - Warehouse	Decorative LED lamp: warehouse	Lighting	Lamp	1/1/17		46.00		kWh	per unit	PSE-deemed	Engineering	$10.82		3	Comm Lighting
Agriculture Direct Install	11027	SBDI: Lamp - LED - Globe - 5w - Assembly Church	5 watt globe LED: assembly or church	Lighting	Lamp	1/1/17		25.00		kWh	per unit	PSE-deemed	Engineering	$14.89		5	Comm Lighting
Agriculture Direct Install	11028	SBDI: Lamp - LED - Globe - 5w - Exterior	5 watt globe LED: exterior	Lighting	Lamp	1/1/17		56.00		kWh	per unit	PSE-deemed	Engineering	$14.89		5	Comm Lighting
Agriculture Direct Install	11029	SBDI: Lamp - LED - Globe - 5w - Grocery	5 watt globe LED: grocery	Lighting	Lamp	1/1/17		73.00		kWh	per unit	PSE-deemed	Engineering	$14.89		5	Comm Lighting
Agriculture Direct Install	11030	SBDI: Lamp - LED - Globe - 5w - Office	5 watt globe LED: office	Lighting	Lamp	1/1/17		41.00		kWh	per unit	PSE-deemed	Engineering	$14.89		5	Comm Lighting
Agriculture Direct Install	11125	SBDI: Fixture - TLED - DLR - 4 ft - 2x - from 4 ft T8 32w NLO 3x	2-lamp 4' tubular LED fixture: delamp and reflector; replace 3-lamp 4' 32 watt normal light output T8	Lighting	Fixture	1/1/16		182.00		kWh	per unit	PSE-deemed	Engineering	60.93		12	Comm Lighting
Agriculture Direct Install	11031	SBDI: Lamp - LED - Globe - 5w - Other	5 watt globe LED: other	Lighting	Lamp	1/1/17		31.00		kWh	per unit	PSE-deemed	Engineering	$14.89		5	Comm Lighting
Agriculture Direct Install	11032	SBDI: Lamp - LED - Globe - 5w - Other Health	5 watt globe LED: other health	Lighting	Lamp	1/1/17		61.00		kWh	per unit	PSE-deemed	Engineering	$14.89		5	Comm Lighting
Agriculture Direct Install	11033	SBDI: Lamp - LED - Globe - 5w - Restaurant	5 watt globe LED: restaurant	Lighting	Lamp	1/1/17		50.00		kWh	per unit	PSE-deemed	Engineering	$14.89		5	Comm Lighting
Agriculture Direct Install	11034	SBDI: Lamp - LED - Globe - 5w - Retail	5 watt globe LED: retail	Lighting	Lamp	1/1/17		46.00		kWh	per unit	PSE-deemed	Engineering	$14.89		5	Comm Lighting
Agriculture Direct Install	11009	SBDI: Fixture - TLED - DLR - 4 ft - 3x - from 4 ft T8 28w LLO 4x	3-lamp 4' tubular LED fixture; delamp and reflector: replace 4-lamp 4' 28 watt low light output T8	Lighting	Fixture	1/1/16		149.00		kWh	per unit	PSE-deemed	Engineering	51.61		12	Comm Lighting
Agriculture Direct Install	11035	SBDI: Lamp - LED - Globe - 5w - School K12	5 watt globe LED: school K-12	Lighting	Lamp	1/1/17		32.00		kWh	per unit	PSE-deemed	Engineering	$14.89		5	Comm Lighting
Agriculture Direct Install	11011	SBDI: Lamp - LED - 20w - from 100w HID	20 watt LED lamp: replace 100 watt high intensity discharge lamp	Lighting	Lamp	1/1/16		458.00		kWh	per unit	PSE-deemed	Engineering	91.65		12	Comm Lighting
Agriculture Direct Install	11012	SBDI: Lamp - LED - 35w - from 175w HID	35 watt LED lamp: replace 175 watt high intensity discharge lamp	Lighting	Lamp	1/1/16		735.00		kWh	per unit	PSE-deemed	Engineering	153.17		12	Comm Lighting
Agriculture Direct Install	11013	SBDI: Lamp - LED - 35w - from 250w HID	35 watt LED: replace 250 watt high intensity discharge lamp	Lighting	Lamp	1/1/16		1,075.00		kWh	per unit	PSE-deemed	Engineering	153.17		12	Comm Lighting
Agriculture Direct Install	11014	SBDI: Lamp - LED - 60w - from 250w HID	60 watt LED: replace 250 watt high intensity discharge lamp	Lighting	Lamp	1/1/16		970.00		kWh	per unit	PSE-deemed	Engineering	194.04		12	Comm Lighting
Agriculture Direct Install	11015	SBDI: Lamp - LED - 60w - from 400w HID	60w LED lamp: replace 400 watt high intensity discharge lamp	Lighting	Lamp	1/1/16		1,672.00		kWh	per unit	PSE-deemed	Engineering	329.75		12	Comm Lighting

Exhibit 5

2016-2017 Measure Values

Program Name	DSMC ID	Measure Name	Description	Measure Category	Measure Type	Version Start Date	Version End Date	Unit Savings - kWh	Unit Savings - Therm	Savings UOM Type	Unit Type	Source of Savings Type	PSE-Deemed Type	Unit Incentive - kWh	Unit Incentive Therm	Measure Life	End Use
Agriculture Direct Install	11016	SBDI: Lamp - LED - 80w - from 400w HID	80w LED lamp: replace 400 watt high intensity discharge lamp	Lighting	Lamp	1/1/16		1,588.00		kWh	per unit	PSE-deemed	Engineering	317.52		12	Comm Lighting
Agriculture Direct Install	11036	SBDI: Lamp - LED - Globe - 5w - Warehouse	5 watt globe LED: warehouse	Lighting	Lamp	1/1/17		33.00		kWh	per unit	PSE-deemed	Engineering	$14.89		5	Comm Lighting
Agriculture Direct Install	11041	SBDI: Lamp - LED - MR 16 - Assembly Church	LED MR16: assembly or church	Lighting	Lamp	1/1/17		47.00		kWh	per unit	PSE-deemed	Engineering	$19.00		5	Comm Lighting
Agriculture Direct Install	11042	SBDI: Lamp - LED - MR 16 - Exterior	LED MR16: exterior	Lighting	Lamp	1/1/17		103.00		kWh	per unit	PSE-deemed	Engineering	$19.00		5	Comm Lighting
Agriculture Direct Install	11043	SBDI: Lamp - LED - MR 16 - Grocery	LED MR16: grocery	Lighting	Lamp	1/1/17		134.00		kWh	per unit	PSE-deemed	Engineering	$19.00		5	Comm Lighting
Agriculture Direct Install	11044	SBDI: Lamp - LED - MR 16 - Office	LED MR16: office	Lighting	Lamp	1/1/17		77.00		kWh	per unit	PSE-deemed	Engineering	$19.00		5	Comm Lighting
Agriculture Direct Install	11045	SBDI: Lamp - LED - MR 16 - Other	LED MR16: other	Lighting	Lamp	1/1/17		58.00		kWh	per unit	PSE-deemed	Engineering	$19.00		5	Comm Lighting
Agriculture Direct Install	11046	SBDI: Lamp - LED - MR 16 - Other Health	LED MR16: other health	Lighting	Lamp	1/1/17		113.00		kWh	per unit	PSE-deemed	Engineering	$19.00		5	Comm Lighting
Agriculture Direct Install	11047	SBDI: Lamp - LED - MR 16 - Restaurant	LED MR16: restaurant	Lighting	Lamp	1/1/17		92.00		kWh	per unit	PSE-deemed	Engineering	$19.00		5	Comm Lighting
Agriculture Direct Install	11048	SBDI: Lamp - LED - MR 16 - Retail	LED MR16: retail	Lighting	Lamp	1/1/17		84.00		kWh	per unit	PSE-deemed	Engineering	$19.00		5	Comm Lighting
Agriculture Direct Install	11049	SBDI: Lamp - LED - MR 16 - School K12	LED MR16: school K-12	Lighting	Lamp	1/1/17		59.00		kWh	per unit	PSE-deemed	Engineering	$19.00		5	Comm Lighting
Agriculture Direct Install	11050	SBDI: Lamp - LED - MR 16 - Warehouse	LED MR16: warehouse	Lighting	Lamp	1/1/17		61.00		kWh	per unit	PSE-deemed	Engineering	$19.00		5	Comm Lighting
Agriculture Direct Install	11051	SBDI: Lamp - LED - Omni - 11w - Assembly Church	11 watt omnidirectional LED: assembly or church	Lighting	Lamp	1/1/17		55.00		kWh	per unit	PSE-deemed	Engineering	$13.78		5	Comm Lighting
Agriculture Direct Install	11052	SBDI: Lamp - LED - Omni - 11w - Exterior	11 watt omnidirectional LED: exterior	Lighting	Lamp	1/1/17		123.00		kWh	per unit	PSE-deemed	Engineering	$13.78		5	Comm Lighting
Agriculture Direct Install	11053	SBDI: Lamp - LED - Omni - 11w - Grocery	11 watt omnidirectional LED: grocery	Lighting	Lamp	1/1/17		159.00		kWh	per unit	PSE-deemed	Engineering	$13.78		5	Comm Lighting
Agriculture Direct Install	11054	SBDI: Lamp - LED - Omni - 11w - Office	11 watt omnidirectional LED: office	Lighting	Lamp	1/1/17		91.00		kWh	per unit	PSE-deemed	Engineering	$13.78		5	Comm Lighting
Agriculture Direct Install	11055	SBDI: Lamp - LED - Omni - 11w - Other	11 watt omnidirectional LED: other	Lighting	Lamp	1/1/17		68.00		kWh	per unit	PSE-deemed	Engineering	$13.78		5	Comm Lighting
Agriculture Direct Install	11056	SBDI: Lamp - LED - Omni - 11w - Other Health	11 watt omnidirectional LED: other health	Lighting	Lamp	1/1/17		134.00		kWh	per unit	PSE-deemed	Engineering	$13.78		5	Comm Lighting
Agriculture Direct Install	11057	SBDI: Lamp - LED - Omni - 11w - Restaurant	11 watt omnidirectional LED: restaurant	Lighting	Lamp	1/1/17		109.00		kWh	per unit	PSE-deemed	Engineering	$13.78		5	Comm Lighting
Agriculture Direct Install	11058	SBDI: Lamp - LED - Omni - 11w - Retail	11 watt omnidirectional LED: retail	Lighting	Lamp	1/1/17		100.00		kWh	per unit	PSE-deemed	Engineering	$13.78		5	Comm Lighting
Agriculture Direct Install	11059	SBDI: Lamp - LED - Omni - 11w - School K12	11 wattomnidirectional LED: school K-12	Lighting	Lamp	1/1/17		70.00		kWh	per unit	PSE-deemed	Engineering	$13.78		5	Comm Lighting
Agriculture Direct Install	11037	SBDI: Lamp - LED - High Output - from 320w HID	High output LED lamp: replace 320 watt high intensity discharge lamp	Lighting	Lamp	1/1/16		928.00		kWh	per unit	PSE-deemed	Engineering	329.75		12	Comm Lighting
Agriculture Direct Install	11038	SBDI: Lamp - LED - High Output - from 400w HID	High output LED lamp: replace 400 watt high intensity discharge lamp	Lighting	Lamp	1/1/16		1,306.00		kWh	per unit	PSE-deemed	Engineering	329.75		12	Comm Lighting
Agriculture Direct Install	11039	SBDI: Lamp - LED - Low to Med Output - from 320w HID	Low to medium output LED lamp: replace 320 watt high intensity discharge lamp	Lighting	Lamp	1/1/16		1,298.00		kWh	per unit	PSE-deemed	Engineering	329.75		12	Comm Lighting
Agriculture Direct Install	11040	SBDI: Lamp - LED - Low to Med Output - from 400w HID	Low to medium output LED lamp: replace 400 watt high intensity discharge lamp	Lighting	Lamp	1/1/16		1,676.00		kWh	per unit	PSE-deemed	Engineering	329.75		12	Comm Lighting
Agriculture Direct Install	11060	SBDI: Lamp - LED - Omni - 11w - Warehouse	11 watt omnidirectional LED: warehouse	Lighting	Lamp	1/1/17		72.00		kWh	per unit	PSE-deemed	Engineering	$13.78		5	Comm Lighting
Agriculture Direct Install	11061	SBDI: Lamp - LED - Omni - 7w - Assembly Church	7 watt omnidirectional LED: assembly or church	Lighting	Lamp	1/1/17		35.00		kWh	per unit	PSE-deemed	Engineering	$13.78		5	Comm Lighting
Agriculture Direct Install	11062	SBDI: Lamp - LED - Omni - 7w - Exterior	7 watt omnidirectional LED: exterior	Lighting	Lamp	1/1/17		78.00		kWh	per unit	PSE-deemed	Engineering	$13.78		5	Comm Lighting
Agriculture Direct Install	11063	SBDI: Lamp - LED - Omni - 7w - Grocery	7 watt omnidirectional LED: grocery	Lighting	Lamp	1/1/17		101.00		kWh	per unit	PSE-deemed	Engineering	$13.78		5	Comm Lighting
Agriculture Direct Install	11064	SBDI: Lamp - LED - Omni - 7w - Office	7 watt omnidirectional LED: office	Lighting	Lamp	1/1/17		58.00		kWh	per unit	PSE-deemed	Engineering	$13.78		5	Comm Lighting
Agriculture Direct Install	11065	SBDI: Lamp - LED - Omni - 7w - Other	7 watt omnidirectional LED: other	Lighting	Lamp	1/1/17		43.00		kWh	per unit	PSE-deemed	Engineering	$13.78		5	Comm Lighting
Agriculture Direct Install	11066	SBDI: Lamp - LED - Omni - 7w - Other Health	7 watt omnidirectional LED: other health	Lighting	Lamp	1/1/17		85.00		kWh	per unit	PSE-deemed	Engineering	$13.78		5	Comm Lighting
Agriculture Direct Install	11067	SBDI: Lamp - LED - Omni - 7w - Restaurant	5 watt omnidirectional LED: restaurant	Lighting	Lamp	1/1/17		70.00		kWh	per unit	PSE-deemed	Engineering	$13.78		5	Comm Lighting
Agriculture Direct Install	11068	SBDI: Lamp - LED - Omni - 7w - Retail	7 watt omnidirectional LED: retail	Lighting	Lamp	1/1/17		64.00		kWh	per unit	PSE-deemed	Engineering	$13.78		5	Comm Lighting
Agriculture Direct Install	11069	SBDI: Lamp - LED - Omni - 7w - School K12	7 watt omnidirectional LED: school K-12	Lighting	Lamp	1/1/17		44.00		kWh	per unit	PSE-deemed	Engineering	$13.78		5	Comm Lighting
Agriculture Direct Install	11070	SBDI: Lamp - LED - Omni - 7w - Warehouse	7 watt omnidirectional LED: warehouse	Lighting	Lamp	1/1/17		46.00		kWh	per unit	PSE-deemed	Engineering	$13.78		5	Comm Lighting
Agriculture Direct Install	11071	SBDI: Lamp - LED - Par 20 - Assembly Church	Par 20 LED lamp: assembly or church	Lighting	Lamp	1/1/17		66.00		kWh	per unit	PSE-deemed	Engineering	$20.07		5	Comm Lighting
Agriculture Direct Install	11072	SBDI: Lamp - LED - Par 20 - Exterior	Par 20 LED lamp: exterior	Lighting	Lamp	1/1/17		147.00		kWh	per unit	PSE-deemed	Engineering	$20.07		5	Comm Lighting
Agriculture Direct Install	11073	SBDI: Lamp - LED - Par 20 - Grocery	Par 20 LED lamp: grocery	Lighting	Lamp	1/1/17		192.00		kWh	per unit	PSE-deemed	Engineering	$20.07		5	Comm Lighting
Agriculture Direct Install	11074	SBDI: Lamp - LED - Par 20 - Office	Par 20 LED lamp: office	Lighting	Lamp	1/1/17		110.00		kWh	per unit	PSE-deemed	Engineering	$20.07		5	Comm Lighting
Agriculture Direct Install	11075	SBDI: Lamp - LED - Par 20 - Other	Par 20 LED lamp: other	Lighting	Lamp	1/1/17		82.00		kWh	per unit	PSE-deemed	Engineering	$20.07		5	Comm Lighting
Agriculture Direct Install	11076	SBDI: Lamp - LED - Par 20 - Other Health	Par 20 LED lamp: other health	Lighting	Lamp	1/1/17		161.00		kWh	per unit	PSE-deemed	Engineering	$20.07		5	Comm Lighting
Agriculture Direct Install	11077	SBDI: Lamp - LED - Par 20 - Restaurant	Par 20 LED lamp: restaurant	Lighting	Lamp	1/1/17		131.00		kWh	per unit	PSE-deemed	Engineering	$20.07		5	Comm Lighting
Agriculture Direct Install	11078	SBDI: Lamp - LED - Par 20 - Retail	Par 20 LED lamp: retail	Lighting	Lamp	1/1/17		120.00		kWh	per unit	PSE-deemed	Engineering	$20.07		5	Comm Lighting
Agriculture Direct Install	11079	SBDI: Lamp - LED - Par 20 - School K12	Par 20 LED lamp: school K-12	Lighting	Lamp	1/1/17		84.00		kWh	per unit	PSE-deemed	Engineering	$20.07		5	Comm Lighting
Agriculture Direct Install	11080	SBDI: Lamp - LED - Par 20 - Warehouse	Par 20 LED lamp: warehouse	Lighting	Lamp	1/1/17		87.00		kWh	per unit	PSE-deemed	Engineering	$20.07		5	Comm Lighting

Exhibit 5

2016-2017 Measure Values

Program Name	DSMC ID	Measure Name	Description	Measure Category	Measure Type	Version Start Date	Version End Date	Unit Savings - kWh	Unit Savings - Therm	Savings UOM Type	Unit Type	Source of Savings Type	PSE-Deemed Type	Unit Incentive - kWh	Unit Incentive Therm	Measure Life	End Use
Agriculture Direct Install	11081	SBDI: Lamp - LED - Par 30 - Assembly Church	Par 30 LED lamp: assembly or church	Lighting	Lamp	1/1/17		57.00		kWh	per unit	PSE-deemed	Engineering	$22.41		5	Comm Lighting
Agriculture Direct Install	11082	SBDI: Lamp - LED - Par 30 - Exterior	Par 30 LED lamp: exterior	Lighting	Lamp	1/1/17		126.00		kWh	per unit	PSE-deemed	Engineering	$22.41		5	Comm Lighting
Agriculture Direct Install	11083	SBDI: Lamp - LED - Par 30 - Grocery	Par 30 LED lamp: grocery	Lighting	Lamp	1/1/17		163.00		kWh	per unit	PSE-deemed	Engineering	$22.41		5	Comm Lighting
Agriculture Direct Install	11084	SBDI: Lamp - LED - Par 30 - Office	Par 30 LED lamp: office	Lighting	Lamp	1/1/17		93.00		kWh	per unit	PSE-deemed	Engineering	$22.41		5	Comm Lighting
Agriculture Direct Install	11085	SBDI: Lamp - LED - Par 30 - Other	Par 30 LED lamp: other	Lighting	Lamp	1/1/17		70.00		kWh	per unit	PSE-deemed	Engineering	$22.41		5	Comm Lighting
Agriculture Direct Install	11086	SBDI: Lamp - LED - Par 30 - Other Health	Par 30 LED lamp: other health	Lighting	Lamp	1/1/17		137.00		kWh	per unit	PSE-deemed	Engineering	$22.41		5	Comm Lighting
Agriculture Direct Install	11087	SBDI: Lamp - LED - Par 30 - Restaurant	Par 30 LED lamp: restaurant	Lighting	Lamp	1/1/17		112.00		kWh	per unit	PSE-deemed	Engineering	$22.41		5	Comm Lighting
Agriculture Direct Install	11088	SBDI: Lamp - LED - Par 30 - Retail	Par 30 LED lamp: retail	Lighting	Lamp	1/1/17		103.00		kWh	per unit	PSE-deemed	Engineering	$22.41		5	Comm Lighting
Agriculture Direct Install	11089	SBDI: Lamp - LED - Par 30 - School K12	Par 30 LED lamp: school K-12	Lighting	Lamp	1/1/17		71.00		kWh	per unit	PSE-deemed	Engineering	$22.41		5	Comm Lighting
Agriculture Direct Install	11090	SBDI: Lamp - LED - Par 30 - Warehouse	Par 30 LED lamp: warehouse	Lighting	Lamp	1/1/17		74.00		kWh	per unit	PSE-deemed	Engineering	$22.41		5	Comm Lighting
Agriculture Direct Install	11091	SBDI: Lamp - LED - Par 38 or 40 - Assembly Church	Par 38 or 40 LED lamp: assembly or church	Lighting	Lamp	1/1/17		76.00		kWh	per unit	PSE-deemed	Engineering	$30.78		5	Comm Lighting
Agriculture Direct Install	11092	SBDI: Lamp - LED - Par 38 or 40 - Exterior	Par 38 or 40 LED lamp: exterior	Lighting	Lamp	1/1/17		170.00		kWh	per unit	PSE-deemed	Engineering	$30.78		5	Comm Lighting
Agriculture Direct Install	11093	SBDI: Lamp - LED - Par 38 or 40 - Grocery	Par 38 or 40 LED lamp: grocery	Lighting	Lamp	1/1/17		221.00		kWh	per unit	PSE-deemed	Engineering	$30.78		5	Comm Lighting
Agriculture Direct Install	11094	SBDI: Lamp - LED - Par 38 or 40 - Office	Par 38 or 40 LED lamp: office	Lighting	Lamp	1/1/17		126.00		kWh	per unit	PSE-deemed	Engineering	$30.78		5	Comm Lighting
Agriculture Direct Install	11095	SBDI: Lamp - LED - Par 38 or 40 - Other	Par 38 or 40 LED lamp: other	Lighting	Lamp	1/1/17		95.00		kWh	per unit	PSE-deemed	Engineering	$30.78		5	Comm Lighting
Agriculture Direct Install	11096	SBDI: Lamp - LED - Par 38 or 40 - Other Health	Par 38 or 40 LED lamp: other health	Lighting	Lamp	1/1/17		185.00		kWh	per unit	PSE-deemed	Engineering	$30.78		5	Comm Lighting
Agriculture Direct Install	11097	SBDI: Lamp - LED - Par 38 or 40 - Restaurant	Par 38 or 40 LED lamp: restaurant	Lighting	Lamp	1/1/17		151.00		kWh	per unit	PSE-deemed	Engineering	$30.78		5	Comm Lighting
Agriculture Direct Install	11098	SBDI: Lamp - LED - Par 38 or 40 - Retail	Par 38 or 40 LED lamp: retail	Lighting	Lamp	1/1/17		139.00		kWh	per unit	PSE-deemed	Engineering	$30.78		5	Comm Lighting
Agriculture Direct Install	11099	SBDI: Lamp - LED - Par 38 or 40 - School K12	Par 38 or 40 LED lamp: school K-12	Lighting	Lamp	1/1/17		96.00		kWh	per unit	PSE-deemed	Engineering	$30.78		5	Comm Lighting
Agriculture Direct Install	11100	SBDI: Lamp - LED - Par 38 or 40 - Warehouse	Par 38 or 40 LED lamp: warehouse	Lighting	Lamp	1/1/17		100.00		kWh	per unit	PSE-deemed	Engineering	$30.78		5	Comm Lighting
Agriculture Direct Install	11103	SBDI: Lamp - T8 - 4 ft - 4x - from 4 ft T12 HO 4x	4-lamp 4' T8: replace 4-lamp 4' high output T12	Lighting	Lamp	1/1/17		634.00		kWh	per unit	PSE-deemed	Engineering	$52.82		12	Comm Lighting
Agriculture Direct Install	11104	SBDI: Lamp - T8 - DLR - 4 ft - 2x - from 4 ft T12 HO 4x	2-lamp 4' T8: replace 4-lamp 4' high output T12	Lighting	Fixture	1/1/17		792.00		kWh	per unit	PSE-deemed	Engineering	$62.01		12	Comm Lighting
Agriculture Direct Install	11105	SBDI: Lamp - T8 - HBF - 4 ft - 6x- from 400w HID	6-lamp 4' T8 high ballast factor: replace 400 watt high intensity discharge	Lighting	Lamp	1/1/17		884.00		kWh	per unit	PSE-deemed	Engineering	$239.32		12	Comm Lighting
Agriculture Direct Install	11107	SBDI: Lamp - TLED - 3 ft - 1x - from 3 ft T12 1x	1-lamp 3'; tubular LED: replace 3' 1-lamp T12	Lighting	Lamp	1/1/17		92.00		kWh	per unit	PSE-deemed	Engineering	$19.07		12	Comm Lighting
Agriculture Direct Install	11108	SBDI: Lamp - TLED - 4 ft - 1x - from 4 ft T12 1x	1-lamp 4' tubular LED: replace 1-lamp 4' T12	Lighting	Lamp	1/1/17		79.00		kWh	per unit	PSE-deemed	Engineering	$29.30		12	Comm Lighting
Agriculture Direct Install	11109	SBDI: Lamp - TLED - 4 ft - 1x - from 4 ft T8 28w LLO 1x	1-lamp 4' tubular LED: replace 1-lamp; low light output; 28 watt T8	Lighting	Lamp	1/1/17		26.00		kWh	per unit	PSE-deemed	Engineering	$29.30		12	Comm Lighting
Agriculture Direct Install	11114	SBDI: Lamp - TLED - 4 ft - 2x - from 4 ft T12 2x	2-lamp 4' tubular LED: replace 2-lamp; 4' T12	Lighting	Lamp	1/1/17		158.00		kWh	per unit	PSE-deemed	Engineering	$41.30		12	Comm Lighting
Agriculture Direct Install	11115	SBDI: Lamp - TLED - 4 ft - 2x - from 4 ft T12 HO 2x	2-lamp 4' tubular LED: replace 2-lamp; 4' high output T12	Lighting	Lamp	1/1/17		389.00		kWh	per unit	PSE-deemed	Engineering	$33.17		12	Comm Lighting
Agriculture Direct Install	11118	SBDI: Lamp - TLED - 4 ft - 2x - from 4 ft T8 32w HLO 2x	2-lamp 4' tubular LED: replace 2-lamp; 4' 32 watt high light output T8	Lighting	Lamp	1/1/17		152.00		kWh	per unit	PSE-deemed	Engineering	$42.83		12	Comm Lighting
Agriculture Direct Install	11120	SBDI: Lamp - TLED - 4 ft - 2x - from 4 ft T8 32w NLO 2x	2-lamp 4' tubular LED: replace 2-lamp; 4' 32 watt normal light output T8	Lighting	Lamp	1/1/17		92.00		kWh	per unit	PSE-deemed	Engineering	$42.83		12	Comm Lighting
Agriculture Direct Install	11121	SBDI: Lamp - TLED - 4 ft - 3x - from 4 ft T12 HO 3x	3-lamp 4' tubular LED: replace 3-lamp 4' high output T12	Lighting	Lamp	1/1/17		584.00		kWh	per unit	PSE-deemed	Engineering	$40.55		12	Comm Lighting
Agriculture Direct Install	11122	SBDI: Lamp - TLED - 4 ft - 3x - from 4 ft T8 28w LLO 3x	3-lamp 4' tubular LED: replace 3-lamp 4' 28 watt low light output T8	Lighting	Lamp	1/1/17		79.00		kWh	per unit	PSE-deemed	Engineering	$37.51		12	Comm Lighting
Agriculture Direct Install	10994	SBDI: Lamp - TLED - 4 ft - 3x - from 4 ft T8 32w HLO 3x	3-lamp 4' tubular LED: replace 3-lamp 4' 32 watt high light output T8	Lighting	Lamp	1/1/17		228.00		kWh	per unit	PSE-deemed	Engineering	$51.60		12	Comm Lighting
Agriculture Direct Install	11127	SBDI: Lamp - TLED - 4 ft - 3x from 4 ft T12 3x	3-lamp 4' tubular LED: replace 3-lamp 4' T12	Lighting	Lamp	1/1/17		238.00		kWh	per unit	PSE-deemed	Engineering	$56.56		12	Comm Lighting
Agriculture Direct Install	11128	SBDI: Lamp - TLED - 4 ft - 4x - from 4 ft T12 4x	4-lamp 4' tubular LED: replace 4-lamp 4' T12	Lighting	Lamp	1/1/17		317.00		kWh	per unit	PSE-deemed	Engineering	$65.32		12	Comm Lighting
Agriculture Direct Install	11129	SBDI: Lamp - TLED - 4 ft - 4x - from 4 ft T12 HO 4x	4-lamp 4' tubular LED: replace 4-lamp 4' high output T12	Lighting	Lamp	1/1/17		779.00		kWh	per unit	PSE-deemed	Engineering	$44.66		12	Comm Lighting
Agriculture Direct Install	11131	SBDI: Lamp - TLED - 4 ft - 4x - from 4 ft T8 28w NLO 4x	4-lamp 4' tubular LED: replace 4-lamp 4' 28 watt normal light output T8	Lighting	Lamp	1/1/17		145.00		kWh	per unit	PSE-deemed	Engineering	$60.93		12	Comm Lighting
Agriculture Direct Install	11132	SBDI: Lamp - TLED - 4 ft - 4x - from 4 ft T8 32w HLO 4x	4-lamp 4' tubular LED: replace 4-lamp 4' 32 watt high light output T8	Lighting	Lamp	1/1/17		304.00		kWh	per unit	PSE-deemed	Engineering	$60.93		12	Comm Lighting
Agriculture Direct Install	11133	SBDI: Lamp - TLED - 4 ft - 4x - from 4 ft T8 32w LLO 4x	4-lamp 4' tubular LED: replace 4-lamp 4' 32 watt low light output T8	Lighting	Lamp	1/1/17		145.00		kWh	per unit	PSE-deemed	Engineering	$60.93		12	Comm Lighting
Agriculture Direct Install	11101	SBDI: Lamp - T8 - 4 ft - 3x - from 4 ft T12 3x	3-lamp 4' T8: replace 3-lamp 4' T12	Lighting	Lamp	1/1/16			129.00	kWh	per unit	PSE-deemed	Engineering	44.25		12	Comm Lighting
Agriculture Direct Install	11102	SBDI: Lamp - T8 - 4 ft - 4x - from 4 ft T12 4x	4-lamp 4' T8: replace 4-lamp 4' T12	Lighting	Lamp	1/1/16			172.00	kWh	per unit	PSE-deemed	Engineering	52.82		12	Comm Lighting
Agriculture Direct Install	11134	SBDI: Lamp - TLED - 4 ft - 4x - from 4 ft T8 32w NLO 4x	4-lamp 4' tubular LED: replace 4-lamp 4' 32 watt normal light output T8	Lighting	Lamp	1/1/17		185.00		kWh	per unit	PSE-deemed	Engineering	$60.93		12	Comm Lighting
Agriculture Direct Install	11136	SBDI: LED Open Sign	LED open sign	Lighting	Signage	1/1/17		396.00		kWh	per unit	PSE-deemed	Engineering	$130.65		16	Comm Lighting
Agriculture Direct Install	11106	SBDI: Lamp - TLED - 3 ft - 1x - from 3 ft 1x T8 25w	1-lamp 3'; tubular LED: replace 3' 1-lamp 25 watt T8	Lighting	Lamp	1/1/16			43.00	kWh	per unit	PSE-deemed	Engineering	19.07		12	Comm Lighting
Agriculture Direct Install	11110	SBDI: Lamp - TLED - 4 ft - 1x - from 4 ft T8 28w NLO 1x	1-lamp 4' tubular LED: replace 1-lamp; normal light output; 28 watt T8	Lighting	Lamp	1/1/16			36.00	kWh	per unit	PSE-deemed	Engineering	29.30		12	Comm Lighting
Agriculture Direct Install	11111	SBDI: Lamp - TLED - 4 ft - 1x - from 4ft T8 32w HLO 1x	1-lamp 4' tubular LED: replace 1-lamp; high light output; 32 watt T8	Lighting	Lamp	1/1/16			76.00	kWh	per unit	PSE-deemed	Engineering	29.30		12	Comm Lighting

Exhibit 5

2016-2017 Measure Values

Program Name	DSMC ID	Measure Name	Description	Measure Category	Measure Type	Version Start Date	Version End Date	Unit Savings - kWh	Unit Savings - Therm	Savings UOM Type	Unit Type	Source of Savings Type	PSE-Deemed Type	Unit Incentive - kWh	Unit Incentive Therm	Measure Life	End Use
Agriculture Direct Install	11112	SBDI: Lamp - TLED - 4 ft - 1x - from 4ft T8 32w LLO 1x	1-lamp 4' tubular LED: replace 1-lamp; low light output; 32 watt T8	Lighting	Lamp	1/1/16		36.00		kWh	per unit	PSE-deemed	Engineering	29.30		12	Comm Lighting
Agriculture Direct Install	11113	SBDI: Lamp - TLED - 4 ft - 1x - from 4ft T8 32w NLO 1x	1-lamp 4' tubular LED: replace 1-lamp; normal light output; 32 watt T8	Lighting	Lamp	1/1/16		46.00		kWh	per unit	PSE-deemed	Engineering	29.30		12	Comm Lighting
Agriculture Direct Install	11116	SBDI: Lamp - TLED - 4 ft - 2x - from 4 ft T8 28w LLO 2x	2-lamp 4' tubular LED: replace 2-lamp; 4' 28 watt low light output T8	Lighting	Lamp	1/1/16		53.00		kWh	per unit	PSE-deemed	Engineering	29.30		12	Comm Lighting
Agriculture Direct Install	11117	SBDI: Lamp - TLED - 4 ft - 2x - from 4 ft T8 28w NLO 2x	2-lamp 4' tubular LED: replace 2-lamp; 4' 28 watt normal light output T8	Lighting	Lamp	1/1/16		73.00		kWh	per unit	PSE-deemed	Engineering	29.30		12	Comm Lighting
Agriculture Direct Install	11119	SBDI: Lamp - TLED - 4 ft - 2x - from 4 ft T8 32w LLO 2x	2-lamp 4' tubular LED: replace 2-lamp; 4' 32 watt low light output T8	Lighting	Lamp	1/1/16		73.00		kWh	per unit	PSE-deemed	Engineering	29.30		12	Comm Lighting
Agriculture Direct Install	11123	SBDI: Lamp - TLED - 4 ft - 3x - from 4 ft T8 28w NLO 3x	3-lamp 4' tubular LED: replace 3-lamp 4' 28 watt normal light output T8	Lighting	Lamp	1/1/16		109.00		kWh	per unit	PSE-deemed	Engineering	37.51		12	Comm Lighting
Agriculture Direct Install	11124	SBDI: Lamp - TLED - 4 ft - 3x - from 4 ft T8 32w LLO 3x	3-lamp 4' tubular LED: replace 3-lamp 4' 32 watt low light output T8	Lighting	Lamp	1/1/16		109.00		kWh	per unit	PSE-deemed	Engineering	51.60		12	Comm Lighting
Agriculture Direct Install	11126	SBDI: Lamp - TLED - 4 ft - 3x - from 4 ft T8 32w NLO 3x	3-lamp 4' tubular LED: replace 3-lamp 4' 32 watt normal light output T8	Lighting	Lamp	1/1/16		139.00		kWh	per unit	PSE-deemed	Engineering	51.60		12	Comm Lighting
Agriculture Direct Install	11130	SBDI: Lamp - TLED - 4 ft - 4x - from 4 ft T8 28w LLO 4x	4-lamp 4' tubular LED: replace 4-lamp 4' 28 watt low light output T8	Lighting	Lamp	1/1/16		106.00		kWh	per unit	PSE-deemed	Engineering	60.93		12	Comm Lighting
Agriculture Direct Install	11137	SBDI: Occupancy Sensor - 100w to 150w	Occupancy sensor: contolling 100 watt to 150 watt	Controls	Occupancy Sensor	1/1/16		120.00		kWh	per unit	PSE-deemed	Engineering	68.00		10	Comm Lighting
Agriculture Direct Install	11138	SBDI: Occupancy Sensor - 151w to 200w	Occupancy sensor: controlling 151 watt to 200 watt	Controls	Occupancy Sensor	1/1/16		167.00		kWh	per unit	PSE-deemed	Engineering	68.00		10	Comm Lighting
Agriculture Direct Install	11139	SBDI: Occupancy Sensor - 201w to 450w	Occupancy sensor: controlling 201 watt to 450 watt	Controls	Occupancy Sensor	1/1/16		311.00		kWh	per unit	PSE-deemed	Engineering	68.00		10	Comm Lighting
Agriculture Direct Install	11140	SBDI: Occupancy Sensor - Less than 100w	Occupancy sensor: controlling less than 100 watt	Controls	Occupancy Sensor	1/1/16		48.00		kWh	per unit	PSE-deemed	Engineering	68.00		10	Comm Lighting
Agriculture Direct Install	11141	SBDI: Occupancy Sensor - over 450w	Occupancy sensor: controlling over 450 watt	Controls	Occupancy Sensor	1/1/16		478.00		kWh	per unit	PSE-deemed	Engineering	68.00		10	Comm Lighting
Agriculture Direct Install	11142	SBDI: Open Case Lighting - LED - High - from 4ft T12	High-power LED open case lighting: replace 4' T12	Lighting	Display Lighting	1/1/16		301.00		kWh	per unit	RTF-deemed		58.55		11	Comm Lighting
Agriculture Direct Install	11143	SBDI: Open Case Lighting - LED - High - from 4ft T8	High-power LED open case lighting: replace 4' T8	Lighting	Display Lighting	1/1/16		179.00		kWh	per unit	RTF-deemed		41.82		11	Comm Lighting
Agriculture Direct Install	11144	SBDI: Open Case Lighting - LED - High - from 5ft T12	High-power LED open case lighting: replace 5' T12	Lighting	Display Lighting	1/1/16		376.00		kWh	per unit	RTF-deemed		58.55		11	Comm Lighting
Agriculture Direct Install	11145	SBDI: Open Case Lighting - LED - High - from 5ft T8	High-power LED open case lighting: replace 5' T8	Lighting	Display Lighting	1/1/16		223.00		kWh	per unit	RTF-deemed		41.82		11	Comm Lighting
Agriculture Direct Install	11146	SBDI: Open Case Lighting - LED - High - from 6ft T12	High-power LED open case lighting: replace 6' T12	Lighting	Display Lighting	1/1/16		451.00		kWh	per unit	RTF-deemed		78.15		11	Comm Lighting
Agriculture Direct Install	11147	SBDI: Open Case Lighting - LED - High - from 6ft T8	High-power LED open case lighting: replace 6' T8	Lighting	Display Lighting	1/1/16		268.00		kWh	per unit	RTF-deemed		55.82		11	Comm Lighting
Agriculture Direct Install	11148	SBDI: Open Case Lighting - LED - Low - from 4ft T12	Low-power LED open case lighting: replace 4' T12	Lighting	Display Lighting	1/1/16		170.00		kWh	per unit	RTF-deemed		58.55		11	Comm Lighting
Agriculture Direct Install	11149	SBDI: Open Case Lighting - LED - Low - from 4ft T8	Low-power LED open case lighting: replace 4' T8	Lighting	Display Lighting	1/1/16		98.00		kWh	per unit	RTF-deemed		41.82		11	Comm Lighting
Agriculture Direct Install	11150	SBDI: Open Case Lighting - LED - Low - from 5ft T12	Low-power LED open case lighting: replace 5' T12	Lighting	Display Lighting	1/1/16		212.00		kWh	per unit	RTF-deemed		58.55		11	Comm Lighting
Agriculture Direct Install	11151	SBDI: Open Case Lighting - LED - Low - from 5ft T8	Low-power LED open case lighting: replace 5' T8	Lighting	Display Lighting	1/1/16		122.00		kWh	per unit	RTF-deemed		41.82		11	Comm Lighting
Agriculture Direct Install	11152	SBDI: Open Case Lighting - LED - Low - from 6ft T12	Low-power LED open case lighting: replace 6' T12	Lighting	Display Lighting	1/1/16		255.00		kWh	per unit	RTF-deemed		78.15		11	Comm Lighting
Agriculture Direct Install	11153	SBDI: Open Case Lighting - LED - Low - from 6ft T8	Low-power LED open case lighting: replace 6' T8	Lighting	Display Lighting	1/1/16		147.00		kWh	per unit	RTF-deemed		55.82		11	Comm Lighting
Agriculture Direct Install	11154	SBDI: Open Case Lighting - T12 - Delamp - 4 ft	4' T12 open case lighting delamp	Lighting	Display Lighting	1/1/16		226.00		kWh	per unit	RTF-deemed		58.55		11	Comm Lighting
Agriculture Direct Install	11155	SBDI: Open Case Lighting - T12 - Delamp - 5 ft	5' T12 open case lighting delamp	Lighting	Display Lighting	1/1/16		282.00		kWh	per unit	RTF-deemed		58.55		11	Comm Lighting
Agriculture Direct Install	11156	SBDI: Open Case Lighting - T12 - Delamp - 6 ft	6' T12 open case lighting delamp	Lighting	Display Lighting	1/1/16		339.00		kWh	per unit	RTF-deemed		78.15		11	Comm Lighting
Agriculture Direct Install	11157	SBDI: Open Case Lighting - T8 - Delamp - 4 ft	4' T8 open case lighting delamp	Lighting	Display Lighting	1/1/16		165.00		kWh	per unit	RTF-deemed		41.82		11	Comm Lighting
Agriculture Direct Install	11158	SBDI: Open Case Lighting - T8 - Delamp - 5 ft	5' T8 open case lighting delamp	Lighting	Display Lighting	1/1/16		206.00		kWh	per unit	RTF-deemed		41.82		11	Comm Lighting
Agriculture Direct Install	11159	SBDI: Open Case Lighting - T8 - Delamp - 6 ft	6' T8 open case lighting delamp	Lighting	Display Lighting	1/1/16		247.00		kWh	per unit	RTF-deemed		55.82		11	Comm Lighting
Agriculture Direct Install	11160	SBDI: Power Strip - Advanced	Advanced power strip	Controls	Advanced Power Strip	1/1/16		118.00		kWh	per unit	RTF-deemed		40.00		4	Comm Flat
Agriculture Direct Install	11161	SBDI: Reach In Case Lighting - LED - Low - from 4ft T12	Low-temperature LED reach-in case lighting: replace 4' T12	Lighting	Display Lighting	1/1/16		302.00		kWh	per unit	RTF-deemed		58.55		11	Comm Lighting
Agriculture Direct Install	11162	SBDI: Reach In Case Lighting - LED - Low - from 4ft T8	Low-temperature LED reach-in case lighting: replace 4' T8	Lighting	Display Lighting	1/1/16		206.00		kWh	per unit	RTF-deemed		41.82		11	Comm Lighting
Agriculture Direct Install	11163	SBDI: Reach In Case Lighting - LED - Low - from 5ft T12	Low-temperature LED reach-in case lighting: replace 5' T12	Lighting	Display Lighting	1/1/16		378.00		kWh	per unit	RTF-deemed		58.55		11	Comm Lighting
Agriculture Direct Install	11164	SBDI: Reach In Case Lighting - LED - Low - from 5ft T8	Low-temperature LED reach-in case lighting: replace 5' T8	Lighting	Display Lighting	1/1/16		258.00		kWh	per unit	RTF-deemed		41.82		11	Comm Lighting
Agriculture Direct Install	11165	SBDI: Reach In Case Lighting - LED - Low - from 6ft T12	Low-temperature LED reach-in case lighting: replace 6' T12	Lighting	Display Lighting	1/1/16		453.00		kWh	per unit	RTF-deemed		78.15		11	Comm Lighting
Agriculture Direct Install	11166	SBDI: Reach In Case Lighting - LED - Low - from 6ft T8	Low-temperature LED reach-in case lighting: replace 6' T8	Lighting	Display Lighting	1/1/16		309.00		kWh	per unit	RTF-deemed		55.82		11	Comm Lighting
Agriculture Direct Install	11167	SBDI: Reach In Case Lighting - LED - Med - from 4ft T12	Medium-temperature LED reach-in case lighting: replace 4' T12	Lighting	Display Lighting	1/1/16		222.00		kWh	per unit	RTF-deemed		58.55		11	Comm Lighting
Agriculture Direct Install	11168	SBDI: Reach In Case Lighting - LED - Med - from 4ft T8	Medium-temperature LED reach-in case lighting: replace 4' T8	Lighting	Display Lighting	1/1/16		152.00		kWh	per unit	RTF-deemed		41.82		11	Comm Lighting
Agriculture Direct Install	11169	SBDI: Reach In Case Lighting - LED - Med - from 5ft T12	Medium-temperature LED reach-in case lighting: replace 5' T12	Lighting	Display Lighting	1/1/16		278.00		kWh	per unit	RTF-deemed		58.55		11	Comm Lighting
Agriculture Direct Install	11170	SBDI: Reach In Case Lighting - LED - Med - from 5ft T8	Medium-temperature LED reach-in case lighting: replace 5' T8	Lighting	Display Lighting	1/1/16		190.00		kWh	per unit	RTF-deemed		41.82		11	Comm Lighting
Agriculture Direct Install	11171	SBDI: Reach In Case Lighting - LED - Med - from 6ft T12	Medium-temperature LED reach-in case lighting: replace 6' T12	Lighting	Display Lighting	1/1/16		333.00		kWh	per unit	RTF-deemed		78.15		11	Comm Lighting
Agriculture Direct Install	11172	SBDI: Reach In Case Lighting - LED - Med - from 6ft T8	Medium-temperature LED reach-in case lighting: replace 6' T8	Lighting	Display Lighting	1/1/16		228.00		kWh	per unit	RTF-deemed		55.82		11	Comm Lighting
Agriculture Direct Install	10951	SBDI: Sealing - Auto Closer - Reach In Glass Doors - Low Temp - E	Auto closer: reach-in glass doors; low temperature; electric heating	Refrigeration	Sealing	1/1/16		343.00		kWh	per unit	RTF-deemed		133.28		8	Comm Refrigeration
Agriculture Direct Install	11174	SBDI: Sealing - Auto Closer - Reach In Glass Doors - Low Temp - NG - EIE	Auto closer: reach-in glass doors; low temperature; natural gas heating; electric interactive effect	Refrigeration	Sealing	1/1/16		336.00		kWh	per unit	RTF-deemed		133.28		8	Comm Refrigeration

Exhibit 5 2016-2017 Measure Values

Program Name	DSMC ID	Measure Name	Description	Measure Category	Measure Type	Version Start Date	Version End Date	Unit Savings - kWh	Unit Savings - Therm	Savings UOM Type	Unit Type	Source of Savings Type	PSE-Deemed Type	Unit Incentive - kWh	Unit Incentive Therm	Measure Life	End Use
Agriculture Direct Install	11175	SBDI: Sealing - Auto Closer - Reach In Glass Doors - Med Temp - E	Auto closer: reach-in glass doors; medium temperature; electric heating	Refrigeration	Sealing	1/1/16		252.00		kWh	per unit	RTF-deemed		133.28		8	Comm Refrigeration
Agriculture Direct Install	11177	SBDI: Sealing - Auto Closer - Reach In Glass Doors - Med Temp - NG - EIE	Auto closer: reach-in glass doors; medium temperature; natural gas heating; electric interactive effect	Refrigeration	Sealing	1/1/16		250.00		kWh	per unit	RTF-deemed		133.28		8	Comm Refrigeration
Agriculture Direct Install	11178	SBDI: Sealing - Auto Closer - Walk In Doors - Low Temp - E	Auto closer: walk-in doors; low temperature; electric heating	Refrigeration	Sealing	1/1/16		2,836.00		kWh	per unit	RTF-deemed		133.28		8	Comm Refrigeration
Agriculture Direct Install	11180	SBDI: Sealing - Auto Closer - Walk In Doors - Low Temp - NG - EIE	Auto closer: walk-in doors; low temperature; natural gas heating; electric interactive effect	Refrigeration	Sealing	1/1/16		2,809.00		kWh	per unit	RTF-deemed		133.28		8	Comm Refrigeration
Agriculture Direct Install	11181	SBDI: Sealing - Auto Closer - Walk In Doors - Med Temp - E	Auto closer: walk-in doors; medium temperature; electric heating	Refrigeration	Sealing	1/1/16		223.00		kWh	per unit	RTF-deemed		133.28		8	Comm Refrigeration
Agriculture Direct Install	11183	SBDI: Sealing - Auto Closer - Walk In Doors - Med Temp - NG - EIE	Auto closer: walk-in doors; medium temperature; natural gas heating; electric interactive effect	Refrigeration	Sealing	1/1/16		221.00		kWh	per unit	RTF-deemed		133.28		8	Comm Refrigeration
Agriculture Direct Install	11184	SBDI: Sealing - Gasket - Reach In Glass Door - Low Temp - E	Reach-in glass door gasket: low temperature per door; electric heating	Refrigeration	Sealing	1/1/16		243.00		kWh	per unit	RTF-deemed		72.90		4	Comm Refrigeration
Agriculture Direct Install	11186	SBDI: Sealing - Gasket - Reach In Glass Door - Med Temp - E	Reach-in glass door gasket: medium temperature per door; electric heating	Refrigeration	Sealing	1/1/16		248.00		kWh	per unit	RTF-deemed		74.40		4	Comm Refrigeration
Agriculture Direct Install	11188	SBDI: Sealing - Gasket - Walk In Cooler Door- Main - E	Walk-in cooler gasket: main door per door; electric heating	Refrigeration	Sealing	1/1/16		204.00		kWh	per unit	RTF-deemed		61.20		4	Comm Refrigeration
Agriculture Direct Install	11190	SBDI: Sealing - Gasket - Walk In Freezer Door - Main - E	Walk-in freezer gasket: main door per door; electric heating	Refrigeration	Sealing	1/1/16		347.00		kWh	per unit	RTF-deemed		104.10		4	Comm Refrigeration
Agriculture Direct Install	11192	SBDI: Sealing - Night Cover - Produce - High Temp - 30F to 55F - E	Night cover for produce displays: high temperature; 30F to 55F; electric heating	Refrigeration	Sealing	1/1/16		86.40		kWh	per unit	PSE-deemed	Engineering	42.14		5	Comm Refrigeration
Agriculture Direct Install	11193	SBDI: Sealing - Night Cover - Produce - High Temp - 30F to 55F - HP	Night cover for produce displays: high temperature; 30F to 55F; heat pump	Refrigeration	Sealing	1/1/16		48.70		kWh	per unit	PSE-deemed	Engineering	42.14		5	Comm Refrigeration
Agriculture Direct Install	11195	SBDI: Sealing - Night Cover - Produce - High Temp - 30F to 55F - NG	Night cover for produce displays: high temperature; 30F to 55F; natural gas heating	Refrigeration	Sealing	1/1/16		21.90		kWh	per unit	PSE-deemed	Engineering	42.14		5	Comm Refrigeration
Agriculture Direct Install	11196	SBDI: Sealing - Night Cover - Produce - High Temp - 30F to 55F - Unknown	Night cover for produce displays: high temperature; 30F to 55F; unknown heating	Refrigeration	Sealing	1/1/16		21.90		kWh	per unit	PSE-deemed	Engineering	42.14		5	Comm Refrigeration
Agriculture Direct Install	11197	SBDI: Sealing - Night Cover - Produce - Low Temp - Neg 35F to 0F - E	Night cover for produce displays: high temperature; 30F to 55F; electric heating	Refrigeration	Sealing	1/1/16		129.80		kWh	per unit	PSE-deemed	Engineering	42.14		5	Comm Refrigeration
Agriculture Direct Install	11198	SBDI: Sealing - Night Cover - Produce - Low Temp - Neg 35F to 0F - HP	Night cover for produce displays: high temperature; 30F to 55F; heat pump	Refrigeration	Sealing	1/1/16		92.50		kWh	per unit	PSE-deemed	Engineering	42.14		5	Comm Refrigeration
Agriculture Direct Install	11200	SBDI: Sealing - Night Cover - Produce - Low Temp - Neg 35F to 0F - NG	Night cover for produce displays: low temperature; -35F to 0F; natural gas heating	Refrigeration	Sealing	1/1/16		65.70		kWh	per unit	PSE-deemed	Engineering	42.14		5	Comm Refrigeration
Agriculture Direct Install	11201	SBDI: Sealing - Night Cover - Produce - Low Temp - Neg 35F to 0F - Unknown	Night cover for produce displays: high temperature; 30F to 55F; unknown heating	Refrigeration	Sealing	1/1/16		65.70		kWh	per unit	PSE-deemed	Engineering	42.14		5	Comm Refrigeration
Agriculture Direct Install	11202	SBDI: Sealing - Night Cover - Produce - Med Temp - 0F to 30F - E	Night cover for produce displays: medium temperature; 0F to 30F; electric heating	Refrigeration	Sealing	1/1/16		130.20		kWh	per unit	PSE-deemed	Engineering	42.14		5	Comm Refrigeration
Agriculture Direct Install	11203	SBDI: Sealing - Night Cover - Produce - Med Temp - 0F to 30F - HP	Night cover for produce displays: medium temperature; 0F to 30F; heat pump	Refrigeration	Sealing	1/1/16		79.60		kWh	per unit	PSE-deemed	Engineering	42.14		5	Comm Refrigeration
Agriculture Direct Install	11205	SBDI: Sealing - Night Cover - Produce - Med Temp - 0F to 30F - NG	Night cover for produce displays: medium temperature; 0F to 30F; natural gas heating	Refrigeration	Sealing	1/1/16		43.80		kWh	per unit	PSE-deemed	Engineering	42.14		5	Comm Refrigeration
Agriculture Direct Install	11206	SBDI: Sealing - Night Cover - Produce - Med Temp - 0F to 30F - Unknown	Night cover for produce displays: medium temperature; 0F to 30F; unknown heating	Refrigeration	Sealing	1/1/16		43.80		kWh	per unit	PSE-deemed	Engineering	42.14		5	Comm Refrigeration
Agriculture Direct Install	11207	SBDI: Sealing - Strip Curtain - Cooler - Grocery	Cooler strip curtain: grocery	Refrigeration	Sealing	1/1/16		123.00		kWh	per unit	RTF-deemed		16.10		2	Comm Refrigeration
Agriculture Direct Install	11208	SBDI: Sealing - Strip Curtain - Freezer - Convenient Store	Freezer strip curtain: convenient store	Refrigeration	Sealing	1/1/16		31.00		kWh	per unit	RTF-deemed		10.50		2	Comm Refrigeration
Agriculture Direct Install	11209	SBDI: Sealing - Strip Curtain - Freezer - Grocery	Freezer strip curtain: grocery	Refrigeration	Sealing	1/1/16		535.00		kWh	per unit	RTF-deemed		16.10		2	Comm Refrigeration
Agriculture Direct Install	11210	SBDI: Sealing - Strip Curtain - Freezer - Restaurant	Freezer strip curtain: restaurant	Refrigeration	Sealing	1/1/16		129.00		kWh	per unit	RTF-deemed		16.10		2	Comm Refrigeration
Agriculture Direct Install	11212	SBDI: Showerhead - Any Comm - GWH - 1.5 gpm - EIE	1.5 gpm direct install showerhead: any commercial application; natural gas water heating; electric savings interactive effect	Water Heating	Showerhead	1/1/16		10.00		kWh	per unit	RTF-deemed		0.00		10	Comm Water Heat
Agriculture Direct Install	11213	SBDI: Showerhead - DI - Any Comm - EWH - 1.5 gpm	1.5 gpm direct install showerhead: any commercial application; electric water heating	Water Heating	Showerhead	1/1/16		228.00		kWh	per unit	RTF-deemed		23.80		10	Comm Water Heat
Agriculture Direct Install	11215	SBDI: Showerhead - DI - Fit Ctr - EWH - 1.5 gpm	1.5 gpm direct install showerhead: fitness center; electric water heating	Water Heating	Showerhead	1/1/16		4,288.00		kWh	per unit	RTF-deemed		23.80		10	Comm Water Heat
Agriculture Direct Install	11218	SBDI: Showerhead - Fit Ctr - GWH - 1.5 gpm - EIE	1.5 gpm direct install showerhead: fitness center; natural gas water heating; electric savings interactive effect	Water Heating	Showerhead	1/1/16		190.00		kWh	per unit	RTF-deemed		0.00		10	Comm Water Heat
Agriculture Direct Install	11219	SBDI: Sprayhead - EWH - 0.65 gpm - from 1.6	0.65 gpm sprayhead: previously 1.6 gpm; electric water heating	Water Heating	Sprayhead	1/1/16		890.00		kWh	per unit	RTF-deemed		76.30		4	Comm Water Heat
Agriculture Direct Install	11220	SBDI: Sprayhead - EWH - 0.65 gpm - from 2.2	0.65 gpm sprayhead: previously 2.2 gpm; electric water heating	Water Heating	Sprayhead	1/1/16		1,393.00		kWh	per unit	RTF-deemed		76.30		4	Comm Water Heat
Agriculture Direct Install	11221	SBDI: Sprayhead - EWH - 0.65 gpm - from 2.6	0.65 gpm sprayhead: previously 2.6 gpm; electric water heat	Water Heating	Sprayhead	1/1/16		2,295.00		kWh	per unit	RTF-deemed		76.30		4	Comm Water Heat
Agriculture Direct Install	11222	SBDI: Sprayhead - EWH - 0.65 gpm - not PI	0.65 gpm sprayhead: no previous install; electric water heating	Water Heating	Sprayhead	1/1/16		1,267.00		kWh	per unit	RTF-deemed		76.30		4	Comm Water Heat
Agriculture Direct Install	11224	SBDI: Sprayhead - GWH - 0.65 gpm - from 1.6 - EIE	0.65 gpm sprayhead: previously 1.6 gpm; natural gas water heating; electric savings interactive effect	Water Heating	Sprayhead	1/1/16		49.00		kWh	per unit	RTF-deemed		0.00		4	Comm Water Heat
Agriculture Direct Install	11226	SBDI: Sprayhead - GWH - 0.65 gpm - from 2.2 - EIE	0.65 gpm sprayhead: previously 2.2 gpm; natural gas water heating; electric interactive effect	Water Heating	Sprayhead	1/1/16		77.00		kWh	per unit	RTF-deemed		0.00		4	Comm Water Heat
Agriculture Direct Install	11228	SBDI: Sprayhead - GWH - 0.65 gpm - from 2.6 - EIE	0.65 gpm sprayhead: previously 2.6 gpm; natural gas water heating; electric interactive effect	Water Heating	Sprayhead	1/1/16		127.00		kWh	per unit	RTF-deemed		0.00		4	Comm Water Heat
Agriculture Direct Install	11230	SBDI: Sprayhead - GWH - 0.65 gpm - not PI - EIE	0.65 gpm sprayhead: no previous install; natural gas water heating; electric interactive effect	Water Heating	Sprayhead	1/1/16		70.00		kWh	per unit	RTF-deemed		0.00		4	Comm Water Heat
Agriculture Direct Install	11231	SBDI: Thermostat - Programmable	Programmable thermostat	Controls	Thermostat	1/1/16		473.00		kWh	per unit	PSE-deemed	Engineering	160.00		10	Comm Space Heat
Appliance Replacement	10108	APPR: Lamp - LED - Engagement	LED engagement lamp	Lighting	Lamp	1/1/17		11.32		kWh	per unit	RTF-deemed		$2.00		12	Res Lighting
Appliance Replacement	10112	APPR: Showerhead - Engagement - EO - 1.5 gpm	1.5 gpm engagement showerhead: electric-only territory	Water Heating	Showerhead	1/1/17		132.10		kWh	per unit	RTF-deemed		$10.00		10	Res Water Heat
Appliance Replacement	10772	APPR: Aerator - Bath - Engagement - EO - Any WH - 1.0 gpm	1.0 gpm engagement bath aerator: electric-only territory, any water heating	Water Heating	Aerator	4/1/16		31.36		kWh	per unit	PSE-deemed	Evaluation Study	2.00		10	Res Water Heat
Appliance Replacement	10774	APPR: Aerator - Kitchen - Engagement - EO - Any WH - 1.5 gpm	1.5 gpm engagement kitchen aerator: electric-only territory, any water heating	Water Heating	Aerator	4/1/16		18.27		kWh	per unit	PSE-deemed	Evaluation Study	2.00		10	Res Water Heat
Appliance Replacement	10619	APPR: Clothes Washer - Replacement - EWH - E Dryer - Front Load	Front-load clothes washer replacement: electric water heat, electric dryer	Appliances	Clothes Washer	1/1/16		848.00		kWh	per unit	PSE-deemed	RTF Derived	700.00		11	Res Water Heat
Appliance Replacement	10620	APPR: Clothes Washer - Replacement - EWH - E Dryer - Top Load	Top-load clothes washer replacement: electric water heat, electric dryer	Appliances	Clothes Washer	1/1/16		809.00		kWh	per unit	PSE-deemed	RTF Derived	650.00		11	Res Water Heat
Appliance Replacement	10109	APPR: Refrigerator Replacement - Year 1 to 14	Refrigerator replacement: year 1 to 14 savings	Appliances	Refrigerator	1/1/16		494.00		kWh	per unit	PSE-deemed	Combination	600.00		14	Res Refrigerator
Appliance Replacement	10110	APPR: Refrigerator Replacement - Year 15 to 20	Refrigerator replacement: year 15 to 20 savings	Appliances	Refrigerator	1/1/16		9.00		kWh	per unit	PSE-deemed	Combination	100.00		20	Res Refrigerator

Exhibit 5

2016-2017 Measure Values

Program Name	DSMC ID	Measure Name	Description	Measure Category	Measure Type	Version Start Date	Version End Date	Unit Savings - kWh	Unit Savings - Therm	Savings UOM Type	Unit Type	Source of Savings Type	PSE-Deemed Type	Unit Incentive - kWh	Unit Incentive Therm	Measure Life	End Use
Commercial HVAC Replacement	11704	CHVAC: Heat Pump - Packaged Terminal - Lodging	Packaged terminal heat pump: installed in lodging	HVAC	Heat Pump	1/1/17		737.00		kWh	per unit	PSE-deemed	Engineering	$100.00		15	Comm Space Heat
Commercial HVAC Replacement	11703	CHVAC: Thermostat Control - Occupancy Based - 5 Degrees	Occupancy-based thermostat control: 5 degrees	Controls	Occupancy Sensor	1/1/17		260.00		kWh	per unit	PSE-deemed	Engineering	$100.00		10	Comm Space Heat
Commercial Kitchens	11835	CKTCH: Dishwasher - Door Type - High Temp - E Booster - NPU	Door type high temperature commercial dishwasher: electric booster; non-PSE utility	Appliances	Dishwasher	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	10873	CKTCH: Dishwasher - Door Type - High Temp - EWH - E Booster	Door type high temperature commercial dishwasher: electric water heating and electric booster	Appliances	Dishwasher	7/1/16		10,200.00		kWh	per unit	PSE-deemed	Engineering	750.00		15	Comm Water Heat
Commercial Kitchens	11834	CKTCH: Dishwasher - Door Type - High Temp - EWH - E Booster - NPU	Door type high temperature commercial dishwasher: electric water heating and electric booster; non-PSE utility	Appliances	Dishwasher	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	10876	CKTCH: Dishwasher - Door Type - Low Temp - EWH	Door type low temperature commercial dishwasher: electric water heating	Appliances	Dishwasher	7/1/16		14,338.00		kWh	per unit	PSE-deemed	Engineering	750.00		15	Comm Water Heat
Commercial Kitchens	11836	CKTCH: Dishwasher - Door Type - Low Temp - EWH - NPU	Door type low temperature commercial dishwasher: electric water heating; non-PSE utility	Appliances	Dishwasher	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	11840	CKTCH: Dishwasher - Multi Tank - High Temp - E Booster - NPU	Multiple tank high temperature commercial dishwasher: electric booster; non-PSE utility	Appliances	Dishwasher	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	10878	CKTCH: Dishwasher - Multi Tank - High Temp - EWH - E Booster	Multiple tank high temperature commercial dishwasher: electric water heating and electric booster	Appliances	Dishwasher	7/1/16		23,668.00		kWh	per unit	PSE-deemed	Engineering	1,500.00		20	Comm Water Heat
Commercial Kitchens	11838	CKTCH: Dishwasher - Multi Tank - High Temp - EWH - E Booster - NPU	Multiple tank high temperature commercial dishwasher: electric water heating and electric booster; non-PSE utility	Appliances	Dishwasher	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	10882	CKTCH: Dishwasher - Multi Tank - Low Temp - EWH	Multiple tank low temperature commercial dishwasher: electric water heating	Appliances	Dishwasher	7/1/16		16,698.00		kWh	per unit	PSE-deemed	Engineering	1,500.00		20	Comm Water Heat
Commercial Kitchens	11841	CKTCH: Dishwasher - Multi Tank - Low Temp - EWH - NPU	Multiple tank low temperature commercial dishwasher: electric water heating; non-PSE utility	Appliances	Dishwasher	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	11845	CKTCH: Dishwasher - Single Tank - High Temp - E Booster - NPU	Single tank high temperature commercial dishwasher: electric booster; non-PSE utility	Appliances	Dishwasher	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	10884	CKTCH: Dishwasher - Single Tank - High Temp - EWH - E Booster	Single tank high temperature commercial dishwasher: electric water heating and electric booster	Appliances	Dishwasher	7/1/16		7,341.00		kWh	per unit	PSE-deemed	Engineering	1,000.00		20	Comm Water Heat
Commercial Kitchens	11843	CKTCH: Dishwasher - Single Tank - High Temp - EWH - E Booster - NPU	Single tank high temperature commercial dishwasher: electric water heating and electric booster; non-PSE utility	Appliances	Dishwasher	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	11848	CKTCH: Dishwasher - Single Tank - Low Temp - E Incidental - NPU	Single tank low temperature commercial dishwasher: incidental electric savings only; non-PSE utility	Appliances	Dishwasher	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	10888	CKTCH: Dishwasher - Single Tank - Low Temp - EWH	Single tank low temperature commercial dishwasher: electric water heating	Appliances	Dishwasher	7/1/16		11,901.00		kWh	per unit	PSE-deemed	Engineering	1,000.00		20	Comm Water Heat
Commercial Kitchens	11846	CKTCH: Dishwasher - Single Tank - Low Temp - EWH - NPU	Single tank low temperature commercial dishwasher: electric water heating; non-PSE utility	Appliances	Dishwasher	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	11851	CKTCH: Dishwasher - Under Counter - High Temp - E Booster - NPU	Under counter high temperature commercial dishwasher: electric booster; non-PSE utility	Appliances	Dishwasher	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	10892	CKTCH: Dishwasher - Under Counter - High Temp - EWH - E Booster	Under counter high temperature commercial dishwasher: electric water heating and electric booster	Appliances	Dishwasher	7/1/16		2,309.00		kWh	per unit	PSE-deemed	Engineering	150.00		10	Comm Water Heat
Commercial Kitchens	11849	CKTCH: Dishwasher - Under Counter - High Temp - EWH - E Booster - NPU	Under counter high temperature commercial dishwasher: electric water heating and electric booster; non-PSE utility	Appliances	Dishwasher	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	10896	CKTCH: Dishwasher - Under Counter - Low Temp - EWH	Under counter low temperature commercial dishwasher: electric gas water heating	Appliances	Dishwasher	7/1/16		2,254.00		kWh	per unit	PSE-deemed	Engineering	150.00		10	Comm Water Heat
Commercial Kitchens	11852	CKTCH: Dishwasher - Under Counter - Low Temp - EWH - NPU	Under counter low temperature commercial dishwasher: electric gas water heating; non-PSE utility	Appliances	Dishwasher	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	10845	CKTCH: Food Cabinet - Hot - 13 Ft to Under 28 Ft	13-foot to under 28-foot hot food holding cabinet	Appliances	Commercial Kitchen	7/1/16		934.00		kWh	per unit	PSE-deemed	Engineering	500.00		12	Comm Cooking
Commercial Kitchens	11809	CKTCH: Food Cabinet - Hot - 13 Ft to Under 28 Ft - NPU	13-foot to under 28-foot hot food holding cabinet; non-PSE utility	Appliances	Commercial Kitchen	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	10843	CKTCH: Food Cabinet - Hot - 28 Ft or More	28-foot or greater hot food holding cabinet	Appliances	Commercial Kitchen	7/1/16		1,113.00		kWh	per unit	PSE-deemed	Engineering	750.00		12	Comm Cooking
Commercial Kitchens	11807	CKTCH: Food Cabinet - Hot - 28 Ft or More - NPU	28-foot or greater hot food holding cabinet; non-PSE utility	Appliances	Commercial Kitchen	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	10844	CKTCH: Food Cabinet - Hot - Under 13 Ft	Under 13-foot hot food holding cabinet	Appliances	Commercial Kitchen	6/1/16		439.00		kWh	per unit	PSE-deemed	Engineering	150.00		12	Comm Cooking
Commercial Kitchens	11808	CKTCH: Food Cabinet - Hot - Under 13 Ft - NPU	Under 13-foot hot food holding cabinet; non-PSE utility	Appliances	Commercial Kitchen	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	10829	CKTCH: Fryer - Large Vat - E	Large-vat fryer: electric fuel	Appliances	Commercial Kitchen	7/1/16		2,686.00		kWh	per unit	PSE-deemed	Engineering	400.00		12	Comm Cooking
Commercial Kitchens	11793	CKTCH: Fryer - Large Vat - E - NPU	Large-vat fryer: electric fuel; non-PSE utility	Appliances	Commercial Kitchen	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	10831	CKTCH: Fryer - Standard Vat - E	Standard-vat fryer: electric fuel	Appliances	Commercial Kitchen	7/1/16		1,604.00		kWh	per unit	PSE-deemed	Engineering	1,000.00		12	Comm Cooking
Commercial Kitchens	11795	CKTCH: Fryer - Standard Vat - E - NPU	Standard-vat fryer: electric fuel; non-PSE utility	Appliances	Commercial Kitchen	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	10833	CKTCH: Griddle - 2 Linear Ft - E	2 linear feet griddle: electric fuel	Appliances	Commercial Kitchen	7/1/16		1,850.00		kWh	per unit	PSE-deemed	Engineering	200.00		12	Comm Cooking
Commercial Kitchens	11797	CKTCH: Griddle - 2 Linear Ft - E - NPU	2 linear feet griddle: electric fuel; non-PSE utility	Appliances	Commercial Kitchen	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	10835	CKTCH: Griddle - 3 Linear Ft - E	3 linear feet griddle: electric fuel	Appliances	Commercial Kitchen	7/1/16		2,775.00		kWh	per unit	PSE-deemed	Engineering	300.00		12	Comm Cooking
Commercial Kitchens	11799	CKTCH: Griddle - 3 Linear Ft - E - NPU	3 linear feet griddle: electric fuel; non-PSE utility	Appliances	Commercial Kitchen	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	10837	CKTCH: Griddle - 4 Linear Ft - E	4 linear feet griddle: electric fuel	Appliances	Commercial Kitchen	7/1/16		3,700.00		kWh	per unit	PSE-deemed	Engineering	400.00		12	Comm Cooking
Commercial Kitchens	11801	CKTCH: Griddle - 4 Linear Ft - E - NPU	4 linear feet griddle: electric fuel; non-PSE utility	Appliances	Commercial Kitchen	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	10839	CKTCH: Griddle - 5 Linear Ft - E	5 linear feet griddle: electric fuel	Appliances	Commercial Kitchen	7/1/16		4,625.00		kWh	per unit	PSE-deemed	Engineering	500.00		12	Comm Cooking
Commercial Kitchens	11803	CKTCH: Griddle - 5 Linear Ft - E - NPU	5 linear feet griddle: electric fuel; non-PSE utility	Appliances	Commercial Kitchen	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	10841	CKTCH: Griddle - 6 Linear Ft - E	6 linear feet griddle: electric fuel	Appliances	Commercial Kitchen	7/1/16		5,550.00		kWh	per unit	PSE-deemed	Engineering	600.00		12	Comm Cooking
Commercial Kitchens	11805	CKTCH: Griddle - 6 Linear Ft - E - NPU	6 linear feet griddle: electric fuel; non-PSE utility	Appliances	Commercial Kitchen	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	10846	CKTCH: Ice Maker - AC - Cube Nugget - IHR 1000 or More	Air-cooled, cube and nugget ice maker: 1,000 or more lbs per day	Appliances	Commercial Kitchen	6/1/16		2,044.00		kWh	per unit	PSE-deemed	Engineering	500.00		10	Comm Refrigeration
Commercial Kitchens	11810	CKTCH: Ice Maker - AC - Cube Nugget - IHR 1000 or More - NPU	Air-cooled, cube and nugget ice maker: 1,000 or more lbs per day; non-PSE utility	Appliances	Commercial Kitchen	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	10847	CKTCH: Ice Maker - AC - Cube Nugget - IHR 175 to 449	Air-cooled, cube and nugget ice maker: 175 to 449 lbs per day	Appliances	Commercial Kitchen	7/1/16		1,517.00		kWh	per unit	PSE-deemed	Engineering	200.00		10	Comm Refrigeration
Commercial Kitchens	11811	CKTCH: Ice Maker - AC - Cube Nugget - IHR 175 to 449 - NPU	Air-cooled, cube and nugget ice maker: 175 to 449 lbs per day; non-PSE utility	Appliances	Commercial Kitchen	9/1/16		0.00		kWh	per unit			0.00			

Exhibit 5

2016-2017 Measure Values

Program Name	DSMC ID	Measure Name	Description	Measure Category	Measure Type	Version Start Date	Version End Date	Unit Savings - kWh	Unit Savings - Therm	Savings UOM Type	Unit Type	Source of Savings Type	PSE-Deemed Type	Unit Incentive - kWh	Unit Incentive Therm	Measure Life	End Use
Commercial Kitchens	10848	CKTCH: Ice Maker - AC - Cube Nugget - IHR 450 to 999	Air-cooled, cube and nugget ice maker: 450 to 999 lbs per day	Appliances	Commercial Kitchen	6/1/16		1,361.00		kWh	per unit	PSE-deemed	Engineering	200.00		10	Comm Refrigeration
Commercial Kitchens	11812	CKTCH: Ice Maker - AC - Cube Nugget - IHR 450 to 999 - NPU	Air-cooled, cube and nugget ice maker: 450 to 999 lbs per day; non-PSE utility	Appliances	Commercial Kitchen	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	10849	CKTCH: Ice Maker - AC - Cube Nugget - IHR 50 to 174	Air-cooled, cube and nugget ice maker: 50 to 174 lbs per day	Appliances	Commercial Kitchen	7/1/16		429.00		kWh	per unit	PSE-deemed	Engineering	200.00		10	Comm Refrigeration
Commercial Kitchens	11813	CKTCH: Ice Maker - AC - Cube Nugget - IHR 50 to 174 - NPU	Air-cooled, cube and nugget ice maker: 50 to 174 lbs per day; non-PSE utility	Appliances	Commercial Kitchen	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	10850	CKTCH: Ice Maker - AC - Flake - IHR 1000 or More	Air-cooled, flake ice maker: 1,000 or more lbs per day	Appliances	Commercial Kitchen	7/1/16		1,314.00		kWh	per unit	PSE-deemed	Engineering	500.00		10	Comm Refrigeration
Commercial Kitchens	11814	CKTCH: Ice Maker - AC - Flake - IHR 1000 or More - NPU	Air-cooled, flake ice maker: 1,000 or more lbs per day; non-PSE utility	Appliances	Commercial Kitchen	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	10851	CKTCH: Ice Maker - AC - Flake - IHR 175 to 999	Air-cooled, flake ice maker: 175 to 999 lbs per day	Appliances	Commercial Kitchen	7/1/16		481.00		kWh	per unit	PSE-deemed	Engineering	200.00		10	Comm Refrigeration
Commercial Kitchens	11815	CKTCH: Ice Maker - AC - Flake - IHR 175 to 999 - NPU	Air-cooled, flake ice maker: 175 to 999 lbs per day; non-PSE utility	Appliances	Commercial Kitchen	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	10852	CKTCH: Ice Maker - WC - Cube Nugget - IHR 1000 or More	Water-cooled, cube and nugget ice maker: 1,000 lbs or more per day	Appliances	Commercial Kitchen	7/1/16		1,903.00		kWh	per unit	PSE-deemed	Engineering	500.00		10	Comm Refrigeration
Commercial Kitchens	11816	CKTCH: Ice Maker - WC - Cube Nugget - IHR 1000 or More - NPU	Water-cooled, cube and nugget ice maker: 1,000 lbs or more per day; non-PSE utility	Appliances	Commercial Kitchen	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	10853	CKTCH: Ice Maker - WC - Cube Nugget - IHR 175 to 449	Water-cooled, cube and nugget ice maker: 175 to 449 lbs per day	Appliances	Commercial Kitchen	7/1/16		1,436.00		kWh	per unit	PSE-deemed	Engineering	200.00		10	Comm Refrigeration
Commercial Kitchens	11817	CKTCH: Ice Maker - WC - Cube Nugget - IHR 175 to 449 - NPU	Water-cooled, cube and nugget ice maker: 175 to 449 lbs per day; non-PSE utility	Appliances	Commercial Kitchen	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	10854	CKTCH: Ice Maker - WC - Cube Nugget - IHR 450 to 999	Water-cooled, cube and nugget ice maker: 450 to 999 lbs per day	Appliances	Commercial Kitchen	7/1/16		385.00		kWh	per unit	PSE-deemed	Engineering	200.00		10	Comm Refrigeration
Commercial Kitchens	11818	CKTCH: Ice Maker - WC - Cube Nugget - IHR 450 to 999 - NPU	Water-cooled, cube and nugget ice maker: 450 to 999 lbs per day; non-PSE utility	Appliances	Commercial Kitchen	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	10855	CKTCH: Ice Maker - WC - Cube Nugget - IHR 50 to 174	Water-cooled, cube and nugget ice maker: 50 to 174 lbs per day	Appliances	Commercial Kitchen	7/1/16		287.00		kWh	per unit	PSE-deemed	Engineering	200.00		10	Comm Refrigeration
Commercial Kitchens	11819	CKTCH: Ice Maker - WC - Cube Nugget - IHR 50 to 174 - NPU	Water-cooled, cube and nugget ice maker: 50 to 174 lbs per day; non-PSE utility	Appliances	Commercial Kitchen	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	10856	CKTCH: Ice Maker - WC - Flake - IHR 1000 or More	Water-cooled, flake ice maker: 1,000 or more lbs per day	Appliances	Commercial Kitchen	7/1/16		1,273.00		kWh	per unit	PSE-deemed	Engineering	500.00		10	Comm Refrigeration
Commercial Kitchens	11820	CKTCH: Ice Maker - WC - Flake - IHR 1000 or More - NPU	Water-cooled, flake ice maker: 1,000 or more lbs per day; non-PSE utility	Appliances	Commercial Kitchen	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	10857	CKTCH: Ice Maker - WC - Flake - IHR 175 to 999	Water-cooled, flake ice maker: 175 to 999 lbs per day	Appliances	Commercial Kitchen	7/1/16		456.00		kWh	per unit	PSE-deemed	Engineering	200.00		10	Comm Refrigeration
Commercial Kitchens	11821	CKTCH: Ice Maker - WC - Flake - IHR 175 to 999 - NPU	Water-cooled, flake ice maker: 175 to 999 lbs per day; non-PSE utility	Appliances	Commercial Kitchen	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	10821	CKTCH: Oven - Combination - 14 Pan or Less - E	Combination oven: under 15 pans; electric fuel	Appliances	Commercial Kitchen	7/1/16		11,497.00		kWh	per unit	PSE-deemed	Engineering	1,000.00		12	Comm Cooking
Commercial Kitchens	11785	CKTCH: Oven - Combination - 14 Pan or Less - E - NPU	Combination oven: under 15 pans; electric fuel; non-PSE utility	Appliances	Commercial Kitchen	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	10823	CKTCH: Oven - Combination - 15 to 28 Pans - E	Combination oven: 15 to 28 pans; electric fuel	Appliances	Commercial Kitchen	7/1/16		15,074.00		kWh	per unit	PSE-deemed	Engineering	1,500.00		12	Comm Cooking
Commercial Kitchens	11787	CKTCH: Oven - Combination - 15 to 28 Pans - E - NPU	Combination oven: 15 to 28 pans; electric fuel; non-PSE utility	Appliances	Commercial Kitchen	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	10822	CKTCH: Oven - Combination - More Than 28 Pans - E	Combination oven: more than 28 pans; electric fuel	Appliances	Commercial Kitchen	7/1/16		22,009.00		kWh	per unit	PSE-deemed	Engineering	7,000.00		12	Comm Cooking
Commercial Kitchens	11786	CKTCH: Oven - Combination - More Than 28 Pans - E - NPU	Combination oven: more than 28 pans; electric fuel; non-PSE utility	Appliances	Commercial Kitchen	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	11779	CKTCH: Oven - Convection - Double - E - NPU	Double convection oven: electric fuel; non-PSE utility	Appliances	Commercial Kitchen	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	11781	CKTCH: Oven - Convection - Full - E - NPU	Full-size convection oven: electric fuel; non-PSE utility	Appliances	Commercial Kitchen	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	11783	CKTCH: Oven - Convection - Half - E - NPU	Half-size convection oven: electric fuel; non-PSE utility	Appliances	Commercial Kitchen	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	10828	CKTCH: Oven - Deck - E	Deck oven: electric fuel	Appliances	Commercial Kitchen	7/1/16		7,313.00		kWh	per unit	PSE-deemed	Engineering	1,500.00		12	Comm Cooking
Commercial Kitchens	11792	CKTCH: Oven - Deck - E - NPU	Deck oven: electric fuel; non-PSE utility	Appliances	Commercial Kitchen	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	10862	CKTCH: Steamer - 10 Pan - E	10-pan steamer: electric fuel	Appliances	Commercial Kitchen	7/1/16		65,751.00		kWh	per unit	PSE-deemed	Engineering	950.00		12	Comm Cooking
Commercial Kitchens	11823	CKTCH: Steamer - 10 Pan - E - NPU	10-pan steamer: electric fuel; non-PSE utility	Appliances	Commercial Kitchen	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	10864	CKTCH: Steamer - 3 Pan - E	3-pan steamer: electric fuel	Appliances	Commercial Kitchen	7/1/16		19,482.00		kWh	per unit	PSE-deemed	Engineering	250.00		12	Comm Cooking
Commercial Kitchens	11825	CKTCH: Steamer - 3 Pan - E - NPU	3-pan steamer: electric fuel; non-PSE utility	Appliances	Commercial Kitchen	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	10866	CKTCH: Steamer - 4 Pan - E	4-pan steamer: electric fuel	Appliances	Commercial Kitchen	7/1/16		29,092.00		kWh	per unit	PSE-deemed	Engineering	350.00		12	Comm Cooking
Commercial Kitchens	11827	CKTCH: Steamer - 4 Pan - E - NPU	4-pan steamer: electric fuel; non-PSE utility	Appliances	Commercial Kitchen	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	10868	CKTCH: Steamer - 5 Pan - E	5-pan steamer: electric fuel	Appliances	Commercial Kitchen	7/1/16		32,702.00		kWh	per unit	PSE-deemed	Engineering	450.00		12	Comm Cooking
Commercial Kitchens	11829	CKTCH: Steamer - 5 Pan - E - NPU	5-pan steamer: electric fuel; non-PSE utility	Appliances	Commercial Kitchen	9/1/16		0.00		kWh	per unit			0.00			
Commercial Kitchens	10870	CKTCH: Steamer - 6 Pan - E	6-pan steamer: electric fuel	Appliances	Commercial Kitchen	7/1/16		39,311.00		kWh	per unit	PSE-deemed	Engineering	550.00		12	Comm Cooking
Commercial Kitchens	11831	CKTCH: Steamer - 6 Pan - E - NPU	6-pan steamer: electric fuel; non-PSE utility	Appliances	Commercial Kitchen	9/1/16		0.00		kWh	per unit			0.00			
Commercial Laundry	12023	CLDRY: Clothes Washer - EWH - E Dryer - Laundromat	Commercial clothes washer: electric water heating; electric dryer; laundromat use	Appliances	Clothes Washer	1/1/17		980.00		kWh	per unit	PSE-deemed	Engineering	$200.00		7	Comm Flat
Commercial Laundry	12039	CLDRY: Clothes Washer - EWH - E Dryer - Lodging	Commercial clothes washer: electric water heating; electric dryer; lodging use	Appliances	Clothes Washer	1/1/17		1,879.00		kWh	per unit	PSE-deemed	Engineering	$200.00		7	Comm Flat
Commercial Laundry	12031	CLDRY: Clothes Washer - EWH - E Dryer - Multi Family	Commercial clothes washer: electric water heating; electric dryer; multi-family use	Appliances	Clothes Washer	1/1/17		717.00		kWh	per unit	PSE-deemed	Engineering	$200.00		11	Comm Flat
HomePrint	10748	HMPT: Home Energy Audit - CAN - E	Home energy audit: CAN; electric heated home	Behavior	Energy Assessment	1/1/17		0.00		kWh	per home			$121.00		1	SF Space Heat
HomePrint	10750	HMPT: Home Energy Audit - CAN - MH	Home energy audit: CAN; manufactured home	Behavior	Energy Assessment	1/1/17		0.00		kWh	per home			$100.00		1	SF Space Heat
HomePrint	10749	HMPT: Home Energy Audit - Service Provider - E	Home energy audit: service provider; electric heated home	Behavior	Energy Assessment	1/1/17		0.00		kWh	per home			$144.00		1	SF Space Heat

Exhibit 5

2016-2017 Measure Values

Program Name	DSMC ID	Measure Name	Description	Measure Category	Measure Type	Version Start Date	Version End Date	Unit Savings - kWh	Unit Savings - Therm	Savings UOM Type	Unit Type	Source of Savings Type	PSE-Deemed Type	Unit Incentive - kWh	Unit Incentive Therm	Measure Life	End Use
HomePrint	10751	HMPT: Home Energy Audit - Service Provider - MH	Home energy audit: service provider; manufactured home	Behavior	Energy Assessment	1/1/17		0.00		kWh	per home			$115.00		1	SF Space Heat
Low Income Weatherization	10263	LIW: Refrigerator Replacement - MF - SH	Refrigerator replacement: multi-family; shareholder	Appliances	Refrigerator	1/1/16		503.00	0.00	kWh	per unit			$0.00	$0.00		
Low Income Weatherization	10265	LIW: Refrigerator Replacement - MH - SH	Refrigerator replacement: mobile home; shareholder	Appliances	Refrigerator	1/1/16		503.00	0.00	kWh	per unit			$0.00	$0.00		
Low Income Weatherization	10267	LIW: Refrigerator Replacement - SF - SH	Refrigerator replacement: single family; shareholder	Appliances	Refrigerator	1/1/16		503.00	0.00	kWh	per unit			$0.00	$0.00		
Low Income Weatherization	10322	LIW: Ductless Heat Pump - SF - SH	Ductless heat pump: single family; shareholder	HVAC	Heat Pump	1/1/16		2,645.00	0.00	kWh	per unit			$0.00	$0.00		
Low Income Weatherization	10426	LIW: Lamp - LED - Reflector - MF - SH	LED reflector lamp: multi-family; shareholder	Lighting	Lamp	1/1/16		27.94	0.00	kWh	per unit			$0.00	$0.00		
Low Income Weatherization	10428	LIW: Lamp - LED - Reflector - SF - SH	LED reflector lamp: single family; shareholder	Lighting	Lamp	1/1/16		38.22	0.00	kWh	per unit			$0.00	$0.00		
Low Income Weatherization	10434	LIW: Fixture - LED - MF - SH	LED fixture: multi-family; shareholder	Lighting	Fixture	1/1/16		26.43	0.00	kWh	per unit			$0.00	$0.00		
Low Income Weatherization	10438	LIW: Fixture - LED - SF - SH	LED fixture: single family; shareholder	Lighting	Fixture	1/1/16		27.30	0.00	kWh	per unit			$0.00	$0.00		
Low Income Weatherization	10467	LIW: Ventilation - Whole House - MF - SH	Whole house ventilation: multi-family; shareholder	HVAC	Ventilation	1/1/16		143.00	0.00	kWh	per unit			$0.00	$0.00		
Low Income Weatherization	10469	LIW: Ventilation - Whole House - MH - SH	Whole house ventilation: mobile home; shareholder	HVAC	Ventilation	1/1/16		143.00	0.00	kWh	per unit			$0.00	$0.00		
Low Income Weatherization	10471	LIW: Ventilation - Whole House - SF - SH	Whole house ventilation: single family; shareholder	HVAC	Ventilation	1/1/16		143.00	0.00	kWh	per unit			$0.00	$0.00		
Low Income Weatherization	10584	LIW: Windows - DP to TP - SF - SH	Triple pane windows: from double pane; single family; shareholder	Weatherization	Window	1/1/16		6.13	0.00	kWh	square foot			$0.00	$0.00		
Low Income Weatherization	10588	LIW: Windows - DP to DP - MH - SH	Double pane windows: from double pane; mobile home; shareholder	Weatherization	Window	1/1/16		3.00	0.00	kWh	square foot			$0.00	$0.00		
Low Income Weatherization	10590	LIW: Windows - DP to DP - SF - SH	Double pane windows: from double pane; single family; shareholder	Weatherization	Window	1/1/16		5.28	0.00	kWh	square foot			$0.00	$0.00		
Low Income Weatherization	10594	LIW: Windows - SP to DP - MH - SH	Double pane windows: from single pane; mobile home; shareholder	Weatherization	Window	1/1/16		8.60	0.00	kWh	square foot			$0.00	$0.00		
Low Income Weatherization	10596	LIW: Windows - SP to DP - SF - SH	Double pane windows: from single pane; single family; shareholder	Weatherization	Window	1/1/16		11.40	0.00	kWh	square foot			$0.00	$0.00		
Low Income Weatherization	10600	LIW: Windows - SP to TP - SF - SH	Triple pane windows: from single pane; single family; shareholder	Weatherization	Window	1/1/16		12.43	0.00	kWh	square foot			$0.00	$0.00		
Low Income Weatherization	10630	LIW: Insulation - Attic - R0 to R49 - MF - SH	Attic insulation: R0 to R49; multi-family; shareholder	Weatherization	Insulation	1/1/16		2.31	0.09	kWh	square foot			$0.00	$0.00		
Low Income Weatherization	10649	LIW: Aerator - 1.5 gpm - SF - SH	1.5 gpm aerator: single family; shareholder	Water Heating	Aerator	1/1/16		36.73		kWh	per unit			$0.00	$0.00		
Low Income Weatherization	10654	LIW: Heat Pump Water Heater - Tier 1 - MH - SH	Tier 1 heat pump water heater: mobile home; shareholder	Water Heating	Water Heater	1/1/16		1,093.00	0.00	kWh	per unit			$0.00	$0.00		
Low Income Weatherization	10656	LIW: Heat Pump Water Heater - Tier 1 - SF - SH	Tier 1 heat pump water heater: single family; shareholder	Water Heating	Water Heater	1/1/16		1,093.00	0.00	kWh	per unit			$0.00	$0.00		
Low Income Weatherization	10660	LIW: Heat Pump Water Heater - Tier 2 - MH - SH	Tier 2 heat pump water heater: mobile home; shareholder	Water Heating	Water Heater	1/1/16		1,523.00	0.00	kWh	per unit			$0.00	$0.00		
Low Income Weatherization	10662	LIW: Heat Pump Water Heater - Tier 2 - SF - SH	Tier 2 heat pump water heater: single family; shareholder	Water Heating	Water Heater	1/1/16		1,523.00	0.00	kWh	per unit			$0.00	$0.00		
Low Income Weatherization	10674	LIW: Advanced Power Strip - DI - MF - SH	Direct-install advanced power strip: multi-family; shareholder	Controls	Advanced Power Strip	1/1/16		216.00	0.00	kWh	per unit			$0.00	$0.00		
Low Income Weatherization	10676	LIW: Advanced Power Strip - DI - MH - SH	Direct-install advanced power strip: mobile home; shareholder	Controls	Advanced Power Strip	1/1/16		216.00	0.00	kWh	per unit			$0.00	$0.00		
Low Income Weatherization	10678	LIW: Advanced Power Strip - DI - SF - SH	Direct-install advanced power strip: single family; shareholder	Controls	Advanced Power Strip	1/1/16		216.00	0.00	kWh	per unit			$0.00	$0.00		
Low Income Weatherization	10264	LIW: Refrigerator Replacement - MF - TE	Refrigerator replacement: multi-family; electric	Appliances	Refrigerator	1/1/16		503.00		kWh	per unit	PSE-deemed	Evaluation Study	$545.00		15	Res Refrigerator
Low Income Weatherization	10266	LIW: Refrigerator Replacement - MH - TE	Refrigerator replacement: mobile home; electric	Appliances	Refrigerator	1/1/16		503.00		kWh	per unit	PSE-deemed	Evaluation Study	$545.00		15	Res Refrigerator
Low Income Weatherization	10268	LIW: Refrigerator Replacement - SF - TE	Refrigerator replacement: single family; electric	Appliances	Refrigerator	1/1/16		503.00		kWh	per unit	PSE-deemed	Evaluation Study	$545.00		15	Res Refrigerator
Low Income Weatherization	10315	LIW: Sealing - Duct - MH - TE	Duct sealing: mobile home; electric	Weatherization	Sealing	1/1/16		973.00		kWh	per home	RTF-deemed		$500.00		20	SF Space Heat
Low Income Weatherization	10318	LIW: Sealing - Duct - SF - TE	Duct sealing: single family; electric	Weatherization	Sealing	1/1/16		735.00		kWh	per home	RTF-deemed		$500.00		20	SF Space Heat
Low Income Weatherization	10320	LIW: Ductless Heat Pump - MH - SH	Ductless heat pump: mobile home; shareholder	HVAC	Heat Pump	1/1/16		3,448.00	0.00	kWh	per unit			$0.00	$0.00		
Low Income Weatherization	10321	LIW: Ductless Heat Pump - MH - TE	Ductless heat pump: mobile home; electric	HVAC	Heat Pump	1/1/16		3,448.00		kWh	per unit	PSE-deemed	RTF Derived	$3,407.00		18	SF Space Heat
Low Income Weatherization	10323	LIW: Ductless Heat Pump - SF - TE	Ductless heat pump: single family; electric	HVAC	Heat Pump	1/1/16		2,645.00		kWh	per unit	PSE-deemed	RTF Derived	$3,407.00		15	SF Space Heat
Low Income Weatherization	10365	LIW: Insulation - Floor - R0 to R19 - SF - TE	Floor insulation: R0 to R19; single family; electric	Weatherization	Insulation	1/1/16		0.91		kWh	square foot	RTF-deemed		$1.87		30	SF Space Heat
Low Income Weatherization	10367	LIW: Insulation - Floor - R0 to R22 - MH - TE	Floor insulation: R0 to R22; mobile home; electric	Weatherization	Insulation	1/1/16		0.50		kWh	square foot	RTF-deemed		$1.50		25	SF Space Heat
Low Income Weatherization	10376	LIW: Insulation - Floor - R0 to R30 - SF - TE	Floor insulation: R0 to R30; single family; electric	Weatherization	Insulation	1/1/16		1.02		kWh	square foot	RTF-deemed		$2.20		30	SF Space Heat
Low Income Weatherization	10379	LIW: Insulation - Floor - R11 to R22 - MH - TE	Floor insulation: R11 to R22; mobile home; electric	Weatherization	Insulation	1/1/16		0.20		kWh	square foot	RTF-deemed		$1.25		25	SF Space Heat
Low Income Weatherization	10391	LIW: Insulation - Wall - R0 to R11 - SF - TE	Wall insulation: R0 to R11; single family; electric	Weatherization	Insulation	1/1/16		1.78		kWh	square foot	RTF-deemed		$2.75		30	SF Space Heat
Low Income Weatherization	10400	LIW: Insulation - Attic - R0 to R30 - MH - TE	Attic insulation: R0 to R30; mobile home; electric	Weatherization	Insulation	1/1/16		0.30		kWh	square foot	RTF-deemed		$1.25		25	SF Space Heat
Low Income Weatherization	10406	LIW: Insulation - Attic - R0 to R38 - SF - TE	Attic insulation: R0 to R38; single family; electric	Weatherization	Insulation	1/1/16		2.20		kWh	square foot	RTF-deemed		$2.43		30	SF Space Heat
Low Income Weatherization	10414	LIW: Insulation - Attic - R11 to R38 - SF - TE	Attic insulation: R11 to R38; single family; electric	Weatherization	Insulation	1/1/16		0.47		kWh	square foot	RTF-deemed		$1.95		30	SF Space Heat
Low Income Weatherization	10419	LIW: Insulation - Attic R19 to R38 - SF - TE	Attic insulation: R19 to R38; single-family; electric	Weatherization	Insulation	1/1/16		0.22		kWh	square foot	RTF-deemed		$1.35		30	SF Space Heat
Low Income Weatherization	10421	LIW: Lamp - LED - A Lamp - MF - TE	LED A-lamp: multi-family; electric	Lighting	Lamp	1/1/16		16.52		kWh	per unit	PSE-deemed	RTF Derived	$15.00		12	Res Lighting
Low Income Weatherization	10423	LIW: Lamp - LED - A Lamp - MH - TE	LED A-lamp: mobile home; electric	Lighting	Lamp	1/1/16		20.67		kWh	per unit	PSE-deemed	RTF Derived	$15.00		12	Res Lighting
Low Income Weatherization	10425	LIW: Lamp - LED - A Lamp - SF - TE	LED A-lamp: single family; electric	Lighting	Lamp	1/1/16		20.67		kWh	per unit	PSE-deemed	RTF Derived	$15.00		12	Res Lighting

Exhibit 5

2016-2017 Measure Values

Program Name	DSMC ID	Measure Name	Description	Measure Category	Measure Type	Version Start Date	Version End Date	Unit Savings - kWh	Unit Savings - Therm	Savings UOM Type	Unit Type	Source of Savings Type	PSE-Deemed Type	Unit Incentive - kWh	Unit Incentive Therm	Measure Life	End Use
Low Income Weatherization	10468	LIW: Ventilation - Whole House - MF - TE	Whole house ventilation: multi-family; electric	HVAC	Ventilation	1/1/16		143.00		kWh	per unit	PSE-deemed	Program Staff	$50.00		10	MF Space Heat
Low Income Weatherization	10470	LIW: Ventilation - Whole House - MH - TE	Whole house ventilation: mobile home; electric	HVAC	Ventilation	1/1/16		143.00		kWh	per unit	PSE-deemed	Program Staff	$50.00		10	SF Space Heat
Low Income Weatherization	10472	LIW: Ventilation - Whole House - SF - TE	Whole house ventilation: single family; electric	HVAC	Ventilation	1/1/16		143.00		kWh	per unit	PSE-deemed	Program Staff	$50.00		10	SF Space Heat
Low Income Weatherization	10420	LIW: Lamp - LED - A Lamp - MF - SH	LED A-lamp: multi-family; shareholder	Lighting	Lamp	1/1/17		16.52		kWh	per unit			$0.00	$0.00		
Low Income Weatherization	10422	LIW: Lamp - LED - A Lamp - MH - SH	LED A-lamp: mobile home; shareholder	Lighting	Lamp	1/1/17		20.67		kWh	per unit			$0.00	$0.00		
Low Income Weatherization	10424	LIW: Lamp - LED - A Lamp - SF - SH	LED A-lamp: single family; shareholder	Lighting	Lamp	1/1/17		20.67		kWh	per unit			$0.00	$0.00		
Low Income Weatherization	10430	LIW: Lamp - LED - Candelabra - MF - SH	LED candelabra: multi-family; shareholder	Lighting	Lamp	1/1/17		9.09		kWh	per unit			$0.00	$0.00		
Low Income Weatherization	10432	LIW: Lamp - LED - Candelabra - SF - SH	LED candelabra: single family; shareholder	Lighting	Lamp	1/1/17		16.01		kWh	per unit			$0.00	$0.00		
Low Income Weatherization	10664	LIW: Lamp - LED - Candelabra - MH - SH	LED candelabra: mobile home; shareholder	Lighting	Lamp	1/1/17		16.01		kWh	per unit			$0.00	$0.00		
Low Income Weatherization	10666	LIW: Lamp - LED - Globe - MF - SH	LED globe lamp: multi-family; shareholder	Lighting	Lamp	1/1/17		14.15		kWh	per unit			$0.00	$0.00		
Low Income Weatherization	10668	LIW: Lamp - LED - Globe - MH - SH	LED globe lamp: mobile home; shareholder	Lighting	Lamp	1/1/17		18.09		kWh	per unit			$0.00	$0.00		
Low Income Weatherization	10670	LIW: Lamp - LED - Globe - SF - SH	LED globe lamp: single family; shareholder	Lighting	Lamp	1/1/17		18.09		kWh	per unit			$0.00	$0.00		
Low Income Weatherization	10672	LIW: Lamp - TLED - T8 - MF - SH	T8 LED lamp: multi-family; shareholder	Lighting	Lamp	1/1/17		9.66		kWh	per unit			$0.00	$0.00		
Low Income Weatherization	10363	LIW: Insulation - Floor - R0 to R19 - MF - TE	Floor insulation: R0 to R19; multi-family; electric	Weatherization	Insulation	1/1/17		1.10		kWh	square foot	RTF-deemed		$1.87		30	MF Space Heat
Low Income Weatherization	10381	LIW: Insulation - Floor - R11 to R30 - MF - TE	Floor insulation: R11 to R30; multi-family; electric	Weatherization	Insulation	1/1/17		0.77		kWh	square foot	RTF-deemed		$1.13		30	MF Space Heat
Low Income Weatherization	10385	LIW: Insulation - Wall - R0 to R11 - MF - TE	Wall insulation: R0 to R11; multi-family; electric	Weatherization	Insulation	1/1/17		2.00		kWh	square foot	RTF-deemed		$2.75		30	MF Space Heat
Low Income Weatherization	10394	LIW: Insulation - Attic - R0 to R19 - MF - TE	Attic insulation: R0 to R19; multi-family; electric	Weatherization	Insulation	1/1/17		0.90		kWh	square foot	RTF-deemed		$2.21		30	MF Space Heat
Low Income Weatherization	10403	LIW: Insulation - Attic - R0 to R38 - MF - TE	Attic insulation: R0 to R38; multi-family; electric	Weatherization	Insulation	1/1/17		1.20		kWh	square foot	RTF-deemed		$2.43		30	MF Space Heat
Low Income Weatherization	10411	LIW: Insulation - Attic - R11 to R38 - MF - TE	Attic insulation: R11 to R38; multi-family; electric	Weatherization	Insulation	1/1/17		0.56		kWh	square foot	RTF-deemed		$1.95		30	MF Space Heat
Low Income Weatherization	10417	LIW: Insulation - Attic R19 to R38 - MF - TE	Attic insulation: R19 to R38; multi-family; electric	Weatherization	Insulation	1/1/17		0.30		kWh	square foot	RTF-deemed		$1.35		30	MF Space Heat
Low Income Weatherization	10431	LIW: Lamp - LED - Candelabra - MF - TE	LED candelabra: multi-family; electric	Lighting	Lamp	1/1/17		9.09		kWh	per unit	PSE-deemed	RTF Derived	$15.00		12	Res Lighting
Low Income Weatherization	10433	LIW: Lamp - LED - Candelabra - SF - TE	LED candelabra: single family; electric	Lighting	Lamp	1/1/17		16.01		kWh	per unit	PSE-deemed	RTF Derived	$15.00		12	Res Lighting
Low Income Weatherization	10530	LIW: Sealing - Shell - MH - TE	Shell sealing: mobile home; electric	Weatherization	Sealing	1/1/16		0.20		kWh		RTF-deemed		$1.00		25	SF Space Heat
Low Income Weatherization	10533	LIW: Sealing - Shell - SF - TE	Shell sealing: single family; electric	Weatherization	Sealing	1/1/16		0.48		kWh		RTF-deemed		$1.00		20	SF Space Heat
Low Income Weatherization	10583	LIW: Windows - DP to TP - MF - TE	Triple pane windows: from double pane; multi-family; electric	Weatherization	Window	1/1/17		15.40		kWh	square foot	RTF-deemed		$8.00		30	MF Space Heat
Low Income Weatherization	10585	LIW: Windows - DP to TP - SF - TE	Triple pane windows: from double pane; single family; electric	Weatherization	Window	1/1/16		6.13		kWh	square foot	RTF-deemed		$8.00		30	SF Space Heat
Low Income Weatherization	10587	LIW: Windows - DP to DP - MF - TE	Double pane windows: from double pane; multi-family; electric	Weatherization	Window	1/1/17		12.80		kWh	square foot	RTF-deemed		$6.00		30	MF Space Heat
Low Income Weatherization	10589	LIW: Windows - DP to DP - MH - TE	Double pane windows: from double pane; mobile home; electric	Weatherization	Window	1/1/16		3.00		kWh	square foot	RTF-deemed		$3.00		25	SF Space Heat
Low Income Weatherization	10591	LIW: Windows - DP to DP - SF - TE	Double pane windows: from double pane; single family; electric	Weatherization	Window	1/1/16		5.28		kWh	square foot	RTF-deemed		$10.00		30	SF Space Heat
Low Income Weatherization	10593	LIW: Windows - SP to DP - MF - TE	Double pane windows: from single pane; multi-family; electric	Weatherization	Window	1/1/17		23.70		kWh	square foot	RTF-deemed		$16.20		30	MF Space Heat
Low Income Weatherization	10595	LIW: Windows - SP to DP - MH - TE	Double pane windows: from single pane; mobile home; electric	Weatherization	Window	1/1/16		8.60		kWh	square foot	RTF-deemed		$12.00		25	SF Space Heat
Low Income Weatherization	10597	LIW: Windows - SP to DP - SF - TE	Double pane windows: from single pane; single family; electric	Weatherization	Window	1/1/16		11.40		kWh	square foot	RTF-deemed		$13.00		30	SF Space Heat
Low Income Weatherization	10599	LIW: Windows - SP to TP - MF - TE	Triple pane windows: from single pane; multi-family; electric	Weatherization	Window	1/1/17		26.30		kWh	square foot	RTF-deemed		$18.00		30	MF Space Heat
Low Income Weatherization	10601	LIW: Windows - SP to TP - SF - TE	Triple pane windows: from single pane; single family home; electric	Weatherization	Window	1/1/16		12.43		kWh	square foot	RTF-deemed		$18.00		30	SF Space Heat
Low Income Weatherization	10629	LIW: Insulation - Attic - R11 to R30 - MH - TE	Attic insulation: R11 to R30; mobile home; electric	Weatherization	Insulation	1/1/16		0.10		kWh	square foot	RTF-deemed		$1.25		30	SF Space Heat
Low Income Weatherization	10631	LIW: Insulation - Attic - R0 to R49 - MF - TE	Attic insulation: R0 to R49; multi-family; electric	Weatherization	Insulation	1/1/17		1.20		kWh	square foot	RTF-deemed		$2.43		30	MF Space Heat
Low Income Weatherization	10634	LIW: Insulation - Attic - R0 to R49 - SF - TE	Attic insulation: R0 to R49; single family; electric	Weatherization	Insulation	1/1/16		2.23		kWh	square foot	RTF-deemed		$2.43		30	SF Space Heat
Low Income Weatherization	10637	LIW: Insulation - Attic - R11 to R49 - SF - TE	Attic insulation: R11 to R49; single family; electric	Weatherization	Insulation	1/1/16		0.51		kWh	square foot	RTF-deemed		$1.95		30	SF Space Heat
Low Income Weatherization	10640	LIW: Insulation - Attic - R19 to R49 - MF - TE	Attic insulation: R19 to R49; multi-family; electric	Weatherization	Insulation	1/1/17		0.40		kWh	square foot	RTF-deemed		$1.95		30	SF Space Heat
Low Income Weatherization	10644	LIW: Aerator - 1.5 gpm - MF - TE	1.5 gpm aerator: multi-family; electric	Water Heating	Aerator	1/1/16		44.84		kWh	per unit	PSE-deemed	Program Staff	$2.10		10	Res Water Heat
Low Income Weatherization	10647	LIW: Aerator - 1.5 gpm- MH - TE	1.5 gpm aerator: mobile home; electric	Water Heating	Aerator	1/1/16		36.73		kWh	per unit	PSE-deemed	Program Staff	$2.10		10	Res Water Heat
Low Income Weatherization	10650	LIW: Aerator - 1.5 gpm - SF - TE	1.5 gpm aerator: single family; electric	Water Heating	Aerator	1/1/16		36.73		kWh	per unit	PSE-deemed	Program Staff	$2.10		10	Res Water Heat
Low Income Weatherization	10665	LIW: Lamp - LED - Candelabra - MH - TE	LED candelabra: mobile home; electric	Lighting	Lamp	1/1/17		16.01		kWh	per unit	PSE-deemed	RTF Derived	$15.00		12	Res Lighting
Low Income Weatherization	10667	LIW: Lamp - LED - Globe - MF - TE	LED globe lamp: multi-family; electric	Lighting	Lamp	1/1/17		14.15		kWh	per unit	PSE-deemed	RTF Derived	$15.00		12	Res Lighting
Low Income Weatherization	10669	LIW: Lamp - LED - Globe - MH - TE	LED globe lamp: mobile home; electric	Lighting	Lamp	1/1/17		18.09		kWh	per unit	PSE-deemed	RTF Derived	$15.00		12	Res Lighting
Low Income Weatherization	10671	LIW: Lamp - LED - Globe - SF - TE	LED globe lamp: single family; electric	Lighting	Lamp	1/1/17		18.09		kWh	per unit	PSE-deemed	RTF Derived	$15.00	$0.00	12	Res Lighting
Low Income Weatherization	10673	LIW: Lamp - TLED - T8 - MF - TE	T8 LED lamp: multi-family; electric	Lighting	Lamp	1/1/17		9.66		kWh	per unit	PSE-deemed	RTF Derived	$15.00	$0.00	12	Res Lighting

Exhibit 5

2016-2017 Measure Values

Program Name	DSMC ID	Measure Name	Description	Measure Category	Measure Type	Version Start Date	Version End Date	Unit Savings - kWh	Unit Savings - Therm	Savings UOM Type	Unit Type	Source of Savings Type	PSE-Deemed Type	Unit Incentive - kWh	Unit Incentive Therm	Measure Life	End Use
Low Income Weatherization	10655	LIW: Heat Pump Water Heater - Tier 1 - MH - TE	Tier 1 heat pump water heater: mobile home; electric	Water Heating	Water Heater	1/1/16		1,093.00	0.00	kWh	per unit	RTF-deemed		$900.00	$0.00	13	Res Water Heat
Low Income Weatherization	10657	LIW: Heat Pump Water Heater - Tier 1 - SF - TE	Tier 1 heat pump water heater: single family; electric	Water Heating	Water Heater	1/1/16		1,093.00	0.00	kWh	per unit	RTF-deemed		$900.00		13	Res Water Heat
Low Income Weatherization	10661	LIW: Heat Pump Water Heater - Tier 2 - MH - TE	Tier 2 heat pump water heater: mobile home; electric	Water Heating	Water Heater	1/1/16		1,523.00	0.00	kWh	per unit	RTF-deemed		$1,369.00	$0.00	13	Res Water Heat
Low Income Weatherization	10663	LIW: Heat Pump Water Heater - Tier 2 - SF - TE	Tier 2 heat pump water heater: single family; electric	Water Heating	Water Heater	1/1/16		1,523.00	0.00	kWh	per unit	RTF-deemed		$1,369.00	$0.00	13	Res Water Heat
Low Income Weatherization	10675	LIW: Advanced Power Strip - DI - MF - TE	Direct-install advanced power strip: multi-family; electric	Controls	Advanced Power Strip	1/1/16		216.00	0.00	kWh	per unit	RTF-deemed		$55.00	$0.00	5	Res Plug Load
Low Income Weatherization	10677	LIW: Advanced Power Strip - DI - MH - TE	Direct-install advanced power strip: mobile home; electric	Controls	Advanced Power Strip	1/1/16		216.00	0.00	kWh	per unit	RTF-deemed		$55.00	$0.00	5	Res Plug Load
Low Income Weatherization	10679	LIW: Advanced Power Strip - DI - SF - TE	Direct-install advanced power strip: single family; electric	Controls	Advanced Power Strip	1/1/16		216.00	0.00	kWh	per unit	RTF-deemed		$55.00	$0.00	5	Res Plug Load
Low Income Weatherization	10691	LIW: Ductless Heat Pump - MF - TE	Ductless heat pump: multi-family; electric	HVAC	Heat Pump	1/1/16		2,645.00		kWh	per unit	PSE-deemed	Other Utility	$3,407.00		15	MF Space Heat
Multi Family New Construction	11944	MFNC: Clothes Washer - Energy Star	Energy Star clothes washer	Appliances	Clothes Washer	3/1/17		98.00		kWh	per unit	RTF-deemed		$100.00		14	Comm Water Heat
Multi Family Retrofit	11254	MFRFT: Door - Energy Star	Energy Star door	Weatherization	Door	1/1/16		79.50		kWh	per unit	PSE-deemed	Other Utility	332.27		20	MF Space Heat
Multi Family Retrofit	11258	MFRFT: Heat Pump - Energy Star Tier 3 - 10.0 HSPF - 16 SEER	Tier 3 Energy Star heat pump: 10.0 HSPF; 16 SEER	HVAC	Heat Pump	1/1/17		939.00		kWh	per unit	PSE-deemed	RTF Derived	$800.00		20	SF Heat Pump
Multi Family Retrofit	11976	MFRFT: Thermostat - Web Enabled - kWh	Web-enabled thermostat: electric home heating	Controls	Thermostat	1/1/17		49.00		kWh	per unit	RTF-deemed	RTF UES Provisional	$483.00		20	SF Space Heat
Multi Family Retrofit	11295	MFRFT: Water Heater - Pipe Wrap - DI	Water heater pipe wrap: direct install	Water Heating	Water Heater	1/1/17		20.00		kWh	per unit	RTF-deemed	RTF UES Deemed	$4.50		15	Res Water Heat
Natural Gas Fuel Conversion	10710	SFFC: E2G Fuel Conversion - Space and WH - BB	Natural gas fuel conversion: space and water heating; electric baseboard-heated home	Combined	Combined	1/1/17		10,865.00		kWh	per home	PSE-deemed	Evaluation Study	$3,550.00		30	SF Space Heat
Natural Gas Fuel Conversion	10711	SFFC: E2G Fuel Conversion - Space and WH - FA	Natural gas fuel conversion: space and water heating; electric forced-air furnace heated home	Combined	Combined	1/1/17		10,865.00		kWh	per home	PSE-deemed	Evaluation Study	$2,950.00		30	SF Space Heat
Natural Gas Fuel Conversion	10712	SFFC: E2G Fuel Conversion - Space Heat Only - BB	Natural gas fuel conversion: space heating only; electric baseboard-heated home	HVAC	Furnace	1/1/17		9,720.00		kWh	per home	PSE-deemed	Evaluation Study	$2,600.00		30	SF Space Heat
Natural Gas Fuel Conversion	10713	SFFC: E2G Fuel Conversion - Space Heat Only - FA	Natural gas fuel conversion: space heating only; electric forced-air furnace heated home	HVAC	Furnace	1/1/17		9,720.00		kWh	per home	PSE-deemed	Evaluation Study	$2,000.00		30	SF Space Heat
Natural Gas Fuel Conversion	10714	SFFC: E2G Fuel Conversion - WH Only - Storage	Natural gas fuel conversion: storage water heater only	Water Heating	Water Heater	1/1/17		3,054.00		kWh	per unit	PSE-deemed	Evaluation Study	$950.00		30	Res Water Heat
Natural Gas Fuel Conversion	10715	SFFC: E2G Fuel Conversion - WH Only - Tankless	Natural gas fuel conversion: tankless water heater only	Water Heating	Water Heater	1/1/17		3,054.00		kWh	per unit	PSE-deemed	Evaluation Study	$950.00		30	Res Water Heat
Retail Lighting	10609	RETL: Fixture - LED - T8	T8 LED fixture	Lighting	Fixture	1/1/17		28.63		kWh	per unit	PSE-deemed	RTF Derived	$5.00		12	Res Lighting
Retail Lighting	10608	RETL: Fixture - LED - T8 Retrofit	T8 LED fixture retrofit	Lighting	Fixture	1/1/17		7.98		kWh	per unit	PSE-deemed	RTF Derived	$2.50		12	Res Lighting
Retail Lighting	10009	RETL: Lamp - LED - Candelabra	LED candelabra	Lighting	Lamp	1/1/17		22.49		kWh	per unit	PSE-deemed	RTF Derived	$2.00		11	Res Lighting
Retail Lighting	10085	RETL: Lamp - LED - Candelabra - NQC	LED candelabra: non-qualified customer	Lighting	Lamp	1/1/17		0.00		kWh	per unit			$2.00			Res Lighting
Retail Lighting	10013	RETL: Lamp - LED - MR16	LED MR-16	Lighting	Lamp	1/1/17		20.19		kWh	per unit	PSE-deemed	RTF Derived	$2.00		12	Res Lighting
Retail Lighting	10088	RETL: Lamp - LED - MR16 - NQC	LED MR-16: non-qualified customer	Lighting	Lamp	1/1/17		0.00		kWh	per unit			$2.00			Res Lighting
Retail Lighting	10014	RETL: Lamp - LED - Reflector	LED reflector lamp	Lighting	Lamp	1/1/17		28.05		kWh	per unit	PSE-deemed	RTF Derived	$3.25		9	Res Lighting
Retail Lighting	10089	RETL: Lamp - LED - Reflector - NQC	LED reflector lamp: non-qualified customer	Lighting	Lamp	1/1/17		0.00		kWh	per unit			$3.25			Res Lighting
Retail Lighting	12007	RETL: String Lighting - LED - Outdoor	Outdoor LED string lighting	Lighting	String Lighting	1/1/17		36.74		kWh	per unit	PSE-deemed	Program Staff	$10.00		12	Res Lighting
Single Family Weatherization	10909	SFWX: Sealing - Air - FAF	Air Sealing: home heated with forced-air furnace	Weatherization	Sealing	1/1/17		0.53		kWh	per unit	RTF-deemed		$0.66		15	SF Space Heat
Single Family Weatherization	10936	SFWX: Sealing - Duct - Double Triple - MH - HP	Duct sealing: double or triple-wide manufactured home heated with heat pump	Weatherization	Sealing	1/1/17		615.00		kWh	per home	RTF-deemed		$400.00		18	SF Space Heat
Single Family Weatherization	10935	SFWX: Sealing - Duct - Double Triple - MH - Zonal	Duct sealing: double or triple-wide manufactured home heated with zonal heating	Weatherization	Sealing	1/1/17		973.00		kWh	per home	RTF-deemed		$400.00		18	SF Space Heat
Single Family Weatherization	10922	SFWX: Ventilation - Whole House - Energy Star - with AS	Energy Star whole house ventilation: when air sealing completed in home	HVAC	Ventilation	1/1/16		81.00		kWh	per unit	PSE-deemed	Program Staff	150.00		10	Res Plug Load
Single Family Weatherization	10942	SFWX: Sealing - Duct - FAF	Duct sealing: home heated with forced-air furnace	Weatherization	Sealing	1/1/17		1,049.00		kWh	per home	RTF-deemed		$300.00		20	SF Space Heat
Single Family Weatherization	10944	SFWX: Sealing - Duct - HP	Duct sealing: home heated with heat pump	Weatherization	Sealing	1/1/17		752.00		kWh	per home	RTF-deemed		$300.00		20	SF Space Heat
Single Family Weatherization	10937	SFWX: Sealing - Duct - Single - MH - HP	Duct sealing: single-wide manufactured home heated with heat pump	Weatherization	Sealing	1/1/17		615.00		kWh	per home	RTF-deemed		$200.00		18	SF Space Heat
Single Family Weatherization	10939	SFWX: Sealing - Duct - Single - MH - Zonal	Duct sealing: single-wide manufactured home heated with zonal heating	Weatherization	Sealing	1/1/17		973.00		kWh	per home	RTF-deemed		$200.00		18	SF Space Heat
Single Family Weatherization	10940	SFWX: Sealing - Duct and Insulation - E	Duct sealing and insulation: home heated with electricity	Combined	Combined	1/1/17		1,859.00		kWh	per home	PSE-deemed	Evaluation Study	$400.00		20	SF Space Heat
Small Business Direct Install	11315	SBDI: Aerator - EWH - All Others	Aerator: electric water heating; all other business types	Water Heating	Aerator	1/1/16		151.60		kWh	per unit	PSE-deemed	Engineering	13.09		10	Comm Water Heat
Small Business Direct Install	11321	SBDI: Aerator - EWH - Retail	Aerator: electric water heating; retail	Water Heating	Aerator	1/1/16		151.60		kWh	per unit	PSE-deemed	Engineering	13.09		10	Comm Water Heat
Small Business Direct Install	11323	SBDI: Aerator - EWH - School	Aerator: electric water heating; school	Water Heating	Aerator	1/1/16		189.50		kWh	per unit	PSE-deemed	Engineering	13.09		10	Comm Water Heat
Small Business Direct Install	11317	SBDI: Aerator - EWH - Small Office	Aerator: electric water heating; small office	Water Heating	Aerator	1/1/16		46.60		kWh	per unit	PSE-deemed	Engineering	13.09		10	Comm Water Heat
Small Business Direct Install	10952	SBDI: Controls - ASH - Compressor - Low Temp	Anti-sweat heater control: controlling compressors; low temperature	Controls	Refrigeration Control	1/1/16		369.00		kWh	per unit	RTF-deemed		42.40		8	Comm Refrigeration
Small Business Direct Install	10953	SBDI: Controls - ASH - Compressor - Mid Temp	Anti-sweat heater control: controlling compressors; mid temperature	Controls	Refrigeration Control	1/1/16		230.00		kWh	per unit	RTF-deemed		42.40		8	Comm Refrigeration
Small Business Direct Install	10954	SBDI: ECM - Display Case	Electronically commutated motors: display case	Motors	Motor	1/1/16		685.00		kWh	per unit	RTF-deemed		133.28		15	Comm Refrigeration
Small Business Direct Install	10955	SBDI: ECM - Walk In - 23w	Electronically commutated motors: walk-in refrigerator; 23 watts or less	Motors	Motor	1/1/16		1,458.00		kWh	per unit	RTF-deemed		225.40		15	Comm Refrigeration
Small Business Direct Install	10956	SBDI: ECM - Walk In - More than 23w	Electronically commutated motors: walk-in refrigerator; more than 23 watts	Motors	Motor	1/1/16		592.00		kWh	per unit	RTF-deemed		225.40		15	Comm Refrigeration
Small Business Direct Install	10957	SBDI: Fixture - LED - Area - Photocell - 35w	35 watt LED area fixture with photocell	Lighting	Fixture	1/1/16		685.00		kWh	per unit	PSE-deemed	Engineering	153.17		12	Comm Lighting

Exhibit 5

2016-2017 Measure Values

Program Name	DSMC ID	Measure Name	Description	Measure Category	Measure Type	Version Start Date	Version End Date	Unit Savings - kWh	Unit Savings - Therm	Savings UOM Type	Unit Type	Source of Savings Type	PSE-Deemed Type	Unit Incentive - kWh	Unit Incentive Therm	Measure Life	End Use
Small Business Direct Install	11986	SBDI: Aerator - EWH - Commercial Kitchen - 1.0 gpm	1.0 gpm aerator: commercial kitchen use; electric water heating	Water Heating	Aerator	1/1/17		270.50		kWh	per unit	PSE-deemed	Engineering	$13.09		10	Comm Space Heat
Small Business Direct Install	11319	SBDI: Aerator - EWH - Restaurant	Aerator: electric water heating; restaurant	Water Heating	Aerator	1/1/17		215.10		kWh	per unit	PSE-deemed	Engineering	$13.09		10	Comm Water Heat
Small Business Direct Install	12053	SBDI: Fixture - LED - 100w - from 400w HID	100w LED fixture: replace 400w high-intensity discharge lamp	Lighting	Fixture	2/1/17		1,181.00		kWh	per unit	PSE-deemed	Engineering	$239.32		12	Comm Lighting
Small Business Direct Install	10958	SBDI: Fixture - LED - Recessed Can - Assembly Church	Recessed can LED: assembly or church	Lighting	Fixture	1/1/17		62.00		kWh	per unit	PSE-deemed	Engineering	$70.00		12	Comm Lighting
Small Business Direct Install	10959	SBDI: Fixture - LED - Recessed Can - Exterior	Recessed can LED: exterior	Lighting	Fixture	1/1/17		138.00		kWh	per unit	PSE-deemed	Engineering	$70.00		12	Comm Lighting
Small Business Direct Install	10960	SBDI: Fixture - LED - Recessed Can - Grocery	Recessed can LED: grocery	Lighting	Fixture	1/1/17		180.00		kWh	per unit	PSE-deemed	Engineering	$70.00		12	Comm Lighting
Small Business Direct Install	10961	SBDI: Fixture - LED - Recessed Can - Office	Recessed can LED: office	Lighting	Fixture	1/1/17		103.00		kWh	per unit	PSE-deemed	Engineering	$70.00		12	Comm Lighting
Small Business Direct Install	10962	SBDI: Fixture - LED - Recessed Can - Other	Recessed can LED: other	Lighting	Fixture	1/1/17		77.00		kWh	per unit	PSE-deemed	Engineering	$70.00		12	Comm Lighting
Small Business Direct Install	10968	SBDI: Fixture - LED - Wall Pack - Photocell - 60w	60 watt LED area fixture with photocell	Lighting	Fixture	1/1/16		937.00		kWh	per unit	PSE-deemed	Engineering	209.03		12	Comm Lighting
Small Business Direct Install	10969	SBDI: Fixture - LED - Wall Pack - Photocell - Less than 19w	Less than 19 watt LED wall pack with photocell	Lighting	Fixture	1/1/16		181.00		kWh	per unit	PSE-deemed	Engineering	70.73		12	Comm Lighting
Small Business Direct Install	10970	SBDI: Fixture - LED - Wall Pack - Photocell - Less than 30w	Less than 30 watt LED wall pack with photocell	Lighting	Fixture	1/1/16		601.00		kWh	per unit	PSE-deemed	Engineering	153.17		12	Comm Lighting
Small Business Direct Install	10963	SBDI: Fixture - LED - Recessed Can - Other Health	Recessed can LED: other health	Lighting	Fixture	1/1/17		151.00		kWh	per unit	PSE-deemed	Engineering	$70.00		12	Comm Lighting
Small Business Direct Install	10964	SBDI: Fixture - LED - Recessed Can - Restaurant	Recessed can LED: restaurant	Lighting	Fixture	1/1/17		123.00		kWh	per unit	PSE-deemed	Engineering	$70.00		12	Comm Lighting
Small Business Direct Install	10965	SBDI: Fixture - LED - Recessed Can - Retail	Recessed can LED: retail	Lighting	Fixture	1/1/17		113.00		kWh	per unit	PSE-deemed	Engineering	$70.00		12	Comm Lighting
Small Business Direct Install	10966	SBDI: Fixture - LED - Recessed Can - School K12	Recessed can LED: school K-12	Lighting	Fixture	1/1/17		78.00		kWh	per unit	PSE-deemed	Engineering	$70.00		12	Comm Lighting
Small Business Direct Install	10975	SBDI: Fixture - T8 - 4 ft - 2x - 28w - from 8 ft T8 F96 1x	2-lamp 4' 28 watt T8 fixture: replace 1-lamp 8' F96 T8	Lighting	Fixture	1/1/16		20.00		kWh	per unit	PSE-deemed	Engineering	127.20		12	Comm Lighting
Small Business Direct Install	10967	SBDI: Fixture - LED - Recessed Can - Warehouse	Recessed can LED: warehouse	Lighting	Fixture	1/1/17		81.00		kWh	per unit	PSE-deemed	Engineering	$70.00		12	Comm Lighting
Small Business Direct Install	10978	SBDI: Fixture - T8 - 4 ft - 4x - from 8 ft T12 F96 2x	4-lamp 4' T8 fixture: replace 2-lamp 8' F96 T12	Lighting	Fixture	1/1/16		40.00		kWh	per unit	PSE-deemed	Engineering	74.79		12	Comm Lighting
Small Business Direct Install	10971	SBDI: Fixture - T8 - 17w - 2x - from Multi-Lamp Fixture 80w NBF	2-lamp 17w T8 fixture: replace multi-lamp normal ballast factor 80 watt fixture	Lighting	Fixture	1/1/17		152.00		kWh	per unit	PSE-deemed	Engineering	$127.54		12	Comm Lighting
Small Business Direct Install	10972	SBDI: Fixture - T8 - 17w - 2x - NBF - from 120w Multi Lamp	2-lamp 17 watt T8 fixture; normal ballast factor: replace 120 watt multi-lamp fixture	Lighting	Fixture	1/1/17		284.00		kWh	per unit	PSE-deemed	Engineering	$127.54		12	Comm Lighting
Small Business Direct Install	10973	SBDI: Fixture - T8 - 25w - 2x - NBF - from 160w Multi Lamp	2-lamp 17 watt T8 fixture; normal ballast factor: replace 160 watt multi-lamp fixture	Lighting	Fixture	1/1/17		356.00		kWh	per unit	PSE-deemed	Engineering	$149.94		12	Comm Lighting
Small Business Direct Install	10974	SBDI: Fixture - T8 - 28w - 2x - NBF - from 240w Multi Lamp	2-lamp 28 watt T8 fixture; normal ballast factor: replace 240 watt multi-lamp fixture	Lighting	Fixture	1/1/17		634.00		kWh	per unit	PSE-deemed	Engineering	$179.34		12	Comm Lighting
Small Business Direct Install	10976	SBDI: Fixture - T8 - 4 ft - 2x - from 8 ft T12 HO F96 1x	2-lamp 4' T8 fixture: replace 1-lamp 8' high output F96 T12	Lighting	Fixture	1/1/17		188.00		kWh	per unit	PSE-deemed	Engineering	$127.20		12	Comm Lighting
Small Business Direct Install	10977	SBDI: Fixture - T8 - 4 ft - 4x - from 8 ft T12 HO F96 2x	4-lamp 4' T8 fixture: replace 2-lamp 8' high output F96 T12	Lighting	Fixture	1/1/17		376.00		kWh	per unit	PSE-deemed	Engineering	$74.79		12	Comm Lighting
Small Business Direct Install	10979	SBDI: Fixture - T8 - DLR - 4 ft - 2x - from 4 ft T12 3x	2-lamp 4' T8 fixture; delamp and reflector: replace 3-lamp 4' T12	Lighting	Fixture	1/1/17		208.00		kWh	per unit	PSE-deemed	Engineering	$61.56		12	Comm Lighting
Small Business Direct Install	10984	SBDI: Fixture - T8 Retro Kit - 2 ft - 1x - from 2 ft T12 1x	1-lamp 3' T8 fixture: replace 2'; 1 lamp T12 fixture	Lighting	Fixture	1/1/16		33.00		kWh	per unit	PSE-deemed	Engineering	38.14		12	Comm Lighting
Small Business Direct Install	10980	SBDI: Fixture - T8 - DLR - 4 ft - 2x - from 4 ft T12 4x	2-lamp 4' T8 fixture; delamp and reflector: replace 4-lamp 4' T12	Lighting	Fixture	1/1/17		330.00		kWh	per unit	PSE-deemed	Engineering	$62.01		12	Comm Lighting
Small Business Direct Install	10981	SBDI: Fixture - T8 - DLR - 4 ft - 2x - from 8 ft T12 delamp 2x	2-lamp 4' T8 fixture; delamp and reflector: replace 2-lamp 8' T12 delamp	Lighting	Fixture	1/1/17		297.00		kWh	per unit	PSE-deemed	Engineering	$62.01		12	Comm Lighting
Small Business Direct Install	10987	SBDI: Fixture - T8 Retro Kit - 4 ft - 1x - from 4 ft T12 1x	1-lamp 4' T8 fixture: replace 1-lamp 4' T12 fixture	Lighting	Fixture	1/1/16		43.00		kWh	per unit	PSE-deemed	Engineering	38.14		12	Comm Lighting
Small Business Direct Install	10988	SBDI: Fixture - T8 Retro Kit - 4 ft - 2x - from 4 ft T12 2x	2-lamp 4' T8 fixture: replace 2-lamp; 4' T12 fixture	Lighting	Fixture	1/1/16		86.00		kWh	per unit	PSE-deemed	Engineering	39.33		12	Comm Lighting
Small Business Direct Install	10982	SBDI: Fixture - T8 - DLR - 4 ft - 3x - from 4 ft T12 4x	3-lamp 4' T8 fixture; delamp and reflector: replace 4-lamp 4' T12	Lighting	Fixture	1/1/17		251.00		kWh	per unit	PSE-deemed	Engineering	$48.55		12	Comm Lighting
Small Business Direct Install	10983	SBDI: Fixture - T8 - DLR - 4 ft - 3x - from 4 ft T12 HO 4x	3-lamp 4' T8 fixture: replace 4-lamp 4' high output T12	Lighting	Fixture	1/1/17		713.00		kWh	per unit	PSE-deemed	Engineering	$48.55		12	Comm Lighting
Small Business Direct Install	11988	SBDI: Fixture - T8 - Split 17w 28w - 2x - LBF - Bi Level Stair	2-lamp split 17 and 28 watt T8 fixture: low ballast factor; installed in bi-level stair corridor	Lighting	Fixture	1/1/17		457.00		kWh	per unit	PSE-deemed	Engineering	$174.50		10	Comm Flat
Small Business Direct Install	10985	SBDI: Fixture - T8 Retro Kit - 2 ft - 1x - from 2 ft T12 HO 1x	1-lamp 2'; T8 fixture: replace 2'; 1 lamp high output T12 fixture	Lighting	Fixture	1/1/17		158.00		kWh	per unit	PSE-deemed	Engineering	$38.14		12	Comm Lighting
Small Business Direct Install	10986	SBDI: Fixture - T8 Retro Kit - 3 ft - 1x - from 3 ft T12 1x	1-lamp 3'; T8 fixture: replace 3' 1-lamp T12 fixture	Lighting	Fixture	1/1/17		79.00		kWh	per unit	PSE-deemed	Engineering	$38.14		12	Comm Lighting
Small Business Direct Install	10989	SBDI: Fixture - T8 Retro Kit - 4 ft - 2x - from 4 ft T12 HO 2x	2-lamp 4' T8 fixture: replace 2-lamp; 4' high output T12 fixture	Lighting	Fixture	1/1/17		317.00		kWh	per unit	PSE-deemed	Engineering	$39.33		12	Comm Lighting
Small Business Direct Install	10990	SBDI: Fixture - T8 Retro Kit - 4 ft - 3x - from 4 ft T12 HO 3x	3-lamp 4' T8 retrofit fixture: replace 3-lamp 4' high output T12 fixture	Lighting	Fixture	1/1/17		475.00		kWh	per unit	PSE-deemed	Engineering	$44.25		12	Comm Lighting
Small Business Direct Install	10991	SBDI: Fixture - T8 Retro Kit - DLR - 4 ft - 2x - from 4 ft T12 HO 3x	2-lamp 4' T8 fixture retrofit kit; delamp and reflector: replace 3-lamp; 4' high output T12	Lighting	Fixture	1/1/17		554.00		kWh	per unit	PSE-deemed	Engineering	$61.56		12	Comm Lighting
Small Business Direct Install	10995	SBDI: Fixture - TLED - 4 ft - 2x - from 8 ft T12 F96 1x	2-lamp 4' tubular LED fixture: replace 1-lamp 8' F96 T12	Lighting	Fixture	1/1/17		142.00		kWh	per unit	PSE-deemed	Engineering	$64.90		12	Comm Lighting
Small Business Direct Install	10996	SBDI: Fixture - TLED - 4 ft - 2x - from 8 ft T12 HO F96 1x	2-lamp 4' tubular LED fixture: replace 1-lamp 8' high output F96 T12	Lighting	Fixture	1/1/17		261.00		kWh	per unit	PSE-deemed	Engineering	$65.48		12	Comm Lighting
Small Business Direct Install	10997	SBDI: Fixture - TLED - 4 ft - 4x - from 8 ft T12 F96 2x	4-lamp 4' tubular LED fixture: replace 2-lamp 8' F96 T12	Lighting	Fixture	1/1/17		284.00		kWh	per unit	PSE-deemed	Engineering	$84.30		12	Comm Lighting
Small Business Direct Install	10998	SBDI: Fixture - TLED - 4 ft - 4x - from 8 ft T12 HO F96 2x	4-lamp 4' tubular LED fixture: replace 2-lamp 8' high output F96 T12	Lighting	Fixture	1/1/17		521.00		kWh	per unit	PSE-deemed	Engineering	$54.05		12	Comm Lighting
Small Business Direct Install	10999	SBDI: Fixture - TLED - DLR - 4 ft - 2x - from 4 ft T12 3x	2-lamp 4' tubular LED fixture; delamp and reflector: replace 3-lamp 4' T12	Lighting	Fixture	1/1/17		281.00		kWh	per unit	PSE-deemed	Engineering	$60.93		12	Comm Lighting
Small Business Direct Install	11000	SBDI: Fixture - TLED - DLR - 4 ft - 2x - from 4 ft T12 4x	2-lamp 4' tubular LED fixture; delamp and reflector: replace 4-lamp 4' T12	Lighting	Fixture	1/1/17		403.00		kWh	per unit	PSE-deemed	Engineering	$61.22		12	Comm Lighting
Small Business Direct Install	11001	SBDI: Fixture - TLED - DLR - 4 ft - 2x - from 4 ft T12 HO 3x	2-lamp 4' tubular LED fixture; delamp and reflector: replace 3-lamp; 4' high output T12	Lighting	Fixture	1/1/17		627.00		kWh	per unit	PSE-deemed	Engineering	$43.73		12	Comm Lighting
Small Business Direct Install	11125	SBDI: Fixture - TLED - DLR - 4 ft - 2x - from 4 ft T8 32w NLO 3x	2-lamp 4' tubular LED fixture: delamp and reflector; replace 3-lamp 4' 32 watt normal light output T8	Lighting	Fixture	1/1/16		182.00		kWh	per unit	PSE-deemed	Engineering	60.93		12	Comm Lighting
Small Business Direct Install	11002	SBDI: Fixture - TLED - DLR - 4 ft - 2x - from 4 ft T12 HO 4x	2-lamp 4' tubular LED: replace 4-lamp 4' high output T12	Lighting	Fixture	1/1/17		865.00		kWh	per unit	PSE-deemed	Engineering	$43.73		12	Comm Lighting

Exhibit 5

2016-2017 Measure Values

Program Name	DSMC ID	Measure Name	Description	Measure Category	Measure Type	Version Start Date	Version End Date	Unit Savings - kWh	Unit Savings - Therm	Savings UOM Type	Unit Type	Source of Savings Type	PSE-Deemed Type	Unit Incentive - kWh	Unit Incentive Therm	Measure Life	End Use
Small Business Direct Install	11003	SBDI: Fixture - TLED - DLR - 4 ft - 2x - from 4 ft T8 28w NLO 4x	2-lamp 4' Tubular LED fixture; delamp and reflector: replace 4-lamp 4' 28 watt normal light output T8	Lighting	Fixture	1/1/17		231.00		kWh	per unit	PSE-deemed	Engineering	$68.87		12	Comm Lighting
Small Business Direct Install	10993	SBDI: Fixture - TLED - DLR - 4 ft - 2x - from 4 ft T8 32w HLO 3x	2-lamp 4' tubular LED fixture; delamp and reflector: replace 3-lamp 4' 32 watt high light output T8	Lighting	Fixture	1/1/17		271.00		kWh	per unit	PSE-deemed	Engineering	$60.93		12	Comm Lighting
Small Business Direct Install	11004	SBDI: Fixture - TLED - DLR - 4 ft - 2x - from 4 ft T8 32w HLO 4x	2-lamp 4' tubular LED fixture; delamp and reflector: replace 4-lamp 4' 32 watt high light output T8	Lighting	Fixture	1/1/17		389.00		kWh	per unit	PSE-deemed	Engineering	$68.87		12	Comm Lighting
Small Business Direct Install	11009	SBDI: Fixture - TLED - DLR - 4 ft - 3x - from 4 ft T8 28w LLO 4x	3-lamp 4' tubular LED fixture; delamp and reflector: replace 4-lamp 4' 28 watt low light output T8	Lighting	Fixture	1/1/16		149.00		kWh	per unit	PSE-deemed	Engineering	51.61		12	Comm Lighting
Small Business Direct Install	10992	SBDI: Fixture - TLED - DLR - 4 ft - 2x - from 4 ft T8 32w LLO 3x	2-lamp 4' tubular LED fixture; delamp and reflector: replace 3-lamp 4' 32 watt low light output T8	Lighting	Fixture	1/1/17		152.00		kWh	per unit	PSE-deemed	Engineering	$60.93		12	Comm Lighting
Small Business Direct Install	11011	SBDI: Lamp - LED - 20w - from 100w HID	20 watt LED lamp: replace 100 watt high intensity discharge lamp	Lighting	Lamp	1/1/16		458.00		kWh	per unit	PSE-deemed	Engineering	91.65		12	Comm Lighting
Small Business Direct Install	11012	SBDI: Lamp - LED - 35w - from 175w HID	35 watt LED lamp: replace 175 watt high intensity discharge lamp	Lighting	Lamp	1/1/16		735.00		kWh	per unit	PSE-deemed	Engineering	153.17		12	Comm Lighting
Small Business Direct Install	11013	SBDI: Lamp - LED - 35w - from 250w HID	35 watt LED: replace 250 watt high intensity discharge lamp	Lighting	Lamp	1/1/16		1,075.00		kWh	per unit	PSE-deemed	Engineering	153.17		12	Comm Lighting
Small Business Direct Install	11014	SBDI: Lamp - LED - 60w - from 250w HID	60 watt LED: replace 250 watt high intensity discharge lamp	Lighting	Lamp	1/1/16		970.00		kWh	per unit	PSE-deemed	Engineering	194.04		12	Comm Lighting
Small Business Direct Install	11015	SBDI: Lamp - LED - 60w - from 400w HID	60w LED lamp: replace 400 watt high intensity discharge lamp	Lighting	Lamp	1/1/16		1,672.00		kWh	per unit	PSE-deemed	Engineering	329.75		12	Comm Lighting
Small Business Direct Install	11016	SBDI: Lamp - LED - 80w - from 400w HID	80w LED lamp: replace 400 watt high intensity discharge lamp	Lighting	Lamp	1/1/16		1,588.00		kWh	per unit	PSE-deemed	Engineering	317.52		12	Comm Lighting
Small Business Direct Install	11005	SBDI: Fixture - TLED - DLR - 4 ft - 2x - from 4 ft T8 32w NLO 4x	2-lamp 4' tubular LED fixture; delamp and reflector: replace 4-lamp 4' 32 watt normal light output T8	Lighting	Fixture	1/1/17		271.00		kWh	per unit	PSE-deemed	Engineering	$68.87		12	Comm Lighting
Small Business Direct Install	11006	SBDI: Fixture - TLED - DLR - 4 ft - 2x - from 8 ft T12 F96 2x	2-lamp 4' tubular LED fixture: delamp and reflector: replace 2-lamp 8' F96 T12	Lighting	Fixture	1/1/17		370.00		kWh	per unit	PSE-deemed	Engineering	$65.93		12	Comm Lighting
Small Business Direct Install	11007	SBDI: Fixture - TLED - DLR - 4 ft - 3x - from 4 ft T12 4x	3-lamp 4' tubular LED fixture; delamp and reflector: replace 4-lamp 4' T12	Lighting	Fixture	1/1/17		360.00		kWh	per unit	PSE-deemed	Engineering	$55.31		12	Comm Lighting
Small Business Direct Install	11008	SBDI: Fixture - TLED - DLR - 4 ft - 3x - from 4 ft T12 HO 4x	3-lamp 4' tubular LED fixture; delamp and reflector: replace 4-lamp 4' high output T12	Lighting	Fixture	1/1/17		822.00		kWh	per unit	PSE-deemed	Engineering	$37.51		12	Comm Lighting
Small Business Direct Install	11010	SBDI: Fixture - TLED - DLR - 4 ft - 3x - from 4 ft T8 32w LLO 4x	3-lamp 4' tubular LED fixture; delamp and reflector: replace 4-lamp 4' 32 watt low light output T8	Lighting	Fixture	1/1/17		188.00		kWh	per unit	PSE-deemed	Engineering	$51.61		12	Comm Lighting
Small Business Direct Install	11017	SBDI: Lamp - LED - Decorative - Assembly Church	Decorative LED lamp: assembly or church	Lighting	Lamp	1/1/17		35.00		kWh	per unit	PSE-deemed	Engineering	$10.82		3	Comm Lighting
Small Business Direct Install	11018	SBDI: Lamp - LED - Decorative - Exterior	Decorative LED lamp: exterior	Lighting	Lamp	1/1/17		79.00		kWh	per unit	PSE-deemed	Engineering	$10.82		3	Comm Lighting
Small Business Direct Install	11019	SBDI: Lamp - LED - Decorative - Grocery	Decorative LED lamp: grocery	Lighting	Lamp	1/1/17		102.00		kWh	per unit	PSE-deemed	Engineering	$10.82		3	Comm Lighting
Small Business Direct Install	11020	SBDI: Lamp - LED - Decorative - Office	Decorative LED lamp: office	Lighting	Lamp	1/1/17		58.00		kWh	per unit	PSE-deemed	Engineering	$10.82		3	Comm Lighting
Small Business Direct Install	11021	SBDI: Lamp - LED - Decorative - Other	Decorative LED lamp: other	Lighting	Lamp	1/1/17		44.00		kWh	per unit	PSE-deemed	Engineering	$10.82		3	Comm Lighting
Small Business Direct Install	11022	SBDI: Lamp - LED - Decorative - Other Health	Decorative LED lamp: other healt	Lighting	Lamp	1/1/17		86.00		kWh	per unit	PSE-deemed	Engineering	$10.82		3	Comm Lighting
Small Business Direct Install	11023	SBDI: Lamp - LED - Decorative - Restaurant	Decorative LED lamp: restaurant	Lighting	Lamp	1/1/17		70.00		kWh	per unit	PSE-deemed	Engineering	$10.82		3	Comm Lighting
Small Business Direct Install	11024	SBDI: Lamp - LED - Decorative - Retail	Decorative LED lamp: retail	Lighting	Lamp	1/1/17		64.00		kWh	per unit	PSE-deemed	Engineering	$10.82		3	Comm Lighting
Small Business Direct Install	11025	SBDI: Lamp - LED - Decorative - School K12	Decorative LED lamp: school K-12	Lighting	Lamp	1/1/17		45.00		kWh	per unit	PSE-deemed	Engineering	$10.82		3	Comm Lighting
Small Business Direct Install	11026	SBDI: Lamp - LED - Decorative - Warehouse	Decorative LED lamp: warehouse	Lighting	Lamp	1/1/17		46.00		kWh	per unit	PSE-deemed	Engineering	$10.82		3	Comm Lighting
Small Business Direct Install	11027	SBDI: Lamp - LED - Globe - 5w - Assembly Church	5 watt globe LED: assembly or church	Lighting	Lamp	1/1/17		25.00		kWh	per unit	PSE-deemed	Engineering	$14.89		5	Comm Lighting
Small Business Direct Install	11028	SBDI: Lamp - LED - Globe - 5w - Exterior	5 watt globe LED: exterior	Lighting	Lamp	1/1/17		56.00		kWh	per unit	PSE-deemed	Engineering	$14.89		5	Comm Lighting
Small Business Direct Install	11029	SBDI: Lamp - LED - Globe - 5w - Grocery	5 watt globe LED: grocery	Lighting	Lamp	1/1/17		73.00		kWh	per unit	PSE-deemed	Engineering	$14.89		5	Comm Lighting
Small Business Direct Install	11030	SBDI: Lamp - LED - Globe - 5w - Office	5 watt globe LED: office	Lighting	Lamp	1/1/17		41.00		kWh	per unit	PSE-deemed	Engineering	$14.89		5	Comm Lighting
Small Business Direct Install	11031	SBDI: Lamp - LED - Globe - 5w - Other	5 watt globe LED: other	Lighting	Lamp	1/1/17		31.00		kWh	per unit	PSE-deemed	Engineering	$14.89		5	Comm Lighting
Small Business Direct Install	11037	SBDI: Lamp - LED - High Output - from 320w HID	High output LED lamp: replace 320 watt high intensity discharge lamp	Lighting	Lamp	1/1/16		928.00		kWh	per unit	PSE-deemed	Engineering	329.75		12	Comm Lighting
Small Business Direct Install	11038	SBDI: Lamp - LED - High Output - from 400w HID	High output LED lamp: replace 400 watt high intensity discharge lamp	Lighting	Lamp	1/1/16		1,306.00		kWh	per unit	PSE-deemed	Engineering	329.75		12	Comm Lighting
Small Business Direct Install	11039	SBDI: Lamp - LED - Low to Med Output - from 320w HID	Low to medium output LED lamp: replace 320 watt high intensity discharge lamp	Lighting	Lamp	1/1/16		1,298.00		kWh	per unit	PSE-deemed	Engineering	329.75		12	Comm Lighting
Small Business Direct Install	11040	SBDI: Lamp - LED - Low to Med Output - from 400w HID	Low to medium output LED lamp: replace 400 watt high intensity discharge lamp	Lighting	Lamp	1/1/16		1,676.00		kWh	per unit	PSE-deemed	Engineering	329.75		12	Comm Lighting
Small Business Direct Install	11032	SBDI: Lamp - LED - Globe - 5w - Other Health	5 watt globe LED: other health	Lighting	Lamp	1/1/17		61.00		kWh	per unit	PSE-deemed	Engineering	$14.89		5	Comm Lighting
Small Business Direct Install	11033	SBDI: Lamp - LED - Globe - 5w - Restaurant	5 watt globe LED: restaurant	Lighting	Lamp	1/1/17		50.00		kWh	per unit	PSE-deemed	Engineering	$14.89		5	Comm Lighting
Small Business Direct Install	11034	SBDI: Lamp - LED - Globe - 5w - Retail	5 watt globe LED: retail	Lighting	Lamp	1/1/17		46.00		kWh	per unit	PSE-deemed	Engineering	$14.89		5	Comm Lighting
Small Business Direct Install	11035	SBDI: Lamp - LED - Globe - 5w - School K12	5 watt globe LED: school K-12	Lighting	Lamp	1/1/17		32.00		kWh	per unit	PSE-deemed	Engineering	$14.89		5	Comm Lighting
Small Business Direct Install	11036	SBDI: Lamp - LED - Globe - 5w - Warehouse	5 watt globe LED: warehouse	Lighting	Lamp	1/1/17		33.00		kWh	per unit	PSE-deemed	Engineering	$14.89		5	Comm Lighting
Small Business Direct Install	11041	SBDI: Lamp - LED - MR 16 - Assembly Church	LED MR16: assembly or church	Lighting	Lamp	1/1/17		47.00		kWh	per unit	PSE-deemed	Engineering	$19.00		5	Comm Lighting
Small Business Direct Install	11042	SBDI: Lamp - LED - MR 16 - Exterior	LED MR16: exterior	Lighting	Lamp	1/1/17		103.00		kWh	per unit	PSE-deemed	Engineering	$19.00		5	Comm Lighting
Small Business Direct Install	11043	SBDI: Lamp - LED - MR 16 - Grocery	LED MR16: grocery	Lighting	Lamp	1/1/17		134.00		kWh	per unit	PSE-deemed	Engineering	$19.00		5	Comm Lighting
Small Business Direct Install	11044	SBDI: Lamp - LED - MR 16 - Office	LED MR16: office	Lighting	Lamp	1/1/17		77.00		kWh	per unit	PSE-deemed	Engineering	$19.00		5	Comm Lighting
Small Business Direct Install	11045	SBDI: Lamp - LED - MR 16 - Other	LED MR16: other	Lighting	Lamp	1/1/17		58.00		kWh	per unit	PSE-deemed	Engineering	$19.00		5	Comm Lighting
Small Business Direct Install	11046	SBDI: Lamp - LED - MR 16 - Other Health	LED MR16: other health	Lighting	Lamp	1/1/17		113.00		kWh	per unit	PSE-deemed	Engineering	$19.00		5	Comm Lighting
Small Business Direct Install	11047	SBDI: Lamp - LED - MR 16 - Restaurant	LED MR16: restaurant	Lighting	Lamp	1/1/17		92.00		kWh	per unit	PSE-deemed	Engineering	$19.00		5	Comm Lighting

Exhibit 5 2016-2017 Measure Values

Program Name	DSMC ID	Measure Name	Description	Measure Category	Measure Type	Version Start Date	Version End Date	Unit Savings - kWh	Unit Savings - Therm	Savings UOM Type	Unit Type	Source of Savings Type	PSE-Deemed Type	Unit Incentive - kWh	Unit Incentive Therm	Measure Life	End Use
Small Business Direct Install	11048	SBDI: Lamp - LED - MR 16 - Retail	LED MR16: retail	Lighting	Lamp	1/1/17		84.00		kWh	per unit	PSE-deemed	Engineering	$19.00		5	Comm Lighting
Small Business Direct Install	11049	SBDI: Lamp - LED - MR 16 - School K12	LED MR16: school K-12	Lighting	Lamp	1/1/17		59.00		kWh	per unit	PSE-deemed	Engineering	$19.00		5	Comm Lighting
Small Business Direct Install	11050	SBDI: Lamp - LED - MR 16 - Warehouse	LED MR16: warehouse	Lighting	Lamp	1/1/17		61.00		kWh	per unit	PSE-deemed	Engineering	$19.00		5	Comm Lighting
Small Business Direct Install	11051	SBDI: Lamp - LED - Omni - 11w - Assembly Church	11 watt omnidirectional LED: assembly or church	Lighting	Lamp	1/1/17		55.00		kWh	per unit	PSE-deemed	Engineering	$13.78		5	Comm Lighting
Small Business Direct Install	11052	SBDI: Lamp - LED - Omni - 11w - Exterior	11 watt omnidirectional LED: exterior	Lighting	Lamp	1/1/17		123.00		kWh	per unit	PSE-deemed	Engineering	$13.78		5	Comm Lighting
Small Business Direct Install	11053	SBDI: Lamp - LED - Omni - 11w - Grocery	11 watt omnidirectional LED: grocery	Lighting	Lamp	1/1/17		159.00		kWh	per unit	PSE-deemed	Engineering	$13.78		5	Comm Lighting
Small Business Direct Install	11054	SBDI: Lamp - LED - Omni - 11w - Office	11 watt omnidirectional LED: office	Lighting	Lamp	1/1/17		91.00		kWh	per unit	PSE-deemed	Engineering	$13.78		5	Comm Lighting
Small Business Direct Install	11055	SBDI: Lamp - LED - Omni - 11w - Other	11 watt omnidirectional LED: other	Lighting	Lamp	1/1/17		68.00		kWh	per unit	PSE-deemed	Engineering	$13.78		5	Comm Lighting
Small Business Direct Install	11056	SBDI: Lamp - LED - Omni - 11w - Other Health	11 watt omnidirectional LED: other health	Lighting	Lamp	1/1/17		134.00		kWh	per unit	PSE-deemed	Engineering	$13.78		5	Comm Lighting
Small Business Direct Install	11057	SBDI: Lamp - LED - Omni - 11w - Restaurant	11 watt omnidirectional LED: restaurant	Lighting	Lamp	1/1/17		109.00		kWh	per unit	PSE-deemed	Engineering	$13.78		5	Comm Lighting
Small Business Direct Install	11058	SBDI: Lamp - LED - Omni - 11w - Retail	11 watt omnidirectional LED: retail	Lighting	Lamp	1/1/17		100.00		kWh	per unit	PSE-deemed	Engineering	$13.78		5	Comm Lighting
Small Business Direct Install	11059	SBDI: Lamp - LED - Omni - 11w - School K12	11 wattomnidirectional LED: school K-12	Lighting	Lamp	1/1/17		70.00		kWh	per unit	PSE-deemed	Engineering	$13.78		5	Comm Lighting
Small Business Direct Install	11060	SBDI: Lamp - LED - Omni - 11w - Warehouse	11 watt omnidirectional LED: warehouse	Lighting	Lamp	1/1/17		72.00		kWh	per unit	PSE-deemed	Engineering	$13.78		5	Comm Lighting
Small Business Direct Install	11061	SBDI: Lamp - LED - Omni - 7w - Assembly Church	7 watt omnidirectional LED: assembly or church	Lighting	Lamp	1/1/17		35.00		kWh	per unit	PSE-deemed	Engineering	$13.78		5	Comm Lighting
Small Business Direct Install	11062	SBDI: Lamp - LED - Omni - 7w - Exterior	7 watt omnidirectional LED: exterior	Lighting	Lamp	1/1/17		78.00		kWh	per unit	PSE-deemed	Engineering	$13.78		5	Comm Lighting
Small Business Direct Install	11063	SBDI: Lamp - LED - Omni - 7w - Grocery	7 watt omnidirectional LED: grocery	Lighting	Lamp	1/1/17		101.00		kWh	per unit	PSE-deemed	Engineering	$13.78		5	Comm Lighting
Small Business Direct Install	11064	SBDI: Lamp - LED - Omni - 7w - Office	7 watt omnidirectional LED: office	Lighting	Lamp	1/1/17		58.00		kWh	per unit	PSE-deemed	Engineering	$13.78		5	Comm Lighting
Small Business Direct Install	11065	SBDI: Lamp - LED - Omni - 7w - Other	7 watt omnidirectional LED: other	Lighting	Lamp	1/1/17		43.00		kWh	per unit	PSE-deemed	Engineering	$13.78		5	Comm Lighting
Small Business Direct Install	11066	SBDI: Lamp - LED - Omni - 7w - Other Health	7 watt omnidirectional LED: other health	Lighting	Lamp	1/1/17		85.00		kWh	per unit	PSE-deemed	Engineering	$13.78		5	Comm Lighting
Small Business Direct Install	11067	SBDI: Lamp - LED - Omni - 7w - Restaurant	5 watt omnidirectional LED: restaurant	Lighting	Lamp	1/1/17		70.00		kWh	per unit	PSE-deemed	Engineering	$13.78		5	Comm Lighting
Small Business Direct Install	11068	SBDI: Lamp - LED - Omni - 7w - Retail	7 watt omnidirectional LED: retail	Lighting	Lamp	1/1/17		64.00		kWh	per unit	PSE-deemed	Engineering	$13.78		5	Comm Lighting
Small Business Direct Install	11069	SBDI: Lamp - LED - Omni - 7w - School K12	7 watt omnidirectional LED: school K-12	Lighting	Lamp	1/1/17		44.00		kWh	per unit	PSE-deemed	Engineering	$13.78		5	Comm Lighting
Small Business Direct Install	11070	SBDI: Lamp - LED - Omni - 7w - Warehouse	7 watt omnidirectional LED: warehouse	Lighting	Lamp	1/1/17		46.00		kWh	per unit	PSE-deemed	Engineering	$13.78		5	Comm Lighting
Small Business Direct Install	11071	SBDI: Lamp - LED - Par 20 - Assembly Church	Par 20 LED lamp: assembly or church	Lighting	Lamp	1/1/17		66.00		kWh	per unit	PSE-deemed	Engineering	$20.07		5	Comm Lighting
Small Business Direct Install	11072	SBDI: Lamp - LED - Par 20 - Exterior	Par 20 LED lamp: exterior	Lighting	Lamp	1/1/17		147.00		kWh	per unit	PSE-deemed	Engineering	$20.07		5	Comm Lighting
Small Business Direct Install	11073	SBDI: Lamp - LED - Par 20 - Grocery	Par 20 LED lamp: grocery	Lighting	Lamp	1/1/17		192.00		kWh	per unit	PSE-deemed	Engineering	$20.07		5	Comm Lighting
Small Business Direct Install	11074	SBDI: Lamp - LED - Par 20 - Office	Par 20 LED lamp: office	Lighting	Lamp	1/1/17		110.00		kWh	per unit	PSE-deemed	Engineering	$20.07		5	Comm Lighting
Small Business Direct Install	11075	SBDI: Lamp - LED - Par 20 - Other	Par 20 LED lamp: other	Lighting	Lamp	1/1/17		82.00		kWh	per unit	PSE-deemed	Engineering	$20.07		5	Comm Lighting
Small Business Direct Install	11076	SBDI: Lamp - LED - Par 20 - Other Health	Par 20 LED lamp: other health	Lighting	Lamp	1/1/17		161.00		kWh	per unit	PSE-deemed	Engineering	$20.07		5	Comm Lighting
Small Business Direct Install	11077	SBDI: Lamp - LED - Par 20 - Restaurant	Par 20 LED lamp: restaurant	Lighting	Lamp	1/1/17		131.00		kWh	per unit	PSE-deemed	Engineering	$20.07		5	Comm Lighting
Small Business Direct Install	11078	SBDI: Lamp - LED - Par 20 - Retail	Par 20 LED lamp: retail	Lighting	Lamp	1/1/17		120.00		kWh	per unit	PSE-deemed	Engineering	$20.07		5	Comm Lighting
Small Business Direct Install	11079	SBDI: Lamp - LED - Par 20 - School K12	Par 20 LED lamp: school K-12	Lighting	Lamp	1/1/17		84.00		kWh	per unit	PSE-deemed	Engineering	$20.07		5	Comm Lighting
Small Business Direct Install	11080	SBDI: Lamp - LED - Par 20 - Warehouse	Par 20 LED lamp: warehouse	Lighting	Lamp	1/1/17		87.00		kWh	per unit	PSE-deemed	Engineering	$20.07		5	Comm Lighting
Small Business Direct Install	11081	SBDI: Lamp - LED - Par 30 - Assembly Church	Par 30 LED lamp: assembly or church	Lighting	Lamp	1/1/17		57.00		kWh	per unit	PSE-deemed	Engineering	$22.41		5	Comm Lighting
Small Business Direct Install	11082	SBDI: Lamp - LED - Par 30 - Exterior	Par 30 LED lamp: exterior	Lighting	Lamp	1/1/17		126.00		kWh	per unit	PSE-deemed	Engineering	$22.41		5	Comm Lighting
Small Business Direct Install	11083	SBDI: Lamp - LED - Par 30 - Grocery	Par 30 LED lamp: grocery	Lighting	Lamp	1/1/17		163.00		kWh	per unit	PSE-deemed	Engineering	$22.41		5	Comm Lighting
Small Business Direct Install	11084	SBDI: Lamp - LED - Par 30 - Office	Par 30 LED lamp: office	Lighting	Lamp	1/1/17		93.00		kWh	per unit	PSE-deemed	Engineering	$22.41		5	Comm Lighting
Small Business Direct Install	11085	SBDI: Lamp - LED - Par 30 - Other	Par 30 LED lamp: other	Lighting	Lamp	1/1/17		70.00		kWh	per unit	PSE-deemed	Engineering	$22.41		5	Comm Lighting
Small Business Direct Install	11086	SBDI: Lamp - LED - Par 30 - Other Health	Par 30 LED lamp: other health	Lighting	Lamp	1/1/17		137.00		kWh	per unit	PSE-deemed	Engineering	$22.41		5	Comm Lighting
Small Business Direct Install	11087	SBDI: Lamp - LED - Par 30 - Restaurant	Par 30 LED lamp: restaurant	Lighting	Lamp	1/1/17		112.00		kWh	per unit	PSE-deemed	Engineering	$22.41		5	Comm Lighting
Small Business Direct Install	11088	SBDI: Lamp - LED - Par 30 - Retail	Par 30 LED lamp: retail	Lighting	Lamp	1/1/17		103.00		kWh	per unit	PSE-deemed	Engineering	$22.41		5	Comm Lighting
Small Business Direct Install	11089	SBDI: Lamp - LED - Par 30 - School K12	Par 30 LED lamp: school K-12	Lighting	Lamp	1/1/17		71.00		kWh	per unit	PSE-deemed	Engineering	$22.41		5	Comm Lighting
Small Business Direct Install	11090	SBDI: Lamp - LED - Par 30 - Warehouse	Par 30 LED lamp: warehouse	Lighting	Lamp	1/1/17		74.00		kWh	per unit	PSE-deemed	Engineering	$22.41		5	Comm Lighting
Small Business Direct Install	11091	SBDI: Lamp - LED - Par 38 or 40 - Assembly Church	Par 38 or 40 LED lamp: assembly or church	Lighting	Lamp	1/1/17		76.00		kWh	per unit	PSE-deemed	Engineering	$30.78		5	Comm Lighting
Small Business Direct Install	11092	SBDI: Lamp - LED - Par 38 or 40 - Exterior	Par 38 or 40 LED lamp: exterior	Lighting	Lamp	1/1/17		170.00		kWh	per unit	PSE-deemed	Engineering	$30.78		5	Comm Lighting
Small Business Direct Install	11093	SBDI: Lamp - LED - Par 38 or 40 - Grocery	Par 38 or 40 LED lamp: grocery	Lighting	Lamp	1/1/17		221.00		kWh	per unit	PSE-deemed	Engineering	$30.78		5	Comm Lighting
Small Business Direct Install	11094	SBDI: Lamp - LED - Par 38 or 40 - Office	Par 38 or 40 LED lamp: office	Lighting	Lamp	1/1/17		126.00		kWh	per unit	PSE-deemed	Engineering	$30.78		5	Comm Lighting
Small Business Direct Install	11095	SBDI: Lamp - LED - Par 38 or 40 - Other	Par 38 or 40 LED lamp: other	Lighting	Lamp	1/1/17		95.00		kWh	per unit	PSE-deemed	Engineering	$30.78		5	Comm Lighting

Exhibit 5

2016-2017 Measure Values

Program Name	DSMC ID	Measure Name	Description	Measure Category	Measure Type	Version Start Date	Version End Date	Unit Savings - kWh	Unit Savings - Therm	Savings UOM Type	Unit Type	Source of Savings Type	PSE-Deemed Type	Unit Incentive - kWh	Unit Incentive Therm	Measure Life	End Use
Small Business Direct Install	11101	SBDI: Lamp - T8 - 4 ft - 3x - from 4 ft T12 3x	3-lamp 4' T8: replace 3-lamp 4' T12	Lighting	Lamp	1/1/16		129.00		kWh	per unit	PSE-deemed	Engineering	44.25		12	Comm Lighting
Small Business Direct Install	11102	SBDI: Lamp - T8 - 4 ft - 4x - from 4 ft T12 4x	4-lamp 4' T8: replace 4-lamp 4' T12	Lighting	Lamp	1/1/16		172.00		kWh	per unit	PSE-deemed	Engineering	52.82		12	Comm Lighting
Small Business Direct Install	11096	SBDI: Lamp - LED - Par 38 or 40 - Other Health	Par 38 or 40 LED lamp: other health	Lighting	Lamp	1/1/17		185.00		kWh	per unit	PSE-deemed	Engineering	$30.78		5	Comm Lighting
Small Business Direct Install	11097	SBDI: Lamp - LED - Par 38 or 40 - Restaurant	Par 38 or 40 LED lamp: restaurant	Lighting	Lamp	1/1/17		151.00		kWh	per unit	PSE-deemed	Engineering	$30.78		5	Comm Lighting
Small Business Direct Install	11098	SBDI: Lamp - LED - Par 38 or 40 - Retail	Par 38 or 40 LED lamp: retail	Lighting	Lamp	1/1/17		139.00		kWh	per unit	PSE-deemed	Engineering	$30.78		5	Comm Lighting
Small Business Direct Install	11106	SBDI: Lamp - TLED - 3 ft - 1x - from 3 ft 1x T8 25w	1-lamp 3'; tubular LED: replace 3' 1-lamp 25 watt T8	Lighting	Lamp	1/1/16		43.00		kWh	per unit	PSE-deemed	Engineering	19.07		12	Comm Lighting
Small Business Direct Install	11099	SBDI: Lamp - LED - Par 38 or 40 - School K12	Par 38 or 40 LED lamp: school K-12	Lighting	Lamp	1/1/17		96.00		kWh	per unit	PSE-deemed	Engineering	$30.78		5	Comm Lighting
Small Business Direct Install	11100	SBDI: Lamp - LED - Par 38 or 40 - Warehouse	Par 38 or 40 LED lamp: warehouse	Lighting	Lamp	1/1/17		100.00		kWh	per unit	PSE-deemed	Engineering	$30.78		5	Comm Lighting
Small Business Direct Install	11103	SBDI: Lamp - T8 - 4 ft - 4x - from 4 ft T12 HO 4x	4-lamp 4' T8: replace 4-lamp 4' high output T12	Lighting	Lamp	1/1/17		634.00		kWh	per unit	PSE-deemed	Engineering	$52.82		12	Comm Lighting
Small Business Direct Install	11110	SBDI: Lamp - TLED - 4 ft - 1x - from 4 ft T8 28w NLO 1x	1-lamp 4' tubular LED: replace 1-lamp; normal light output; 28 watt T8	Lighting	Lamp	1/1/16		36.00		kWh	per unit	PSE-deemed	Engineering	29.30		12	Comm Lighting
Small Business Direct Install	11111	SBDI: Lamp - TLED - 4 ft - 1x - from 4ft T8 32w HLO 1x	1-lamp 4' tubular LED: replace 1-lamp; high light output; 32 watt T8	Lighting	Lamp	1/1/16		76.00		kWh	per unit	PSE-deemed	Engineering	29.30		12	Comm Lighting
Small Business Direct Install	11112	SBDI: Lamp - TLED - 4 ft - 1x - from 4ft T8 32w LLO 1x	1-lamp 4' tubular LED: replace 1-lamp; low light output; 32 watt T8	Lighting	Lamp	1/1/16		36.00		kWh	per unit	PSE-deemed	Engineering	29.30		12	Comm Lighting
Small Business Direct Install	11113	SBDI: Lamp - TLED - 4 ft - 1x - from 4ft T8 32w NLO 1x	1-lamp 4' tubular LED: replace 1-lamp; normal light output; 32 watt T8	Lighting	Lamp	1/1/16		46.00		kWh	per unit	PSE-deemed	Engineering	29.30		12	Comm Lighting
Small Business Direct Install	11104	SBDI: Lamp - T8 - DLR - 4 ft - 2x - from 4 ft T12 HO 4x	2-lamp 4' T8: replace 4-lamp 4' high output T12	Lighting	Fixture	1/1/17		792.00		kWh	per unit	PSE-deemed	Engineering	$62.01		12	Comm Lighting
Small Business Direct Install	11105	SBDI: Lamp - T8 - HBF - 4 ft - 6x- from 400w HID	6-lamp 4' T8 high ballast factor: replace 400 watt high intensity discharge	Lighting	Lamp	1/1/17		884.00		kWh	per unit	PSE-deemed	Engineering	$239.32		12	Comm Lighting
Small Business Direct Install	11116	SBDI: Lamp - TLED - 4 ft - 2x - from 4 ft T8 28w LLO 2x	2-lamp 4' tubular LED: replace 2-lamp; 4' 28 watt low light output T8	Lighting	Lamp	1/1/16		53.00		kWh	per unit	PSE-deemed	Engineering	29.30		12	Comm Lighting
Small Business Direct Install	11117	SBDI: Lamp - TLED - 4 ft - 2x - from 4 ft T8 28w NLO 2x	2-lamp 4' tubular LED: replace 2-lamp; 4' 28 watt normal light output T8	Lighting	Lamp	1/1/16		73.00		kWh	per unit	PSE-deemed	Engineering	29.30		12	Comm Lighting
Small Business Direct Install	11107	SBDI: Lamp - TLED - 3 ft - 1x - from 3 ft T12 1x	1-lamp 3'; tubular LED: replace 3' 1-lamp T12	Lighting	Lamp	1/1/17		92.00		kWh	per unit	PSE-deemed	Engineering	$19.07		12	Comm Lighting
Small Business Direct Install	11119	SBDI: Lamp - TLED - 4 ft - 2x - from 4 ft T8 32w LLO 2x	2-lamp 4' tubular LED: replace 2-lamp; 4' 32 watt low light output T8	Lighting	Lamp	1/1/16		73.00		kWh	per unit	PSE-deemed	Engineering	29.30		12	Comm Lighting
Small Business Direct Install	11108	SBDI: Lamp - TLED - 4 ft - 1x - from 4 ft T12 1x	1-lamp 4' tubular LED: replace 1-lamp 4' T12	Lighting	Lamp	1/1/17		79.00		kWh	per unit	PSE-deemed	Engineering	$29.30		12	Comm Lighting
Small Business Direct Install	11109	SBDI: Lamp - TLED - 4 ft - 1x - from 4 ft T8 28w LLO 1x	1-lamp 4' tubular LED: replace 1-lamp; low light output; 28 watt T8	Lighting	Lamp	1/1/17		26.00		kWh	per unit	PSE-deemed	Engineering	$29.30		12	Comm Lighting
Small Business Direct Install	11114	SBDI: Lamp - TLED - 4 ft - 2x - from 4 ft T12 2x	2-lamp 4' tubular LED: replace 2-lamp; 4' T12	Lighting	Lamp	1/1/17		158.00		kWh	per unit	PSE-deemed	Engineering	$41.30		12	Comm Lighting
Small Business Direct Install	11123	SBDI: Lamp - TLED - 4 ft - 3x - from 4 ft T8 28w NLO 3x	3-lamp 4' tubular LED: replace 3-lamp 4' 28 watt normal light output T8	Lighting	Lamp	1/1/16		109.00		kWh	per unit	PSE-deemed	Engineering	37.51		12	Comm Lighting
Small Business Direct Install	11115	SBDI: Lamp - TLED - 4 ft - 2x - from 4 ft T12 HO 2x	2-lamp 4' tubular LED: replace 2-lamp; 4' high output T12	Lighting	Lamp	1/1/17		389.00		kWh	per unit	PSE-deemed	Engineering	$33.17		12	Comm Lighting
Small Business Direct Install	11124	SBDI: Lamp - TLED - 4 ft - 3x - from 4 ft T8 32w LLO 3x	3-lamp 4' tubular LED: replace 3-lamp 4' 32 watt low light output T8	Lighting	Lamp	1/1/16		109.00		kWh	per unit	PSE-deemed	Engineering	51.60		12	Comm Lighting
Small Business Direct Install	11126	SBDI: Lamp - TLED - 4 ft - 3x - from 4 ft T8 32w NLO 3x	3-lamp 4' tubular LED: replace 3-lamp 4' 32 watt normal light output T8	Lighting	Lamp	1/1/16		139.00		kWh	per unit	PSE-deemed	Engineering	51.60		12	Comm Lighting
Small Business Direct Install	11118	SBDI: Lamp - TLED - 4 ft - 2x - from 4 ft T8 32w HLO 2x	2-lamp 4' tubular LED: replace 2-lamp; 4' 32 watt high light output T8	Lighting	Lamp	1/1/17		152.00		kWh	per unit	PSE-deemed	Engineering	$42.83		12	Comm Lighting
Small Business Direct Install	11120	SBDI: Lamp - TLED - 4 ft - 2x - from 4 ft T8 32w NLO 2x	2-lamp 4' tubular LED: replace 2-lamp; 4' 32 watt normal light output T8	Lighting	Lamp	1/1/17		92.00		kWh	per unit	PSE-deemed	Engineering	$42.83		12	Comm Lighting
Small Business Direct Install	11121	SBDI: Lamp - TLED - 4 ft - 3x - from 4 ft T12 HO 3x	3-lamp 4' tubular LED: replace 3-lamp 4' high output T12	Lighting	Lamp	1/1/17		584.00		kWh	per unit	PSE-deemed	Engineering	$40.55		12	Comm Lighting
Small Business Direct Install	11130	SBDI: Lamp - TLED - 4 ft - 4x - from 4 ft T8 28w LLO 4x	4-lamp 4' tubular LED: replace 4-lamp 4' 28 watt low light output T8	Lighting	Lamp	1/1/16		106.00		kWh	per unit	PSE-deemed	Engineering	60.93		12	Comm Lighting
Small Business Direct Install	11122	SBDI: Lamp - TLED - 4 ft - 3x - from 4 ft T8 28w LLO 3x	3-lamp 4' tubular LED: replace 3-lamp 4' 28 watt low light output T8	Lighting	Lamp	1/1/17		79.00		kWh	per unit	PSE-deemed	Engineering	$37.51		12	Comm Lighting
Small Business Direct Install	10994	SBDI: Lamp - TLED - 4 ft - 3x - from 4 ft T8 32w HLO 3x	3-lamp 4' tubular LED: replace 3-lamp 4' 32 watt high light output T8	Lighting	Lamp	1/1/17		228.00		kWh	per unit	PSE-deemed	Engineering	$51.60		12	Comm Lighting
Small Business Direct Install	11127	SBDI: Lamp - TLED - 4 ft - 3x from 4 ft T12 3x	3-lamp 4' tubular LED: replace 3-lamp 4' T12	Lighting	Lamp	1/1/17		238.00		kWh	per unit	PSE-deemed	Engineering	$56.56		12	Comm Lighting
Small Business Direct Install	11128	SBDI: Lamp - TLED - 4 ft - 4x - from 4 ft T12 4x	4-lamp 4' tubular LED: replace 4-lamp 4' T12	Lighting	Lamp	1/1/17		317.00		kWh	per unit	PSE-deemed	Engineering	$65.32		12	Comm Lighting
Small Business Direct Install	11129	SBDI: Lamp - TLED - 4 ft - 4x - from 4 ft T12 HO 4x	4-lamp 4' tubular LED: replace 4-lamp 4' high output T12	Lighting	Lamp	1/1/17		779.00		kWh	per unit	PSE-deemed	Engineering	$44.66		12	Comm Lighting
Small Business Direct Install	11137	SBDI: Occupancy Sensor - 100w to 150w	Occupancy sensor: contolling 100 watt to 150 watt	Controls	Occupancy Sensor	1/1/16		120.00		kWh	per unit	PSE-deemed	Engineering	68.00		10	Comm Lighting
Small Business Direct Install	11138	SBDI: Occupancy Sensor - 151w to 200w	Occupancy sensor: controlling 151 watt to 200 watt	Controls	Occupancy Sensor	1/1/16		167.00		kWh	per unit	PSE-deemed	Engineering	68.00		10	Comm Lighting
Small Business Direct Install	11139	SBDI: Occupancy Sensor - 201w to 450w	Occupancy sensor: controlling 201 watt to 450 watt	Controls	Occupancy Sensor	1/1/16		311.00		kWh	per unit	PSE-deemed	Engineering	68.00		10	Comm Lighting
Small Business Direct Install	11140	SBDI: Occupancy Sensor - Less than 100w	Occupancy sensor: controlling less than 100 watt	Controls	Occupancy Sensor	1/1/16		48.00		kWh	per unit	PSE-deemed	Engineering	68.00		10	Comm Lighting
Small Business Direct Install	11141	SBDI: Occupancy Sensor - over 450w	Occupancy sensor: controlling over 450 watt	Controls	Occupancy Sensor	1/1/16		478.00		kWh	per unit	PSE-deemed	Engineering	68.00		10	Comm Lighting
Small Business Direct Install	11142	SBDI: Open Case Lighting - LED - High - from 4ft T12	High-power LED open case lighting: replace 4' T12	Lighting	Display Lighting	1/1/16		301.00		kWh	per unit	RTF-deemed		58.55		11	Comm Lighting
Small Business Direct Install	11143	SBDI: Open Case Lighting - LED - High - from 4ft T8	High-power LED open case lighting: replace 4' T8	Lighting	Display Lighting	1/1/16		179.00		kWh	per unit	RTF-deemed		41.82		11	Comm Lighting
Small Business Direct Install	11144	SBDI: Open Case Lighting - LED - High - from 5ft T12	High-power LED open case lighting: replace 5' T12	Lighting	Display Lighting	1/1/16		376.00		kWh	per unit	RTF-deemed		58.55		11	Comm Lighting
Small Business Direct Install	11145	SBDI: Open Case Lighting - LED - High - from 5ft T8	High-power LED open case lighting: replace 5' T8	Lighting	Display Lighting	1/1/16		223.00		kWh	per unit	RTF-deemed		41.82		11	Comm Lighting
Small Business Direct Install	11146	SBDI: Open Case Lighting - LED - High - from 6ft T12	High-power LED open case lighting: replace 6' T12	Lighting	Display Lighting	1/1/16		451.00		kWh	per unit	RTF-deemed		78.15		11	Comm Lighting
Small Business Direct Install	11147	SBDI: Open Case Lighting - LED - High - from 6ft T8	High-power LED open case lighting: replace 6' T8	Lighting	Display Lighting	1/1/16		268.00		kWh	per unit	RTF-deemed		55.82		11	Comm Lighting
Small Business Direct Install	11148	SBDI: Open Case Lighting - LED - Low - from 4ft T12	Low-power LED open case lighting: replace 4' T12	Lighting	Display Lighting	1/1/16		170.00		kWh	per unit	RTF-deemed		58.55		11	Comm Lighting

Exhibit 5

2016-2017 Measure Values

Program Name	DSMC ID	Measure Name	Description	Measure Category	Measure Type	Version Start Date	Version End Date	Unit Savings - kWh	Unit Savings - Therm	Savings UOM Type	Unit Type	Source of Savings Type	PSE-Deemed Type	Unit Incentive - kWh	Unit Incentive Therm	Measure Life	End Use
Small Business Direct Install	11149	SBDI: Open Case Lighting - LED - Low - from 4ft T8	Low-power LED open case lighting: replace 4' T8	Lighting	Display Lighting	1/1/16		98.00		kWh	per unit	RTF-deemed		41.82		11	Comm Lighting
Small Business Direct Install	11150	SBDI: Open Case Lighting - LED - Low - from 5ft T12	Low-power LED open case lighting: replace 5' T12	Lighting	Display Lighting	1/1/16		212.00		kWh	per unit	RTF-deemed		58.55		11	Comm Lighting
Small Business Direct Install	11151	SBDI: Open Case Lighting - LED - Low - from 5ft T8	Low-power LED open case lighting: replace 5' T8	Lighting	Display Lighting	1/1/16		122.00		kWh	per unit	RTF-deemed		41.82		11	Comm Lighting
Small Business Direct Install	11152	SBDI: Open Case Lighting - LED - Low - from 6ft T12	Low-power LED open case lighting: replace 6' T12	Lighting	Display Lighting	1/1/16		255.00		kWh	per unit	RTF-deemed		78.15		11	Comm Lighting
Small Business Direct Install	11153	SBDI: Open Case Lighting - LED - Low - from 6ft T8	Low-power LED open case lighting: replace 6' T8	Lighting	Display Lighting	1/1/16		147.00		kWh	per unit	RTF-deemed		55.82		11	Comm Lighting
Small Business Direct Install	11154	SBDI: Open Case Lighting - T12 - Delamp - 4 ft	4' T12 open case lighting delamp	Lighting	Display Lighting	1/1/16		226.00		kWh	per unit	RTF-deemed		58.55		11	Comm Lighting
Small Business Direct Install	11155	SBDI: Open Case Lighting - T12 - Delamp - 5 ft	5' T12 open case lighting delamp	Lighting	Display Lighting	1/1/16		282.00		kWh	per unit	RTF-deemed		58.55		11	Comm Lighting
Small Business Direct Install	11156	SBDI: Open Case Lighting - T12 - Delamp - 6 ft	6' T12 open case lighting delamp	Lighting	Display Lighting	1/1/16		339.00		kWh	per unit	RTF-deemed		78.15		11	Comm Lighting
Small Business Direct Install	11157	SBDI: Open Case Lighting - T8 - Delamp - 4 ft	4' T8 open case lighting delamp	Lighting	Display Lighting	1/1/16		165.00		kWh	per unit	RTF-deemed		41.82		11	Comm Lighting
Small Business Direct Install	11158	SBDI: Open Case Lighting - T8 - Delamp - 5 ft	5' T8 open case lighting delamp	Lighting	Display Lighting	1/1/16		206.00		kWh	per unit	RTF-deemed		41.82		11	Comm Lighting
Small Business Direct Install	11159	SBDI: Open Case Lighting - T8 - Delamp - 6 ft	6' T8 open case lighting delamp	Lighting	Display Lighting	1/1/16		247.00		kWh	per unit	RTF-deemed		55.82		11	Comm Lighting
Small Business Direct Install	11160	SBDI: Power Strip - Advanced	Advanced power strip	Controls	Advanced Power Strip	1/1/16		118.00		kWh	per unit	RTF-deemed		40.00		4	Comm Flat
Small Business Direct Install	11161	SBDI: Reach In Case Lighting - LED - Low - from 4ft T12	Low-temperature LED reach-in case lighting: replace 4' T12	Lighting	Display Lighting	1/1/16		302.00		kWh	per unit	RTF-deemed		58.55		11	Comm Lighting
Small Business Direct Install	11162	SBDI: Reach In Case Lighting - LED - Low - from 4ft T8	Low-temperature LED reach-in case lighting: replace 4' T8	Lighting	Display Lighting	1/1/16		206.00		kWh	per unit	RTF-deemed		41.82		11	Comm Lighting
Small Business Direct Install	11163	SBDI: Reach In Case Lighting - LED - Low - from 5ft T12	Low-temperature LED reach-in case lighting: replace 5' T12	Lighting	Display Lighting	1/1/16		378.00		kWh	per unit	RTF-deemed		58.55		11	Comm Lighting
Small Business Direct Install	11164	SBDI: Reach In Case Lighting - LED - Low - from 5ft T8	Low-temperature LED reach-in case lighting: replace 5' T8	Lighting	Display Lighting	1/1/16		258.00		kWh	per unit	RTF-deemed		41.82		11	Comm Lighting
Small Business Direct Install	11165	SBDI: Reach In Case Lighting - LED - Low - from 6ft T12	Low-temperature LED reach-in case lighting: replace 6' T12	Lighting	Display Lighting	1/1/16		453.00		kWh	per unit	RTF-deemed		78.15		11	Comm Lighting
Small Business Direct Install	11166	SBDI: Reach In Case Lighting - LED - Low - from 6ft T8	Low-temperature LED reach-in case lighting: replace 6' T8	Lighting	Display Lighting	1/1/16		309.00		kWh	per unit	RTF-deemed		55.82		11	Comm Lighting
Small Business Direct Install	11167	SBDI: Reach In Case Lighting - LED - Med - from 4ft T12	Medium-temperature LED reach-in case lighting: replace 4' T12	Lighting	Display Lighting	1/1/16		222.00		kWh	per unit	RTF-deemed		58.55		11	Comm Lighting
Small Business Direct Install	11168	SBDI: Reach In Case Lighting - LED - Med - from 4ft T8	Medium-temperature LED reach-in case lighting: replace 4' T8	Lighting	Display Lighting	1/1/16		152.00		kWh	per unit	RTF-deemed		41.82		11	Comm Lighting
Small Business Direct Install	11169	SBDI: Reach In Case Lighting - LED - Med - from 5ft T12	Medium-temperature LED reach-in case lighting: replace 5' T12	Lighting	Display Lighting	1/1/16		278.00		kWh	per unit	RTF-deemed		58.55		11	Comm Lighting
Small Business Direct Install	11170	SBDI: Reach In Case Lighting - LED - Med - from 5ft T8	Medium-temperature LED reach-in case lighting: replace 5' T8	Lighting	Display Lighting	1/1/16		190.00		kWh	per unit	RTF-deemed		41.82		11	Comm Lighting
Small Business Direct Install	11171	SBDI: Reach In Case Lighting - LED - Med - from 6ft T12	Medium-temperature LED reach-in case lighting: replace 6' T12	Lighting	Display Lighting	1/1/16		333.00		kWh	per unit	RTF-deemed		78.15		11	Comm Lighting
Small Business Direct Install	11172	SBDI: Reach In Case Lighting - LED - Med - from 6ft T8	Medium-temperature LED reach-in case lighting: replace 6' T8	Lighting	Display Lighting	1/1/16		228.00		kWh	per unit	RTF-deemed		55.82		11	Comm Lighting
Small Business Direct Install	10951	SBDI: Sealing - Auto Closer - Reach In Glass Doors - Low Temp - E	Auto closer: reach-in glass doors; low temperature; electric heating	Refrigeration	Sealing	1/1/16		343.00		kWh	per unit	RTF-deemed		133.28		8	Comm Refrigeration
Small Business Direct Install	11174	SBDI: Sealing - Auto Closer - Reach In Glass Doors - Low Temp - NG - EIE	Auto closer: reach-in glass doors; low temperature; natural gas heating; electric interactive effect	Refrigeration	Sealing	1/1/16		336.00		kWh	per unit	RTF-deemed		133.28		8	Comm Refrigeration
Small Business Direct Install	11175	SBDI: Sealing - Auto Closer - Reach In Glass Doors - Med Temp - E	Auto closer: reach-in glass doors; medium temperature; electric heating	Refrigeration	Sealing	1/1/16		252.00		kWh	per unit	RTF-deemed		133.28		8	Comm Refrigeration
Small Business Direct Install	11177	SBDI: Sealing - Auto Closer - Reach In Glass Doors - Med Temp - NG - EIE	Auto closer: reach-in glass doors; medium temperature; natural gas heating; electric interactive effect	Refrigeration	Sealing	1/1/16		250.00		kWh	per unit	RTF-deemed		133.28		8	Comm Refrigeration
Small Business Direct Install	11178	SBDI: Sealing - Auto Closer - Walk In Doors - Low Temp - E	Auto closer: walk-in doors; low temperature; electric heating	Refrigeration	Sealing	1/1/16		2,836.00		kWh	per unit	RTF-deemed		133.28		8	Comm Refrigeration
Small Business Direct Install	11180	SBDI: Sealing - Auto Closer - Walk In Doors - Low Temp - NG - EIE	Auto closer: walk-in doors; low temperature; natural gas heating; electric interactive effect	Refrigeration	Sealing	1/1/16		2,809.00		kWh	per unit	RTF-deemed		133.28		8	Comm Refrigeration
Small Business Direct Install	11181	SBDI: Sealing - Auto Closer - Walk In Doors - Med Temp - E	Auto closer: walk-in doors; medium temperature; electric heating	Refrigeration	Sealing	1/1/16		223.00		kWh	per unit	RTF-deemed		133.28		8	Comm Refrigeration
Small Business Direct Install	11183	SBDI: Sealing - Auto Closer - Walk In Doors - Med Temp - NG - EIE	Auto closer: walk-in doors; medium temperature; natural gas heating; electric interactive effect	Refrigeration	Sealing	1/1/16		221.00		kWh	per unit	RTF-deemed		133.28		8	Comm Refrigeration
Small Business Direct Install	11184	SBDI: Sealing - Gasket - Reach In Glass Door - Low Temp - E	Reach-in glass door gasket: low temperature per door; electric heating	Refrigeration	Sealing	1/1/16		243.00		kWh	per unit	RTF-deemed		72.90		4	Comm Refrigeration
Small Business Direct Install	11186	SBDI: Sealing - Gasket - Reach In Glass Door - Med Temp - E	Reach-in glass door gasket: medium temperature per door; electric heating	Refrigeration	Sealing	1/1/16		248.00		kWh	per unit	RTF-deemed		74.40		4	Comm Refrigeration
Small Business Direct Install	11188	SBDI: Sealing - Gasket - Walk In Cooler Door- Main - E	Walk-in cooler gasket: main door per door; electric heating	Refrigeration	Sealing	1/1/16		204.00		kWh	per unit	RTF-deemed		61.20		4	Comm Refrigeration
Small Business Direct Install	11190	SBDI: Sealing - Gasket - Walk In Freezer Door - Main - E	Walk-in freezer gasket: main door per door; electric heating	Refrigeration	Sealing	1/1/16		347.00		kWh	per unit	RTF-deemed		104.10		4	Comm Refrigeration
Small Business Direct Install	11192	SBDI: Sealing - Night Cover - Produce - High Temp - 30F to 55F - E	Night cover for produce displays: high temperature; 30F to 55F; electric heating	Refrigeration	Sealing	1/1/16		86.40		kWh	per unit	PSE-deemed	Engineering	42.14		5	Comm Refrigeration
Small Business Direct Install	11193	SBDI: Sealing - Night Cover - Produce - High Temp - 30F to 55F - HP	Night cover for produce displays: high temperature; 30F to 55F; heat pump	Refrigeration	Sealing	1/1/16		48.70		kWh	per unit	PSE-deemed	Engineering	42.14		5	Comm Refrigeration
Small Business Direct Install	11195	SBDI: Sealing - Night Cover - Produce - High Temp - 30F to 55F - NG	Night cover for produce displays: high temperature; 30F to 55F; natural gas heating	Refrigeration	Sealing	1/1/16		21.90		kWh	per unit	PSE-deemed	Engineering	42.14		5	Comm Refrigeration
Small Business Direct Install	11196	SBDI: Sealing - Night Cover - Produce - High Temp - 30F to 55F - Unknown	Night cover for produce displays: high temperature; 30F to 55F; unknown heating	Refrigeration	Sealing	1/1/16		21.90		kWh	per unit	PSE-deemed	Engineering	42.14		5	Comm Refrigeration
Small Business Direct Install	11197	SBDI: Sealing - Night Cover - Produce - Low Temp - Neg 35F to 0F - E	Night cover for produce displays: high temperature; 30F to 55F; electric heating	Refrigeration	Sealing	1/1/16		129.80		kWh	per unit	PSE-deemed	Engineering	42.14		5	Comm Refrigeration
Small Business Direct Install	11198	SBDI: Sealing - Night Cover - Produce - Low Temp - Neg 35F to 0F - HP	Night cover for produce displays: high temperature; 30F to 55F; heat pump	Refrigeration	Sealing	1/1/16		92.50		kWh	per unit	PSE-deemed	Engineering	42.14		5	Comm Refrigeration
Small Business Direct Install	11200	SBDI: Sealing - Night Cover - Produce - Low Temp - Neg 35F to 0F - NG	Night cover for produce displays: low temperature; -35F to 0F; natural gas heating	Refrigeration	Sealing	1/1/16		65.70		kWh	per unit	PSE-deemed	Engineering	42.14		5	Comm Refrigeration
Small Business Direct Install	11201	SBDI: Sealing - Night Cover - Produce - Low Temp - Neg 35F to 0F - Unknown	Night cover for produce displays: high temperature; 30F to 55F; unknown heating	Refrigeration	Sealing	1/1/16		65.70		kWh	per unit	PSE-deemed	Engineering	42.14		5	Comm Refrigeration
Small Business Direct Install	11202	SBDI: Sealing - Night Cover - Produce - Med Temp - 0F to 30F - E	Night cover for produce displays: medium temperature; 0F to 30F; electric heating	Refrigeration	Sealing	1/1/16		130.20		kWh	per unit	PSE-deemed	Engineering	42.14		5	Comm Refrigeration
Small Business Direct Install	11203	SBDI: Sealing - Night Cover - Produce - Med Temp - 0F to 30F - HP	Night cover for produce displays: medium temperature; 0F to 30F; heat pump	Refrigeration	Sealing	1/1/16		79.60		kWh	per unit	PSE-deemed	Engineering	42.14		5	Comm Refrigeration
Small Business Direct Install	11205	SBDI: Sealing - Night Cover - Produce - Med Temp - 0F to 30F - NG	Night cover for produce displays: medium temperature; 0F to 30F; natural gas heating	Refrigeration	Sealing	1/1/16		43.80		kWh	per unit	PSE-deemed	Engineering	42.14		5	Comm Refrigeration

Exhibit 5 2016-2017 Measure Values

Program Name	DSMC ID	Measure Name	Description	Measure Category	Measure Type	Version Start Date	Version End Date	Unit Savings - kWh	Unit Savings - Therm	Savings UOM Type	Unit Type	Source of Savings Type	PSE-Deemed Type	Unit Incentive - kWh	Unit Incentive Therm	Measure Life	End Use
Small Business Direct Install	11206	SBDI: Sealing - Night Cover - Produce - Med Temp - 0F to 30F - Unknown	Night cover for produce displays: medium temperature; 0F to 30F; unknown heating	Refrigeration	Sealing	1/1/16		43.80		kWh	per unit	PSE-deemed	Engineering	42.14		5	Comm Refrigeration
Small Business Direct Install	11207	SBDI: Sealing - Strip Curtain - Cooler - Grocery	Cooler strip curtain: grocery	Refrigeration	Sealing	1/1/16		123.00		kWh	per unit	RTF-deemed		16.10		2	Comm Refrigeration
Small Business Direct Install	11208	SBDI: Sealing - Strip Curtain - Freezer - Convenient Store	Freezer strip curtain: convenient store	Refrigeration	Sealing	1/1/16		31.00		kWh	per unit	RTF-deemed		10.50		2	Comm Refrigeration
Small Business Direct Install	11209	SBDI: Sealing - Strip Curtain - Freezer - Grocery	Freezer strip curtain: grocery	Refrigeration	Sealing	1/1/16		535.00		kWh	per unit	RTF-deemed		16.10		2	Comm Refrigeration
Small Business Direct Install	11210	SBDI: Sealing - Strip Curtain - Freezer - Restaurant	Freezer strip curtain: restaurant	Refrigeration	Sealing	1/1/16		129.00		kWh	per unit	RTF-deemed		16.10		2	Comm Refrigeration
Small Business Direct Install	11212	SBDI: Showerhead - Any Comm - GWH - 1.5 gpm - EIE	1.5 gpm direct install showerhead: any commercial application; natural gas water heating; electric savings interactive effect	Water Heating	Showerhead	1/1/16		10.00		kWh	per unit	RTF-deemed		0.00		10	Comm Water Heat
Small Business Direct Install	11213	SBDI: Showerhead - DI - Any Comm - EWH - 1.5 gpm	1.5 gpm direct install showerhead: any commercial application; electric water heating	Water Heating	Showerhead	1/1/16		228.00		kWh	per unit	RTF-deemed		23.80		10	Comm Water Heat
Small Business Direct Install	11215	SBDI: Showerhead - DI - Fit Ctr - EWH - 1.5 gpm	1.5 gpm direct install showerhead: fitness center; electric water heating	Water Heating	Showerhead	1/1/16		4,288.00		kWh	per unit	RTF-deemed		23.80		10	Comm Water Heat
Small Business Direct Install	11218	SBDI: Showerhead - Fit Ctr - GWH - 1.5 gpm - EIE	1.5 gpm direct install showerhead: fitness center; natural gas water heating; electric savings interactive effect	Water Heating	Showerhead	1/1/16		190.00		kWh	per unit	RTF-deemed		0.00		10	Comm Water Heat
Small Business Direct Install	11219	SBDI: Sprayhead - EWH - 0.65 gpm - from 1.6	0.65 gpm sprayhead: previously 1.6 gpm; electric water heating	Water Heating	Sprayhead	1/1/16		890.00		kWh	per unit	RTF-deemed		76.30		4	Comm Water Heat
Small Business Direct Install	11220	SBDI: Sprayhead - EWH - 0.65 gpm - from 2.2	0.65 gpm sprayhead: previously 2.2 gpm; electric water heating	Water Heating	Sprayhead	1/1/16		1,393.00		kWh	per unit	RTF-deemed		76.30		4	Comm Water Heat
Small Business Direct Install	11221	SBDI: Sprayhead - EWH - 0.65 gpm - from 2.6	0.65 gpm sprayhead: previously 2.6 gpm; electric water heat	Water Heating	Sprayhead	1/1/16		2,295.00		kWh	per unit	RTF-deemed		76.30		4	Comm Water Heat
Small Business Direct Install	11222	SBDI: Sprayhead - EWH - 0.65 gpm - not PI	0.65 gpm sprayhead: no previous install; electric water heating	Water Heating	Sprayhead	1/1/16		1,267.00		kWh	per unit	RTF-deemed		76.30		4	Comm Water Heat
Small Business Direct Install	11224	SBDI: Sprayhead - GWH - 0.65 gpm - from 1.6 - EIE	0.65 gpm sprayhead: previously 1.6 gpm; natural gas water heating; electric savings interactive effect	Water Heating	Sprayhead	1/1/16		49.00		kWh	per unit	RTF-deemed		0.00		4	Comm Water Heat
Small Business Direct Install	11226	SBDI: Sprayhead - GWH - 0.65 gpm - from 2.2 - EIE	0.65 gpm sprayhead: previously 2.2 gpm; natural gas water heating; electric interactive effect	Water Heating	Sprayhead	1/1/16		77.00		kWh	per unit	RTF-deemed		0.00		4	Comm Water Heat
Small Business Direct Install	11228	SBDI: Sprayhead - GWH - 0.65 gpm - from 2.6 - EIE	0.65 gpm sprayhead: previously 2.6 gpm; natural gas water heating; electric interactive effect	Water Heating	Sprayhead	1/1/16		127.00		kWh	per unit	RTF-deemed		0.00		4	Comm Water Heat
Small Business Direct Install	11230	SBDI: Sprayhead - GWH - 0.65 gpm - not PI - EIE	0.65 gpm sprayhead: no previous install; natural gas water heating; electric interactive effect	Water Heating	Sprayhead	1/1/16		70.00		kWh	per unit	RTF-deemed		0.00		4	Comm Water Heat
Small Business Direct Install	11231	SBDI: Thermostat - Programmable	Programmable thermostat	Controls	Thermostat	1/1/16		473.00		kWh	per unit	PSE-deemed	Engineering	160.00		10	Comm Space Heat
Small Business Direct Install	11131	SBDI: Lamp - TLED - 4 ft - 4x - from 4 ft T8 28w NLO 4x	4-lamp 4' tubular LED: replace 4-lamp 4' 28 watt normal light output T8	Lighting	Lamp	1/1/17		145.00		kWh	per unit	PSE-deemed	Engineering	$60.93		12	Comm Lighting
Small Business Direct Install	11132	SBDI: Lamp - TLED - 4 ft - 4x - from 4 ft T8 32w HLO 4x	4-lamp 4' tubular LED: replace 4-lamp 4' 32 watt high light output T8	Lighting	Lamp	1/1/17		304.00		kWh	per unit	PSE-deemed	Engineering	$60.93		12	Comm Lighting
Small Business Direct Install	11133	SBDI: Lamp - TLED - 4 ft - 4x - from 4 ft T8 32w LLO 4x	4-lamp 4' tubular LED: replace 4-lamp 4' 32 watt low light output T8	Lighting	Lamp	1/1/17		145.00		kWh	per unit	PSE-deemed	Engineering	$60.93		12	Comm Lighting
Small Business Direct Install	11134	SBDI: Lamp - TLED - 4 ft - 4x - from 4 ft T8 32w NLO 4x	4-lamp 4' tubular LED: replace 4-lamp 4' 32 watt normal light output T8	Lighting	Lamp	1/1/17		185.00		kWh	per unit	PSE-deemed	Engineering	$60.93		12	Comm Lighting
Small Business Direct Install	11136	SBDI: LED Open Sign	LED open sign	Lighting	Signage	1/1/17		396.00		kWh	per unit	PSE-deemed	Engineering	$130.65		16	Comm Lighting
Agriculture Direct Install	11316	SBDI: Aerator - GWH - All Others	Aerator: natural gas water heating; all other business types	Water Heating	Aerator	1/1/16			6.50	Therm	per unit	PSE-deemed	Engineering		13.09	10	Comm Water Heat
Agriculture Direct Install	11987	SBDI: Aerator - GWH - Commercial Kitchen - 1.0 gpm	1.0 gpm aerator: commercial kitchen use; natural gas water heating	Water Heating	Aerator	1/1/17			11.70	Therm	per unit	PSE-deemed	Engineering		$13.09	10	Comm Space Heat
Agriculture Direct Install	11320	SBDI: Aerator - GWH - Restaurant	Aerator: natural gas water heating; restaurant	Water Heating	Aerator	1/1/17			9.30	Therm	per unit	PSE-deemed	Engineering		$13.09	10	Comm Water Heat
Agriculture Direct Install	11322	SBDI: Aerator - GWH - Retail	Aerator: natural gas water heating; retail	Water Heating	Aerator	1/1/16			6.50	Therm	per unit	PSE-deemed	Engineering		13.09	10	Comm Water Heat
Agriculture Direct Install	11324	SBDI: Aerator - GWH - School	Aerator: natural gas water heating; school	Water Heating	Aerator	1/1/16			8.20	Therm	per unit	PSE-deemed	Engineering		13.09	10	Comm Water Heat
Agriculture Direct Install	11318	SBDI: Aerator - GWH - Small	Aerator: natural gas water heating; small office	Water Heating	Aerator	1/1/16			2.00	Therm	per unit	PSE-deemed	Engineering		13.09	10	Comm Water Heat
Agriculture Direct Install	11982	SBDI: Boiler - Education - NG	Natural gas boiler: education	Water Heating	Water Heater	1/1/17			470.00	Therm	per unit	PSE-deemed	Engineering		$1,500.00	15	Comm Water Heat
Agriculture Direct Install	11980	SBDI: Boiler - Kitchen - NG	Natural gas boiler: commercial kitchen use	Water Heating	Water Heater	1/1/17			800.00	Therm	per unit	PSE-deemed	Engineering		$1,500.00	15	Comm Water Heat
Agriculture Direct Install	11981	SBDI: Boiler - Laundry - NG	Natural gas boiler: commercial laundry use	Water Heating	Water Heater	1/1/17			597.00	Therm	per unit	PSE-deemed	Engineering		$1,500.00	15	Comm Water Heat
Agriculture Direct Install	11173	SBDI: Sealing - Auto Closer - Reach In Glass Doors - Low Temp - NG	Auto closer: reach-in glass doors; low temperature; natural gas heating	Refrigeration	Sealing	1/1/16			0.67	Therm	per unit	PSE-deemed	Engineering		0.00	8	Comm Space Heat
Agriculture Direct Install	11176	SBDI: Sealing - Auto Closer - Reach In Glass Doors - Med Temp - NG	Auto closer: reach-in glass doors; medium temperature; natural gas heating	Refrigeration	Sealing	1/1/16			0.25	Therm	per unit	PSE-deemed	Engineering		0.00	8	Comm Space Heat
Agriculture Direct Install	11179	SBDI: Sealing - Auto Closer - Walk In Doors - Low Temp - NG	Auto closer: walk-in doors; low temperature; natural gas heating	Refrigeration	Sealing	1/1/16			5.62	Therm	per unit	PSE-deemed	Engineering		0.00	8	Comm Flat
Agriculture Direct Install	11182	SBDI: Sealing - Auto Closer - Walk In Doors - Med Temp - NG	Auto closer: walk-in glass doors; medium temperature; electric heating	Refrigeration	Sealing	1/1/16			0.22	Therm	per unit	PSE-deemed	Engineering		0.00	8	Comm Flat
Agriculture Direct Install	11185	SBDI: Sealing - Gasket - Reach In Glass Door - Low Temp - NG	Reach-in glass door gasket: low temperature per door; natural gas heating	Refrigeration	Sealing	1/1/16			6.20	Therm	per unit	PSE-deemed	Engineering		0.00	4	Comm Flat
Agriculture Direct Install	11187	SBDI: Sealing - Gasket - Reach In Glass Door - Med Temp - NG	Reach-in glass door gasket: medium temperature per door; natural gas heating	Refrigeration	Sealing	1/1/16			13.90	Therm	per unit	PSE-deemed	Engineering		0.00	4	Comm Flat
Agriculture Direct Install	11189	SBDI: Sealing - Gasket - Walk In Cooler Door- Main - NG	Walk-in cooler gasket: main door per door; natural gas heating	Refrigeration	Sealing	1/1/16			11.40	Therm	per unit	RTF-deemed			0.00	4	Comm Flat
Agriculture Direct Install	11191	SBDI: Sealing - Gasket - Walk In Freezer Door - Main - NG	Walk-in freezer gasket: main door per door; natural gas heating	Refrigeration	Sealing	1/1/16			8.90	Therm	per unit	RTF-deemed			0.00	4	Comm Flat
Agriculture Direct Install	11194	SBDI: Sealing - Night Cover - Produce - High Temp - 30F to 55F - NG - GIE	Night cover for produce displays: high temperature; 30F to 55F; natural gas heating; natural gas interactive effect	Refrigeration	Sealing	1/1/16			3.90	Therm	per unit	RTF-deemed			0.00	5	Comm Space Heat
Agriculture Direct Install	11199	SBDI: Sealing - Night Cover - Produce - Low Temp - Neg 35F to 0F - NG - GIE	Night cover for produce displays: low temperature; -35F to 0F; natural gas heating; natural gas interactive effect	Refrigeration	Sealing	1/1/16			3.90	Therm	per unit	RTF-deemed			0.00	5	Comm Space Heat
Agriculture Direct Install	11204	SBDI: Sealing - Night Cover - Produce - Med Temp - 0F to 30F - NG - GIE	Night cover for produce displays: medium temperature; 0F to 30F; natural gas heating; natural gas interactive effect	Refrigeration	Sealing	1/1/16			5.20	Therm	per unit	RTF-deemed			0.00	5	Comm Space Heat
Agriculture Direct Install	11214	SBDI: Showerhead - DI - Any Comm - GWH - 1.5 gpm	1.5 gpm direct install showerhead: any commercial application; natural gas water heating	Water Heating	Showerhead	1/1/16			10.00	Therm	per unit	RTF-deemed			28.70	10	Comm Water Heat
Agriculture Direct Install	11216	SBDI: Showerhead - DI - Fit Ctr - GWH 1.5 gpm	1.5 gpm direct install showerhead: fitness center; natural gas water heating	Water Heating	Showerhead	1/1/16			183.00	Therm	per unit	RTF-deemed			28.70	10	Comm Water Heat
Agriculture Direct Install	11223	SBDI: Sprayhead - GWH - 0.65 gpm - from 1.6	0.65 gpm sprayhead: previously 1.6 gpm; natural gas water heating	Water Heating	Sprayhead	1/1/16			35.20	Therm	per unit	RTF-deemed			76.30	4	Comm Water Heat
Agriculture Direct Install	11225	SBDI: Sprayhead - GWH - 0.65 gpm - from 2.2	0.65 gpm sprayhead: previously 2.2 gpm; natural gas water heating	Water Heating	Sprayhead	1/1/16			55.00	Therm	per unit	RTF-deemed			76.30	4	Comm Water Heat

Exhibit 5

2016-2017 Measure Values

Program Name	DSMC ID	Measure Name	Description	Measure Category	Measure Type	Version Start Date	Version End Date	Unit Savings - kWh	Unit Savings - Therm	Savings UOM Type	Unit Type	Source of Savings Type	PSE-Deemed Type	Unit Incentive - kWh	Unit Incentive Therm	Measure Life	End Use
Agriculture Direct Install	11227	SBDI: Sprayhead - GWH - 0.65 gpm - from 2.6	0.65 gpm sprayhead: previously 2.6 gpm; natural gas water heating	Water Heating	Sprayhead	1/1/16			90.70	Therm	per unit	RTF-deemed			76.30	4	Comm Water Heat
Agriculture Direct Install	11229	SBDI: Sprayhead - GWH - 0.65 gpm - not PI	0.65 gpm sprayhead: no previous install; natural gas water heating	Water Heating	Sprayhead	1/1/16			50.00	Therm	per unit	RTF-deemed			76.30	4	Comm Water Heat
Agriculture Direct Install	11979	SBDI: Water Heater - Education - NG	Natural gas water heater: education	Water Heating	Water Heater	1/1/17			592.00	Therm	per unit	PSE-deemed	Engineering		$1,500.00	7	Comm Water Heat
Agriculture Direct Install	11977	SBDI: Water Heater - Kitchen - NG	Natural gas water heater: commercial kitchen use	Water Heating	Water Heater	1/1/17			613.00	Therm	per unit	PSE-deemed	Engineering		$1,500.00	7	Comm Water Heat
Agriculture Direct Install	11978	SBDI: Water Heater - Laundry - NG	Natural gas water heater: commercial laundry use	Water Heating	Water Heater	1/1/17			597.00	Therm	per unit	PSE-deemed	Engineering		$1,500.00	7	Comm Water Heat
Agriculture Direct Install	11985	SBDI: Water Heater - Tankless - Education - NG	Tankless natural gas water heater: education	Water Heating	Water Heater	1/1/17			664.00	Therm	per unit	PSE-deemed	Engineering		$1,500.00	7	Comm Water Heat
Agriculture Direct Install	11983	SBDI: Water Heater - Tankless - Kitchen - NG	Tankless natural gas water heater: commercial kitchen use	Water Heating	Water Heater	1/1/17			748.00	Therm	per unit	PSE-deemed	Engineering		$1,500.00	7	Comm Water Heat
Agriculture Direct Install	11984	SBDI: Water Heater - Tankless - Laundry - NG	Tankless natural gas water heater: commercial laundry use	Water Heating	Water Heater	1/1/17			732.00	Therm	per unit	PSE-deemed	Engineering		$1,500.00	7	Comm Water Heat
Commercial Kitchens	12047	CKTCH: Boiler - Education - NG	Natural gas boiler: education	Water Heating	Water Heater	1/1/17			470.00	Therm	per unit	PSE-deemed	Engineering		$1,500.00	15	Comm Water Heat
Commercial Kitchens	11778	CKTCH: Boiler - NG - NPU	Natural gas boiler: commercial kitchen use; non-PSE utility	Water Heating	Water Heater	9/1/16			0.00	Therm	per unit				0.00		
Commercial Kitchens	11833	CKTCH: Dishwasher - Door Type - High Temp - GWH - NPU	Door type high temperature commercial dishwasher: natural gas water heating; non-PSE utility	Appliances	Dishwasher	9/1/16			0.00	Therm	per unit				0.00		
Commercial Kitchens	10877	CKTCH: Dishwasher - Door Type - Low Temp - GWH	Door type low temperature commercial dishwasher: natural gas water heating	Appliances	Dishwasher	7/1/16			599.00	Therm	per unit	PSE-deemed	Engineering		750.00	15	Comm Water Heat
Commercial Kitchens	11837	CKTCH: Dishwasher - Door Type - Low Temp - GWH - NPU	Door type low temperature commercial dishwasher: natural gas water heating; non-PSE utility	Appliances	Dishwasher	9/1/16			0.00	Therm	per unit				0.00		
Commercial Kitchens	11839	CKTCH: Dishwasher - Multi Tank - High Temp - GWH - NPU	Multiple tank high temperature commercial dishwasher: natural gas water heating; non-PSE utility	Appliances	Dishwasher	9/1/16			0.00	Therm	per unit				0.00		
Commercial Kitchens	10883	CKTCH: Dishwasher - Multi Tank - Low Temp - GWH	Multiple tank low temperature commercial dishwasher: natural gas water heating	Appliances	Dishwasher	7/1/16			698.00	Therm	per unit	PSE-deemed	Engineering		1,500.00	20	Comm Water Heat
Commercial Kitchens	11842	CKTCH: Dishwasher - Multi Tank - Low Temp - GWH - NPU	Multiple tank low temperature commercial dishwasher: natural gas water heating; non-PSE utility	Appliances	Dishwasher	9/1/16			0.00	Therm	per unit				0.00		
Commercial Kitchens	11844	CKTCH: Dishwasher - Single Tank - High Temp - GWH - NPU	Single tank high temperature commercial dishwasher: natural gas water heating; non-PSE utility	Appliances	Dishwasher	9/1/16			0.00	Therm	per unit				0.00		
Commercial Kitchens	11847	CKTCH: Dishwasher - Single Tank - Low Temp - GWH - NPU	Single tank low temperature commercial dishwasher: natural gas water heating; non-PSE utility	Appliances	Dishwasher	9/1/16			0.00	Therm	per unit				0.00		
Commercial Kitchens	11850	CKTCH: Dishwasher - Under Counter - High Temp - GWH - NPU	Under counter high temperature commercial dishwasher: natural gas water heating; non-PSE utility	Appliances	Dishwasher	9/1/16			0.00	Therm	per unit				0.00		
Commercial Kitchens	10897	CKTCH: Dishwasher - Under Counter - Low Temp - GWH	Under counter low temperature commercial dishwasher: natural gas water heating	Appliances	Dishwasher	7/1/16			94.00	Therm	per unit	PSE-deemed	Engineering		150.00	10	Comm Water Heat
Commercial Kitchens	11853	CKTCH: Dishwasher - Under Counter - Low Temp - GWH - NPU	Under counter low temperature commercial dishwasher: natural gas water heating; non-PSE utility	Appliances	Dishwasher	9/1/16			0.00	Therm	per unit				0.00		
Commercial Kitchens	10830	CKTCH: Fryer - Large Vat - NG	Large-vat fryer: natural gas fuel	Appliances	Commercial Kitchen	7/1/16			490.00	Therm	per unit	PSE-deemed	Engineering		500.00	12	Comm Cooking
Commercial Kitchens	11794	CKTCH: Fryer - Large Vat - NG - NPU	Large-vat fryer: natural gas fuel; non-PSE utility	Appliances	Commercial Kitchen	9/1/16			0.00	Therm	per unit				0.00		
Commercial Kitchens	10832	CKTCH: Fryer - Standard Vat - NG	Standard-vat fryer: natural gas fuel	Appliances	Commercial Kitchen	5/16/16			432.00	Therm	per unit	PSE-deemed	Engineering		1,000.00	12	Comm Cooking
Commercial Kitchens	11796	CKTCH: Fryer - Standard Vat - NG - NPU	Standard-vat fryer: natural gas fuel; non-PSE utility	Appliances	Commercial Kitchen	9/1/16			0.00	Therm	per unit				0.00		
Commercial Kitchens	10834	CKTCH: Griddle - 2 Linear Ft - NG	2 linear feet griddle: natural gas fuel	Appliances	Commercial Kitchen	7/1/16			174.00	Therm	per unit	PSE-deemed	Engineering		900.00	12	Comm Cooking
Commercial Kitchens	11798	CKTCH: Griddle - 2 Linear Ft - NG - NPU	2 linear feet griddle: natural gas fuel; non-PSE utility	Appliances	Commercial Kitchen	9/1/16			0.00	Therm	per unit				0.00		
Commercial Kitchens	10836	CKTCH: Griddle - 3 Linear Ft - NG	3 linear feet griddle: natural gas fuel	Appliances	Commercial Kitchen	7/1/16			261.00	Therm	per unit	PSE-deemed	Engineering		1,300.00	12	Comm Cooking
Commercial Kitchens	11800	CKTCH: Griddle - 3 Linear Ft - NG - NPU	3 linear feet griddle: natural gas fuel; non-PSE utility	Appliances	Commercial Kitchen	9/1/16			0.00	Therm	per unit				0.00		
Commercial Kitchens	10838	CKTCH: Griddle - 4 Linear Ft - NG	4 linear feet griddle: natural gas fuel	Appliances	Commercial Kitchen	7/1/16			348.00	Therm	per unit	PSE-deemed	Engineering		1,400.00	12	Comm Cooking
Commercial Kitchens	11802	CKTCH: Griddle - 4 Linear Ft - NG - NPU	4 linear feet griddle: natural gas fuel; non-PSE utility	Appliances	Commercial Kitchen	9/1/16			0.00	Therm	per unit				0.00		
Commercial Kitchens	10840	CKTCH: Griddle - 5 Linear Ft - NG	5 linear feet griddle: natural gas fuel	Appliances	Commercial Kitchen	7/1/16			435.00	Therm	per unit	PSE-deemed	Engineering		1,500.00	12	Comm Cooking
Commercial Kitchens	11804	CKTCH: Griddle - 5 Linear Ft - NG - NPU	5 linear feet griddle: natural gas fuel; non-PSE utility	Appliances	Commercial Kitchen	9/1/16			0.00	Therm	per unit				0.00		
Commercial Kitchens	10842	CKTCH: Griddle - 6 Linear Ft - NG	6 linear feet griddle: natural gas fuel	Appliances	Commercial Kitchen	7/1/16			522.00	Therm	per unit	PSE-deemed	Engineering		1,600.00	12	Comm Cooking
Commercial Kitchens	11806	CKTCH: Griddle - 6 Linear Ft - NG - NPU	6 linear feet griddle: natural gas fuel; non-PSE utility	Appliances	Commercial Kitchen	9/1/16			0.00	Therm	per unit				0.00		
Commercial Kitchens	10824	CKTCH: Oven - Combination - 14 Pan or Less - NG	Combination oven: under 15 pans; natural gas fuel	Appliances	Commercial Kitchen	7/1/16			798.00	Therm	per unit	PSE-deemed	Engineering		2,500.00	12	Comm Cooking
Commercial Kitchens	11788	CKTCH: Oven - Combination - 14 Pan or Less - NG - NPU	Combination oven: under 15 pans; natural gas fuel; non-PSE utility	Appliances	Commercial Kitchen	9/1/16			0.00	Therm	per unit				0.00		
Commercial Kitchens	10826	CKTCH: Oven - Combination - 15 to 28 Pans - NG	Combination oven: 15 to 28 pans; natural gas fuel	Appliances	Commercial Kitchen	7/1/16			1,120.00	Therm	per unit	PSE-deemed	Engineering		3,000.00	12	Comm Cooking
Commercial Kitchens	11790	CKTCH: Oven - Combination - 15 to 28 Pans - NG - NPU	Combination oven: 15 to 28 pans; natural gas fuel; non-PSE utility	Appliances	Commercial Kitchen	9/1/16			0.00	Therm	per unit				0.00		
Commercial Kitchens	10825	CKTCH: Oven - Combination - More Than 28 Pans - NG	Combination oven: more than 28 pans; natural gas fuel	Appliances	Commercial Kitchen	7/1/16			1,573.00	Therm	per unit	PSE-deemed	Engineering		7,000.00	12	Comm Cooking
Commercial Kitchens	11789	CKTCH: Oven - Combination - More Than 28 Pans - NG - NPU	Combination oven: more than 28 pans; natural gas fuel; non-PSE utility	Appliances	Commercial Kitchen	9/1/16			0.00	Therm	per unit				0.00		
Commercial Kitchens	11780	CKTCH: Oven - Convection - Double - NG - NPU	Double convection oven: natural gas fuel; non-PSE utility	Appliances	Commercial Kitchen	9/1/16			0.00	Therm	per unit				0.00		
Commercial Kitchens	11782	CKTCH: Oven - Convection - Full - NG - NPU	Full-size convection oven: natural gas fuel; non-PSE utility	Appliances	Commercial Kitchen	9/1/16			0.00	Therm	per unit				0.00		
Commercial Kitchens	10827	CKTCH: Oven - Convection - Half - NG	Half-size convection oven: natural gas fuel	Appliances	Commercial Kitchen	7/1/16			226.00	Therm	per unit	PSE-deemed	Engineering		450.00	12	Comm Cooking
Commercial Kitchens	11791	CKTCH: Oven - Convection - Half - NG - NPU	Half-size convection oven: natural gas fuel; non-PSE utility	Appliances	Commercial Kitchen	9/1/16			0.00	Therm	per unit				0.00		
Commercial Kitchens	11325	CKTCH: Oven - Double Rack - NG	Double-rack oven: natural gas fuel	Appliances	Commercial Kitchen	7/1/16			2,113.00	Therm	per unit	PSE-deemed	Engineering		1,000.00	12	Comm Cooking
Commercial Kitchens	11854	CKTCH: Oven - Double Rack - NG - NPU	Double-rack oven: natural gas fuel; non-PSE utility	Appliances	Commercial Kitchen	9/1/16			0.00	Therm	per unit				0.00		

Exhibit 5 2016-2017 Measure Values

Program Name	DSMC ID	Measure Name	Description	Measure Category	Measure Type	Version Start Date	Version End Date	Unit Savings - kWh	Unit Savings - Therm	Savings UOM Type	Unit Type	Source of Savings Type	PSE-Deemed Type	Unit Incentive - kWh	Unit Incentive Therm	Measure Life	End Use
Commercial Kitchens	10861	CKTCH: Oven - Single Rack - NG	Single-rack oven: natural gas fuel	Appliances	Commercial Kitchen	7/1/16			1,034.00	Therm	per unit	PSE-deemed	Engineering		1,500.00	12	Comm Cooking
Commercial Kitchens	11822	CKTCH: Oven - Single Rack - NG - NPU	Single-rack oven: natural gas fuel; non-PSE utility	Appliances	Commercial Kitchen	9/1/16			0.00	Therm	per unit				0.00		
Commercial Kitchens	10863	CKTCH: Steamer - 10 Pan - NG	10-pan steamer: natural gas fuel	Appliances	Commercial Kitchen	7/1/16			3,893.00	Therm	per unit	PSE-deemed	Engineering		950.00	12	Comm Cooking
Commercial Kitchens	11824	CKTCH: Steamer - 10 Pan - NG - NPU	10-pan steamer: natural gas fuel; non-PSE utility	Appliances	Commercial Kitchen	9/1/16			0.00	Therm	per unit				0.00		
Commercial Kitchens	10865	CKTCH: Steamer - 3 Pan - NG	3-pan steamer: natural gas fuel	Appliances	Commercial Kitchen	7/1/16			1,164.00	Therm	per unit	PSE-deemed	Engineering		250.00	12	Comm Cooking
Commercial Kitchens	11826	CKTCH: Steamer - 3 Pan - NG - NPU	3-pan steamer: natural gas fuel; non-PSE utility	Appliances	Commercial Kitchen	9/1/16			0.00	Therm	per unit				0.00		
Commercial Kitchens	10867	CKTCH: Steamer - 4 Pan - NG	4-pan steamer: natural gas fuel	Appliances	Commercial Kitchen	7/1/16			1,554.00	Therm	per unit	PSE-deemed	Engineering		350.00	12	Comm Cooking
Commercial Kitchens	11828	CKTCH: Steamer - 4 Pan - NG - NPU	4-pan steamer: natural gas fuel; non-PSE utility	Appliances	Commercial Kitchen	9/1/16			0.00	Therm	per unit				0.00		
Commercial Kitchens	10869	CKTCH: Steamer - 5 Pan - NG	5-pan steamer: natural gas fuel	Appliances	Commercial Kitchen	7/1/16			1,944.00	Therm	per unit	PSE-deemed	Engineering		450.00	12	Comm Cooking
Commercial Kitchens	11830	CKTCH: Steamer - 5 Pan - NG - NPU	5-pan steamer: natural gas fuel; non-PSE utility	Appliances	Commercial Kitchen	9/1/16			0.00	Therm	per unit				0.00		
Commercial Kitchens	10871	CKTCH: Steamer - 6 Pan - NG	6-pan steamer: natural gas fuel	Appliances	Commercial Kitchen	7/1/16			2,334.00	Therm	per unit	PSE-deemed	Engineering		550.00	12	Comm Cooking
Commercial Kitchens	11832	CKTCH: Steamer - 6 Pan - NG - NPU	6-pan steamer: natural gas fuel; non-PSE utility	Appliances	Commercial Kitchen	9/1/16			0.00	Therm	per unit				0.00		
Commercial Kitchens	12046	CKTCH: Water Heater - Education - NG	Natural gas water heater: education	Water Heating	Water Heater	1/1/17			592.00	Therm	per unit	PSE-deemed	Engineering		$1,500.00	7	Comm Water Heat
Commercial Kitchens	10809	CKTCH: Water Heater - NG	Water heater: commercial kitchen use	Water Heating	Water Heater	1/1/17			613.00	Therm	per unit	PSE-deemed	Engineering		$1,500.00	7	Comm Water Heat
Commercial Kitchens	11784	CKTCH: Water Heater - NG - NPU	Water heater: commercial kitchen use; non-PSE utility	Water Heating	Water Heater	9/1/16			0.00	Therm	per unit				0.00		
Commercial Kitchens	12049	CKTCH: Water Heater - Tankless - Education - NG	Tankless natural gas water heater: education	Water Heating	Water Heater	1/1/17			664.00	Therm	per unit	PSE-deemed	Engineering		$1,500.00	7	Comm Water Heat
Commercial Kitchens	12048	CKTCH: Water Heater - Tankless - Kitchen - NG	Tankless natural gas water heater: commercial kitchen use	Water Heating	Water Heater	1/1/17			748.00	Therm	per unit	PSE-deemed	Engineering		$1,500.00	7	Comm Water Heat
Commercial Laundry	10898	CLDRY: Boiler - NG	Natural gas boiler: commercial laundry use	Water Heating	Water Heater	1/1/16			597.00	Therm	per unit	PSE-deemed	Engineering		1,500.00	15	Comm Water Heat
Commercial Laundry	10904	CLDRY: Clothes Washer - GWH	Commercial clothes washer: natural gas water heating	Appliances	Clothes Washer	1/1/16			20.00	Therm	per unit	PSE-deemed	Engineering		60.00	7	Comm Water Heat
Commercial Laundry	12028	CLDRY: Clothes Washer - GWH - G Dryer - Laundromat	Commercial clothes washer: natural gas water heating; natural gas dryer; laundromat use	Appliances	Clothes Washer	1/1/17			40.00	Therm	per unit	PSE-deemed	Engineering		$150.00	7	Comm Flat
Commercial Laundry	12044	CLDRY: Clothes Washer - GWH - G Dryer - Lodging	Commercial clothes washer: natural gas water heating; natural gas dryer; lodging use	Appliances	Clothes Washer	1/1/17			76.00	Therm	per unit	PSE-deemed	Engineering		$150.00	7	Comm Flat
Commercial Laundry	12036	CLDRY: Clothes Washer - GWH - G Dryer - Multi Family	Commercial clothes washer: natural gas water heating; natural gas dryer; multi-family use	Appliances	Clothes Washer	1/1/17			29.00	Therm	per unit	PSE-deemed	Engineering		$150.00	11	Comm Flat
Commercial Laundry	10905	CLDRY: Hot Water Heater - NG	Natural gas hot water heater: commercial laundry use	Water Heating	Water Heater	1/1/17			597.00	Therm	per unit	PSE-deemed	Engineering		$1,500.00	7	Comm Water Heat
Commercial Laundry	12045	CLDRY: Water Heater - Tankless - NG	Tankless water heater: commercial kitchen use	Water Heating	Water Heater	1/1/17			732.00	Therm	per unit	PSE-deemed	Engineering		$1,500.00	7	Comm Water Heat
HomePrint	10764	HMPT: Home Energy Audit - CAN - MH - NG	Home energy audit: CAN; natural gas heated manufactured home	Behavior	Energy Assessment	1/1/17			0.00	Therm	per home				$100.00	1	Res Space Heat
HomePrint	10763	HMPT: Home Energy Audit - CAN - NG	Home energy audit: CAN; natural gas heated home	Behavior	Energy Assessment	1/1/17			0.00	Therm	per home				$121.00	1	Res Space Heat
HomePrint	10765	HMPT: Home Energy Audit - Service Provider - MH - NG	Home energy audit: service provider; natural gas heated manufactured home	Behavior	Energy Assessment	1/1/17			0.00	Therm	per home				$115.00	1	Res Space Heat
HomePrint	10762	HMPT: Home Energy Audit - Service Provider - NG	Home energy audit: service provider; natural gas heated home	Behavior	Energy Assessment	1/1/17			0.00	Therm	per home				$144.00	1	Res Space Heat
Low Income Weatherization	10316	LIW: Sealing - Duct - MH - TG	Duct sealing: mobile home; natural gas	Weatherization	Sealing	1/1/16			39.40	Therm	per home	RTF-deemed			$350.00	20	Res Space Heat
Low Income Weatherization	10319	LIW: Sealing - Duct - SF - TG	Duct sealing: single family; natural gas	Weatherization	Sealing	1/1/16			30.00	Therm	per home	RTF-deemed			$350.00	20	Res Space Heat
Low Income Weatherization	10368	LIW: Insulation - Floor - R0 to R22 - MH - TG	Floor insulation: R0 to R22; mobile home; natural gas	Weatherization	Insulation	1/1/16			0.02	Therm	square foot	PSE-deemed	RTF Derived		$0.70	25	Res Space Heat
Low Income Weatherization	10389	LIW: Insulation - Wall - R0 to R11 - MH - TG	Wall insulation: R0 to R11; mobile home; natural gas	Weatherization	Insulation	1/1/16			0.07	Therm	square foot	PSE-deemed	RTF Derived		$0.80	25	Res Space Heat
Low Income Weatherization	10392	LIW: Insulation - Wall - R0 to R11 - SF - TG	Wall insulation: R0 to R11; single family; natural gas	Weatherization	Insulation	1/1/16			0.07	Therm	square foot	PSE-deemed	RTF Derived		$0.85	30	Res Space Heat
Low Income Weatherization	10401	LIW: Insulation - Attic - R0 to R30 - MH - TG	Attic insulation: R0 to R30; mobile home; natural gas	Weatherization	Insulation	1/1/16			0.01	Therm	square foot	PSE-deemed	RTF Derived		$0.70	25	Res Space Heat
Low Income Weatherization	10531	LIW: Sealing - Shell - MH - TG	Shell sealing: mobile home; natural gas	Weatherization	Sealing	1/1/16			0.01	Therm		PSE-deemed	RTF Derived		$0.40	25	Res Space Heat
Low Income Weatherization	10534	LIW: Sealing - Shell - SF - TG	Shell sealing: single family; natural gas	Weatherization	Sealing	1/1/16			0.02	Therm		PSE-deemed	RTF Derived		$0.40	20	Res Space Heat
Low Income Weatherization	10632	LIW: Insulation - Attic - R0 to R49 - MF - TG	Attic insulation: R0 to R49; multi-family; natural gas	Weatherization	Insulation	1/1/16			0.09	Therm	square foot	PSE-deemed	RTF Derived		$0.95	30	Res Space Heat
Low Income Weatherization	10635	LIW: Insulation - Attic - R0 to R49 - SF - TG	Attic insulation: R0 to R49; single family; natural gas	Weatherization	Insulation	1/1/16			0.09	Therm	square foot	PSE-deemed	RTF Derived		$0.95	30	Res Space Heat
Low Income Weatherization	10638	LIW: Insulation - Attic - R11 to R49 - SF - TG	Attic insulation: R11 to R49; single family; natural gas	Weatherization	Insulation	1/1/16			0.02	Therm	square foot	PSE-deemed	RTF Derived		$0.70	30	Res Space Heat
Low Income Weatherization	10641	LIW: Insulation - Attic - R19 to R49 - MF - TG	Attic insulation: R19 to R49; multi-family; natural gas	Weatherization	Insulation	1/1/16			0.03	Therm	square foot	PSE-deemed	RTF Derived		$0.70	30	Res Space Heat
Low Income Weatherization	10645	LIW: Aerator - 1.5 gpm - MF - TG	1.5 gpm aerator: multi-family; gas	Water Heating	Aerator	1/1/16			2.00	Therm	per unit	PSE-deemed	Program Staff		$2.00	10	Res Water Heat
Low Income Weatherization	10648	LIW: Aerator - 1.5 gpm - MH - TG	1.5 gpm aerator: mobile home; gas	Water Heating	Aerator	1/1/16			1.64	Therm	per unit	PSE-deemed	Program Staff		$2.00	10	Res Water Heat
Low Income Weatherization	10651	LIW: Aerator - 1.5 gpm - SF - TG	1.5 gpm aerator: single family; gas	Water Heating	Aerator	1/1/16			1.64	Therm	per unit	PSE-deemed	Program Staff		$2.00	10	Res Water Heat
Multi Family Retrofit	11267	MFRFT: Fireplace - Natural Gas - High Efficiency - In Unit	High efficiency natural gas fireplace; installed in unit	HVAC	Fireplace	1/1/17			72.00	Therm	per home	PSE-deemed	Program Staff		$200.00	20	Res Space Heat
Multi Family Retrofit	11281	MFRFT: Furnace - Natural Gas - 95pc - In Unit	95% efficient natural gas furnace; installed in unit	HVAC	Furnace	1/1/17			82.40	Therm	per unit	PSE-deemed	Evaluation Study		$350.00	18	Res Space Heat
Multi Family Retrofit	11268	MFRFT: Integrated Space and Water Heating - In Unit	Integrated space and water heating system: installed in unit	Combined	Combined	1/1/17			129.70	Therm	per home	PSE-deemed	Evaluation Study		$800.00	18	Res Space Heat
Residential Windows	10709	SFWIN: Windows - Single Pane - to U30 - NG	Single pane windows: U-factor up to 0.30; home heated with natural gas	Weatherization	Window	1/1/17			0.64	Therm	varies	PSE-deemed	RTF Derived		$50.00	30	Res Space Heat

Exhibit 5

2016-2017 Measure Values

Program Name	DSMC ID	Measure Name	Description	Measure Category	Measure Type	Version Start Date	Version End Date	Unit Savings - kWh	Unit Savings - Therm	Savings UOM Type	Unit Type	Source of Savings Type	PSE-Deemed Type	Unit Incentive - kWh	Unit Incentive Therm	Measure Life	End Use
Residential Windows	10721	SFWIN: Windows - Single Pane - to U30 - NG - MH	Single pane windows: U-factor up to 0.30; manufactured home heated with natural gas	Weatherization	Window	1/1/17			0.40	Therm	varies	PSE-deemed	RTF Derived		$50.00	25	Res Space Heat
Single Family Weatherization	10920	SFWX: Carbon Monoxide Detector	Carbon monoxide detector	Safety	Safety Equipment	1/1/17			0.00	Therm	per home				$38.30	5	Res Space Heat
Single Family Weatherization	10931	SFWX: Sealing - Air - Attic - NG	Attic air sealing: home heated with natural gas	Weatherization	Sealing	1/1/17			0.01	Therm	square foot	PSE-deemed	Other Utility		$0.09	30	Res Space Heat
Single Family Weatherization	10933	SFWX: Sealing - Air - Floor - NG	Floor air sealing: home heated with natural gas	Weatherization	Sealing	1/1/17			0.01	Therm	square foot	PSE-deemed	Other Utility		$0.09	30	Res Space Heat
Single Family Weatherization	10934	SFWX: Sealing - Duct - Double Triple - MH - NG	Duct sealing: double or triple-wide manufactured home heated with natural gas	Weatherization	Sealing	1/1/17			39.43	Therm	per home	PSE-deemed	RTF Derived		$400.00	18	Res Space Heat
Single Family Weatherization	10943	SFWX: Sealing - Duct - NG	Duct sealing: home heated with natural gas	Weatherization	Sealing	1/1/17			42.50	Therm	per home	PSE-deemed	RTF Derived		$300.00	20	Res Space Heat
Single Family Weatherization	10938	SFWX: Sealing - Duct - Single - MH - NG	Duct sealing: single-wide manufactured home heated with natural gas	Weatherization	Sealing	1/1/17			39.43	Therm	per home	PSE-deemed	RTF Derived		$200.00	18	Res Space Heat
Single Family Weatherization	10941	SFWX: Sealing - Duct and Insulation - NG	Duct sealing and insulation: home heated with natural gas	Combined	Combined	1/1/17			75.00	Therm	per unit	PSE-deemed	RTF Derived		$400.00	20	Res Space Heat
Small Business Direct Install	11316	SBDI: Aerator - GWH - All Others	Aerator: natural gas water heating; all other business types	Water Heating	Aerator	1/1/16			6.50	Therm	per unit	PSE-deemed	Engineering		13.09	10	Comm Water Heat
Small Business Direct Install	11987	SBDI: Aerator - GWH - Commercial Kitchen - 1.0 gpm	1.0 gpm aerator: commercial kitchen use; natural gas water heating	Water Heating	Aerator	1/1/17			11.70	Therm	per unit	PSE-deemed	Engineering		$13.09	10	Comm Space Heat
Small Business Direct Install	11320	SBDI: Aerator - GWH - Restaurant	Aerator: natural gas water heating; restaurant	Water Heating	Aerator	1/1/17			9.30	Therm	per unit	PSE-deemed	Engineering		$13.09	10	Comm Water Heat
Small Business Direct Install	11322	SBDI: Aerator - GWH - Retail	Aerator: natural gas water heating; retail	Water Heating	Aerator	1/1/16			6.50	Therm	per unit	PSE-deemed	Engineering		13.09	10	Comm Water Heat
Small Business Direct Install	11324	SBDI: Aerator - GWH - School	Aerator: natural gas water heating; school	Water Heating	Aerator	1/1/16			8.20	Therm	per unit	PSE-deemed	Engineering		13.09	10	Comm Water Heat
Small Business Direct Install	11318	SBDI: Aerator - GWH - Small	Aerator: natural gas water heating; small office	Water Heating	Aerator	1/1/16			2.00	Therm	per unit	PSE-deemed	Engineering		13.09	10	Comm Water Heat
Small Business Direct Install	11982	SBDI: Boiler - Education - NG	Natural gas boiler: education	Water Heating	Water Heater	1/1/17			470.00	Therm	per unit	PSE-deemed	Engineering		$1,500.00	15	Comm Water Heat
Small Business Direct Install	11980	SBDI: Boiler - Kitchen - NG	Natural gas boiler: commercial kitchen use	Water Heating	Water Heater	1/1/17			800.00	Therm	per unit	PSE-deemed	Engineering		$1,500.00	15	Comm Water Heat
Small Business Direct Install	11981	SBDI: Boiler - Laundry - NG	Natural gas boiler: commercial laundry use	Water Heating	Water Heater	1/1/17			597.00	Therm	per unit	PSE-deemed	Engineering		$1,500.00	15	Comm Water Heat
Small Business Direct Install	11173	SBDI: Sealing - Auto Closer - Reach In Glass Doors - Low Temp - NG	Auto closer: reach-in glass doors; low temperature; natural gas heating	Refrigeration	Sealing	1/1/16			0.67	Therm	per unit	PSE-deemed	Engineering		0.00	8	Comm Space Heat
Small Business Direct Install	11176	SBDI: Sealing - Auto Closer - Reach In Glass Doors - Med Temp - NG	Auto closer: reach-in glass doors; medium temperature; natural gas heating	Refrigeration	Sealing	1/1/16			0.25	Therm	per unit	PSE-deemed	Engineering		0.00	8	Comm Space Heat
Small Business Direct Install	11179	SBDI: Sealing - Auto Closer - Walk In Doors - Low Temp - NG	Auto closer: walk-in doors; low temperature; natural gas heating	Refrigeration	Sealing	1/1/16			5.62	Therm	per unit	PSE-deemed	Engineering		0.00	8	Comm Flat
Small Business Direct Install	11182	SBDI: Sealing - Auto Closer - Walk In Doors - Med Temp - NG	Auto closer: walk-in glass doors; medium temperature; electric heating	Refrigeration	Sealing	1/1/16			0.22	Therm	per unit	PSE-deemed	Engineering		0.00	8	Comm Flat
Small Business Direct Install	11185	SBDI: Sealing - Gasket - Reach In Glass Door - Low Temp - NG	Reach-in glass door gasket: low temperature per door; natural gas heating	Refrigeration	Sealing	1/1/16			6.20	Therm	per unit	PSE-deemed	Engineering		0.00	4	Comm Flat
Small Business Direct Install	11187	SBDI: Sealing - Gasket - Reach In Glass Door - Med Temp - NG	Reach-in glass door gasket: medium temperature per door; natural gas heating	Refrigeration	Sealing	1/1/16			13.90	Therm	per unit	PSE-deemed	Engineering		0.00	4	Comm Flat
Small Business Direct Install	11189	SBDI: Sealing - Gasket - Walk In Cooler Door- Main - NG	Walk-in cooler gasket: main door per door; natural gas heating	Refrigeration	Sealing	1/1/16			11.40	Therm	per unit	RTF-deemed			0.00	4	Comm Flat
Small Business Direct Install	11191	SBDI: Sealing - Gasket - Walk In Freezer Door - Main - NG	Walk-in freezer gasket: main door per door; natural gas heating	Refrigeration	Sealing	1/1/16			8.90	Therm	per unit	RTF-deemed			0.00	4	Comm Flat
Small Business Direct Install	11194	SBDI: Sealing - Night Cover - Produce - High Temp - 30F to 55F - NG - GIE	Night cover for produce displays: high temperature; 30F to 55F; natural gas heating; natural gas interactive effect	Refrigeration	Sealing	1/1/16			3.90	Therm	per unit	RTF-deemed			0.00	5	Comm Space Heat
Small Business Direct Install	11199	SBDI: Sealing - Night Cover - Produce - Low Temp - Neg 35F to 0F - NG - GIE	Night cover for produce displays: low temperature; -35F to 0F; natural gas heating; natural gas interactive effect	Refrigeration	Sealing	1/1/16			3.90	Therm	per unit	RTF-deemed			0.00	5	Comm Space Heat
Small Business Direct Install	11204	SBDI: Sealing - Night Cover - Produce - Med Temp - 0F to 30F - NG - GIE	Night cover for produce displays: medium temperature; 0F to 30F; natural gas heating; natural gas interactive effect	Refrigeration	Sealing	1/1/16			5.20	Therm	per unit	RTF-deemed			0.00	5	Comm Space Heat
Small Business Direct Install	11214	SBDI: Showerhead - DI - Any Comm - GWH - 1.5 gpm	1.5 gpm direct install showerhead: any commercial application; natural gas water heating	Water Heating	Showerhead	1/1/16			10.00	Therm	per unit	RTF-deemed			28.70	10	Comm Water Heat
Small Business Direct Install	11216	SBDI: Showerhead - DI - Fit Ctr - GWH 1.5 gpm	1.5 gpm direct install showerhead: fitness center; natural gas water heating	Water Heating	Showerhead	1/1/16			183.00	Therm	per unit	RTF-deemed			28.70	10	Comm Water Heat
Small Business Direct Install	11223	SBDI: Sprayhead - GWH - 0.65 gpm - from 1.6	0.65 gpm sprayhead: previously 1.6 gpm; natural gas water heating	Water Heating	Sprayhead	1/1/16			35.20	Therm	per unit	RTF-deemed			76.30	4	Comm Water Heat
Small Business Direct Install	11225	SBDI: Sprayhead - GWH - 0.65 gpm - from 2.2	0.65 gpm sprayhead: previously 2.2 gpm; natural gas water heating	Water Heating	Sprayhead	1/1/16			55.00	Therm	per unit	RTF-deemed			76.30	4	Comm Water Heat
Small Business Direct Install	11227	SBDI: Sprayhead - GWH - 0.65 gpm - from 2.6	0.65 gpm sprayhead: previously 2.6 gpm; natural gas water heating	Water Heating	Sprayhead	1/1/16			90.70	Therm	per unit	RTF-deemed			76.30	4	Comm Water Heat
Small Business Direct Install	11229	SBDI: Sprayhead - GWH - 0.65 gpm - not PI	0.65 gpm sprayhead: no previous install; natural gas water heating	Water Heating	Sprayhead	1/1/16			50.00	Therm	per unit	RTF-deemed			76.30	4	Comm Water Heat
Small Business Direct Install	11979	SBDI: Water Heater - Education - NG	Natural gas water heater: education	Water Heating	Water Heater	1/1/17			592.00	Therm	per unit	PSE-deemed	Engineering		$1,500.00	7	Comm Water Heat
Small Business Direct Install	11977	SBDI: Water Heater - Kitchen - NG	Natural gas water heater: commercial kitchen use	Water Heating	Water Heater	1/1/17			613.00	Therm	per unit	PSE-deemed	Engineering		$1,500.00	7	Comm Water Heat
Small Business Direct Install	11978	SBDI: Water Heater - Laundry - NG	Natural gas water heater: commercial laundry use	Water Heating	Water Heater	1/1/17			597.00	Therm	per unit	PSE-deemed	Engineering		$1,500.00	7	Comm Water Heat
Small Business Direct Install	11985	SBDI: Water Heater - Tankless - Education - NG	Tankless natural gas water heater: education	Water Heating	Water Heater	1/1/17			664.00	Therm	per unit	PSE-deemed	Engineering		$1,500.00	7	Comm Water Heat
Small Business Direct Install	11983	SBDI: Water Heater - Tankless - Kitchen - NG	Tankless natural gas water heater: commercial kitchen use	Water Heating	Water Heater	1/1/17			748.00	Therm	per unit	PSE-deemed	Engineering		$1,500.00	7	Comm Water Heat
Small Business Direct Install	11984	SBDI: Water Heater - Tankless - Laundry - NG	Tankless natural gas water heater: commercial laundry use	Water Heating	Water Heater	1/1/17			732.00	Therm	per unit	PSE-deemed	Engineering		$1,500.00	7	Comm Water Heat

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	2010 Settlement Agreement Sections Still in Effect					
1	UE-100177 A(1)	The following parties reached agreement on the terms for approval of Puget Sound Energy Inc's Ten-Year Achievable Conservation Potential and Biennial Conservation Target, which Puget Sound Energy filed in Docket UE-100177 on June 18, 2010: Puget Sound Energy, Inc. ("PSE" or the "Company"); the Staff of the Washington Utilities and Transportation Commission; the Public Counsel Section of the Attorney General's Office; Intervenor (sp) Industrial Customers of Northwest Utilities; and Intervenor NW Energy Coalition ("NWEC ") (hereinafter referred to collectively as "Executing Parties"). This Settlement Agreement ("Agreement") is the agreement reached by the Executing Parties.		Not Applicable	Not Applicable	Not applicable-- No deliverable
2	UE-100177 A(2)	The Executing Parties intend that this Agreement shall supersede and replace the Settlement Terms for Conservation, Exhibit F to the Settlement Stipulation in Docket UE-011570 for electric conservation. This Agreement addresses conservation of electricity only. It does not address conservation of natural gas. The Northwest Industrial Gas Users and The Energy Project, signatories to the Settlement Terms for Conservation, Exhibit F to the Settlement Stipulation in Docket UG-011571 but not parties in Docket UE-100177, participated in discussions about the preparation of this Agreement. **Nothing in this settlement shall affect the natural gas Settlement Terms for Conservation, Exhibit F to the Settlement Stipulation in Docket UG-011571 with respect to natural gas conservation, which remains in full force and effect with respect to natural gas conservation issues.** (Emphasis added.)		Not Applicable	Not Applicable	Not applicable -- No deliverable
3	UE-100177 A(3)	The approval of Initiative 937 in 2006, codified in Chapter 19.285 of the Revised Code of Washington as the Energy Independence Act, and PSE's subsequent filing in Docket UE-100177, resulted in the need to update and amend the electric conservation provisions of the Settlement Terms for Conservation, Exhibit F to the Settlement Stipulation in Docket UE-011570. Those changes are included in this Agreement. RCW 19.285.040(1) and WAC 480-109-010 require utilities to identify achievable cost-effective conservation potential using methodologies consistent with those used by the Northwest Power and Conservation Council ("Council").		Not Applicable	Not Applicable	Not applicable -- No deliverable
4	UE-100177 B(4)	This Agreement establishes a conservation program with no sunset date. Any party may petition the Commission for modifications to the program, including in a general rate case proceeding. Nothing herein prevents any party from commenting on any filings under this or any other docket before the Commission.		Not Applicable	Not Applicable	Not applicable -- No deliverable
5	UE-100177 B(4)(a)	Except where expressly stated, the conditions in Section K and all other provisions of this Agreement are intended to remain in effect notwithstanding the biennial review conducted under the Energy Independence Act. Any party may petition to, or the Commission may on its own motion and notice to parties, modify the conservation program if required by the results of the review.		Not Applicable	Not Applicable	Not applicable -- No deliverable
6	UE-100177 B(4)(b)	In the event that PSE is not required to set or achieve specific conservation savings targets by the Energy Independence Act or other state law, PSE agrees to continue a conservation program that is consistent with the provisions of the 2002 Settlement, such that the programs funded through PSE's tariff rider will be designed to achieve all savings that are not independently captured by consumer acquisition, that are cost-effective to the Company, and economically feasible for consumers, taking into account incentives provided by PSE.		Not Applicable	Not Applicable	Not applicable -- No deliverable
7	UE-100177 C(5)	PSE shall set the ten-year conservation potential and the biennial conservation targets as required by the Energy Independence Act (RCW 19.285) and WAC 480-109 and consistent with this Agreement.		Not Applicable	Not Applicable	Not applicable -- No deliverable
8	UE-100177 C(6)	In general each individual energy efficiency program shall be designed to be cost-effective.		Not Applicable	Not Applicable	Not applicable -- No deliverable
9	UE-100177 D(7)	PSE shall establish an external Advisory Committee. The Advisory Committee shall address, but not be limited to the issues identified in Section K.3 of this Agreement.		Not Applicable	Not Applicable	Not applicable -- No deliverable

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10	UE-100177 D(8)	Advisory Committee membership shall be established as follows. The Company shall extend an invitation to serve as an Advisory Committee member to a representative from at least each of the following organizations: WUTC staff, Attorney General Office of Public Counsel, NW Energy Coalition, Energy Project, Natural Resources Defense Council, Pacific Northwest Electric Power and Conservation Council, Industrial Customers of Northwest Utilities, Northwest Industrial Gas Users, Washington State Department of Commerce, Northwest Energy Efficiency Council, and the Department Of Energy Weatherization Assistance Program provider network. Additionally, the Company shall seek customer representatives from the residential, commercial, industrial, and institutional sectors to serve on the Advisory Committee. Other interested parties may attend Advisory Committee meetings as well, but will not be considered Advisory Committee members. This ongoing committee is now called the Conservation Resources Advisory Group (CRAG).		Not Applicable	Not Applicable	Not applicable -- No deliverable
11	UE-100177 E(9)	To determine which energy efficiency programs and measures are cost-effective, PSE shall rely on a calculation of avoided cost consistent with the Council methodology and with the Energy Independence Act.		Not Applicable	Not Applicable	Not applicable -- No deliverable
12	UG-011571 (2002 Rate Case Stipulation Agreement) F.16	PSE shall develop, in conjunction with its August 2002 filing, avoided costs for natural gas efficiency programs, with review from the Advisory Committee, by analyzing similar components of system costs.	Avoided costs updated in conjunction with 2017 IRP	biennially	2017 Q4	✓
13	UE-100177 E(10)	PSE may modify, after consultation with the CRAG, the Company's calculation of avoided cost based upon the following: modification to one or more component values of the calculation, use of a forecasting tool or production cost model other than Aurora, establishment of load factors that are more specific to PSE's service territory, or other information relevant to the calculation of avoided cost.	PSE did not modify the electric components of avoided costs	biennially		✓
14	UE-100177 F(11)	The annual budget of the program will be built up from the bottom through the development of a mix of programs that deliver cost-effective savings in PSE's service territory. PSE's conservation targets developed under RCW 19.285.040(1) will direct development of the mix of cost effective programs that will establish the budgets for efficiency programs.		Annually		✓
15	UG-011571 (2002 Rate Case Stipulation) H.25	Tariff-rider funds shall only be used on programs and their associated administrative costs that result in energy savings through energy efficiency investments or fuel switching. **This may include reasonable administration costs for PSE's net metering program.** **(Emphasis added.)**	Concurrent with PSE's filing of Annual Conservation Plans	Annually		✓
16	UE-100177 F(12)	Schedule 449 customers are eligible for self-direction under existing Schedule 258 and participation in efficiency programs offered by PSE, except as stated in paragraph 13. Schedule 258 customers who are not on Schedule 449 will be eligible to participate in other programs offered directly by PSE. Non-449 Schedule 258 customers will share in paying NEEA/market transformation and administration costs consistent with all other non-449 customers.	Ongoing--Standard Business Practice	Ongoing		✓
17	UE-100177 F(13)	Each Schedule 449 customer can self-direct and/or participate in programs offered directly by PSE up to a total dollar cap equal to the annual efficiency funding level for that 449 customer minus 17.5% of that amount. The 17.5% represents payments for market transformation (10%) and for administration (7.5%).	Ongoing--Standard Business Practice	Ongoing		✓

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18	UE-100177 G(14)	PSE will continue to honor Commitments 22 and 23 from U-072375 with regard to future funding levels for low-income energy conservation programs based on the 2010-2011 planning levels. PSE will continue to work with agencies to provide additional funding above that established by Commitment 22 if additional production through the existing or newly developed cost-effective programs warrants it. In addition, PSE will continue to contribute a total of $300,000 of shareholder funds annually for low-income weatherization regardless of fuel type.	Ongoing--Standard Business Practice	Ongoing		
19	UE-100177 H(15)	The Company shall retain the existing rider mechanism going forward, subject to the Commission's Order in Docket No. UE-970686.	Ongoing--Standard Business Practice	Ongoing	4	
20	UE-100177 H(16)	The Company shall continue to use the peak credit method of assigning the costs of its electric conservation programs to each rate schedule with one exception, the Schedule 449 customers. (The CRAG will review cost allocation methodology per Section K, Paragraph (11)(c)). Schedule 449 customers currently pay 0.0944 cents per kWh toward the cost of the current Schedule 258 four-year conservation program (4/1/10 – 4/1/14). The current practice is to hold the payment amount constant over the Schedule 258 period. This amount is based on a $164 million biennial electric conservation-only budget for 2010-11, and is scalable in the next Schedule 258 budget cycle depending on whether the overall conservation budget increases or decreases. In 2002, the Schedule 449 customers paid 0.045 cents per kWh toward the cost of the conservation program. This amount was based on a $20 million annual budget.	Ongoing--Standard Business Practice	Ongoing		
21	UG-011571 (2002 Rate Case Stipulation) L.38	Gas conservation program costs will be allocated in a manner consistent with the gas program in effect in May 2002. No gas conservation program costs shall be allocated for recovery from natural gas transportation customers. Natural gas program cost recovery allocations made to natural gas sales customers shall be made according to the peak credit (i.e., bridge) methodology that underlies Puget's recovery for surcharges for its current conservation programs as approved in March 2002 in Docket No. UG-020264.	Concurrent with PSE's filing of Annual Conservation Plans	Annually		
22	UE-100177 I(17)	Achievement of the biennial targets for savings from cost-effective electricity conservation programs shall be subject to the penalty/incentive provisions of the Energy Independence Act. In the event that statutory penalties/incentives no longer apply under the Energy Independence Act or other state law or Commission order, PSE agrees to develop and propose a replacement penalty mechanism in consultation with the CRAG. At the same time, PSE may propose an incentive mechanism in consultation with the CRAG.		2018		
23	UG-011571 (2002 Rate Case Stipulation Agreement) M.43	The financial penalties for failure to achieve the annual conservation savings targets are as follows. • Achieve savings that are 90 to 99% of the goal: $200,000 penalty applies • Achieve savings that are 75% to 89% of the goal: $500,000 penalty applies Achieve savings that are less than 75% of the goal: $750,000 penalty applies	If a financial penalty is warranted, PSE will present that in its even-year Annual Reports.	2018		
24	UG-011571 (2002 Rate Case Stipulation Agreement) M.44	The Company shall provide biennial notification in a Conservation Report Card to its customers regarding the Company's performance related to its annual savings targets. The report shall: (All agree with I(18)(a), I(18)(b). **M.44.c,** though, indicates: Be distributed no later than 90 days after the filing of the Annual Conservation report (currently due February 15), beginning in 2006 and every two years thereafter.		2016		

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25	UE-100177 I(18)	The Company shall provide biennial notification in a Conservation Report Card to its customers regarding the Company's performance related to its biennial savings targets under the Energy Independence Act. [The following is after I(18)(d)(3)] The report also may contain reference to PSE's ongoing energy efficiency programs, including encouragement for customers to participate in those programs. The report shall:		2016		✓
26	UE-100177 I(18)(a)	Be distributed as a conspicuous stand-alone document accompanying a customer's bill or in a separate mailing and also posted to PSE's website.		Not Applicable	Not Applicable	Only the condition section heading will be checked.
27	UE-100177 I(18)(b)	Be distributed to customers only after adequate consultation with Staff and the CRAG.		Not Applicable	Not Applicable	Only the condition section heading will be checked.
28	UE-100177 I(18)(c)	Be distributed no later than 90 days after *the Commission determination on the two-year report on conservation program achievement required by the Energy Independence Act and Commission rules.*		Not Applicable	Not Applicable	Only the condition section heading will be checked.
29	UE-100177 I(18)(d)	Contain the following information, at a minimum: 1) A brief description of the purpose of the report. 2) A brief description of the benchmarks and an indication of whether the Company met the benchmarks in each biennial period. 3) The total amount of penalties imposed (or incentive earned) for the current reporting period.		Not Applicable	Not Applicable	Only the condition section heading will be checked.
30	UE-100177 J(19)	PSE may adopt line extension policies that are designed to encourage (and particularly not discourage) builders, developers, and end-use customers to select a heating fuel that is most resource efficient and adopt construction practices that exceed current energy codes.	Ongoing--Standard Business Practice	2010	4	✓
	Effective January, 2016: Appendix A in Attachment 1 of Order 01, Docket No. UE-152058 are the conditions in force.					
	Target Setting					
31	WAC 480-109-100 (2) Ten-year conservation potential	By January 1, 2010, and every two years thereafter, a utility must project its cumulative ten-year conservation potential.	Provided in 2017 IRP and 2018-2019 BCP	2017	4	✓
32	WAC 480-109-100 (2) Ten-year conservation potential	(a) This projection must consider all available conservation resources that are cost-effective, reliable, and feasible.		Not applicable	Not Applicable	Only the condition section heading will be checked.
33	WAC 480-109-100 (2) Ten-year conservation potential	(b) This projection must be derived from the utility's most recent IRP, including any information learned in its subsequent resource acquisition process, or the utility must document the reasons for any differences. When developing this projection, utilities must use methodologies that are consistent with those used in the Northwest Conservation and Electric Power Plan.		Not applicable	Not Applicable	Only the condition section heading will be checked.
34	WAC 480-109-100 (2) Ten-year conservation potential	(c) The projection must include a list of each measure used in the potential, its unit energy savings value, and the source of that value.		Not applicable	Not Applicable	Only the condition section heading will be checked.

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35	WAC 480-109-100 (3) Biennial conservation target	(3) Biennial conservation target. Beginning January 2010, and every two years thereafter, a utility must establish a biennial conservation target. (a) The biennial conservation target must identify, and quantify in megawatt-hours, all available conservation that is cost-effective, reliable, and feasible. (b) The biennial conservation target must be no lower than a pro rata share of the utility's ten-year conservation potential.	Provided in 2017 IRP and 2018-2019 BCP	2017	4	✓
36	WAC 480-109-100(3)(c)	**Excess conservation.** No more than twenty-five percent of any biennial target may be met with excess conservation savings allowed by this subsection. Excess conservation may only be used to mitigate shortfalls in the immediately subsequent two biennia and may not be used to adjust a utility's ten-year conservation potential or biennial target. The presence of excess conservation does not relieve a utility of its obligation to pursue the level of conservation in its biennial target.		Not applicable	Not Applicable	Only the condition section heading will be checked.
37	WAC 480-109-100(3)(c)	(i) Cost-effective conservation achieved in excess of a biennial conservation target may be used to meet up to twenty percent of each of the immediately subsequent two biennial targets.		Not applicable	Not Applicable	Only the condition section heading will be checked.
38	WAC 480-109-100(3)(c)	(ii) A utility may use single large facility conservation savings achieved in excess of its biennial target to meet up to five percent of each of the immediately subsequent two biennial conservation targets.		Not applicable	Not Applicable	Only the condition section heading will be checked.
39	WAC 480-109-100(3)(c)	(iii) Until December 31, 2017, a utility with an industrial facility located in a county with a population between ninety-five thousand and one hundred fifteen thousand that is directly interconnected with electricity facilities that are capable of carrying electricity at transmission voltage, may use cost-effective excess conservation savings from that industrial facility to meet the subsequent two biennial conservation targets. For purposes of this subsection, transmission voltage is 100,000 volts or higher.		Not applicable	Not Applicable	Only the condition section heading will be checked.
40	UE-152058 (1)(a)	Puget Sound Energy's 2016-2025 ten-year achievable electric conservation potential of 2,715,486 megawatt-hours (310 average megawatts), and Puget Sound Energy's 2016-2017 biennial conservation target of 537,078 megawatt-hours (61.3 average megawatts) at the customer meter, identified in Puget Sound Energy's 2016-2017 Biennial Conservation Plan (BCP) filed on October 30, 2015, are approved with conditions pursuant to RCW 19.285.040(1)(e) and WAC 480-109-120(1) This approval is subject to the Conditions described in Paragraphs (2) through (10) below. The Conditions in this Order shall apply to Puget Sound Energy's 2016-2025 Ten-Year Achievable Conservation Potential and Puget Sound Energy's 2016-2017 Biennial Conservation Target.		Not Applicable	Not Applicable	Not applicable -- No deliverable
41	UE-152058 (1)(b)	As part of Puget Sound Energy's biennial conservation acquisition efforts, Puget Sound Energy will continue to pursue regional electric market transformation, in collaboration with funding from other parties and with other strategic market partners in this biennium that complements Puget Sound Energy's energy efficiency programs, services, and measures, [sic]		Not Applicable	Not Applicable	Only the condition section heading will be checked.
42	UE-121697 UG-121705 (Decoupling)	Section D.2.c, ¶ 108: […] PSE does, however, agree to participate in the Northwest Energy Efficiency Alliance study on gas conservation. […]	ongoing	ongoing	Mark as complete at end of biennium	✓
43	UE-152058 (2)	**Puget Sound Energy Retains Responsibility.** Nothing within this Agreement relieves Puget Sound Energy of the sole responsibility for complying with RCW 19.285 and WAC 480-109. Specifically, the conditions regarding the need for a high degree of transparency, and communication and consultation with external stakeholders, diminish neither Puget Sound Energy's operational authority nor its ultimate responsibility for meeting the biennial conservation target approved herein.	ongoing	Not Applicable	Not Applicable	Not applicable -- No deliverable
	Advisory Group					

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44	UE-152058 (3)(a)	To meet the requirements of WAC 480-109-110, Puget Sound Energy shall continue to use its Conservation Resources Advisory Group (CRAG), initially created under Docket UE-011570 and UG-011571, and its Integrated Resource Planning Advisory Group created under WAC 480-100-238.	ongoing	ongoing	Mark as complete at end of biennium	✓
45	UE-152058 (3)(b)	Puget Sound Energy will notify CRAG members of public meetings scheduled to address Puget Sound Energy's integrated resource plan. Puget Sound Energy will also provide CRAG members with an opportunity to meet with the entity conducting the conservation potential assessment regarding the scope and design of the study, as well as the assumptions and relevant information utilized in the development of Puget Sound Energy's integrated resource plan as they apply to development and/or modification of the ten-year conservation potential as requested through the integrated resource plan public process.	ongoing	ongoing	Mark as complete at end of biennium	✓
46	UE-152058 (3)(c)	Puget Sound Energy must consult with the Advisory Groups starting no later than July 1, 2017, to begin to identify achievable conservation potential for 2018-2027 and to begin to set annual and biennial targets for the 2018-2019 biennium, including necessary revisions to program details. *See* RCW 19.285.040(1)(b); WAC 480-109-110.		July, 2017	Completed after second CRAG meeting of 2017	✓
47	UE-152058 (3)(d)	Puget Sound Energy shall inform the CRAG members when its projected expenditures indicate that Puget Sound Energy will spend more than 120 percent or less than 80 percent of its annual conservation budget.	not applicable during 2016-2017 biennium	ongoing	Mark as complete at end of biennium	✓
48	UE-152058 (3)(e)	Prior to filing the Biennial Conservation Plan, Puget Sound Energy shall provide the following information to the CRAG: draft ten-year conservation potential and two-year target by August 1, 2017; draft program details, including budgets, by September 1, 2017; and draft program tariffs by October 1, 2017.	All deliverables provided by October 1, 2017	November, 2017	When BCP is provided to CRAG	✓
	WAC 480-109-110 Conservation Advisory Group	A utility must maintain and use an external conservaation advisory group of stakeholders to advise the utility on cons				
49	WAC 480-109-110(1) Conservation Advisory Group	(a) Conservation programs and measures.	Provided throughout 2016-2017, with special focus on programs in July 2017	ongoing	Mark as complete at end of biennium	✓
50	WAC 480-109-110(1) Conservation Advisory Group	(b) Updates to the utility's evaluation, measurement, and verification framework.	Discussed in three 2016-2017 CRAG meetings. Included in draft BCP, October 2017	ongoing	Mark as complete at end of biennium	✓
51	WAC 480-109-110(1) Conservation Advisory Group	(c) Modification of existing, or development of new evaluation, measurement, and verification methods.	Discussed in three 2016-2017 CRAG meetings. Included in draft BCP, October 2017	ongoing	Mark as complete at end of biennium	✓
52	WAC 480-109-110(1) Conservation Advisory Group	(d) Independent third-party evaluation of portfolio-level biennial conservation achievement.		2018	Mark as complete in June following end of biennium	⌛

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53	WAC 480-109-110(1) Conservation Advisory Group	(e) Development of conservation potential assessments, as required by RCW 19.285.040 (1)(a) and WAC 480-109-100(2).	Reviewed May, 2017	2017	Mark as complete at end of biennium	✓
54	WAC 480-109-110(1) Conservation Advisory Group	(f) The methodology, inputs, and calculations for cost-effectiveness.	Ad-hoc meeting for CRAG members, Oct 2016, draft BCP Oct 2017	2017	Mark as complete at end of biennium	✓
55	WAC 480-109-110(1) Conservation Advisory Group	(g) The data sources and values used to develop and update supply curves.	Reviewed in two CRAG meetings related to IRP	2017	Mark as complete at end of biennium	✓
56	WAC 480-109-110(1) Conservation Advisory Group	(h) The need for tariff modifications or mid-biennium program corrections.	Included in draft 2018-2019 BCP, October 2017	2017	4	✓
57	WAC 480-109-110(1) Conservation Advisory Group	(i) The appropriate level of and planning for: (1) Marketing conservation programs; (2) Incentives to customers for measures and services; and (3) Impact, Markiet, and process evaluations.	Several CRAG meetings througout 2016-2017	2017	4	✓
58	WAC 480-109-110(1) Conservation Advisory Group	(j) Programs for low-income residential customers.	LIW discussed during several CRAG meetings, especially during HTR discussions.	2017	4	✓
59	WAC 480-109-110(1) Conservation Advisory Group	(k) Establishment of the biennial conservation target and program achievement results compared to the target.	Three CRAG meetings in 2017	2017	Mark as complete at end of biennium	✓
60	WAC 480-109-110(1) Conservation Advisory Group	(l) Conservation program budgets and actual expenditures compared to budgets.	Regular updates provided at CRAG meetings	2017	Mark as complete at end of biennium	✓
61	WAC 480-109-110(1) Conservation Advisory Group	(m) Development and implementation of new and pilot programs.	Several CRAG meetings througout 2016-2017	2017	Mark as complete at end of biennium	✓
62	WAC 480-109-110 Conservation Advisory Group	(2) **Advisory group meetings.** A utility must meet with its conservation advisory group at least four times per year. Conservation advisory group members may request additional meetings. A utility must provide reasonable advance notice of all conservation advisory group meetings.	Completed	2017	Mark as complete at end of biennium	✓
63	WAC 480-109-110 Conservation Advisory Group	(3) **Advance notification of filings.** Except for the conservation cost recovery adjustment filing required in WAC 480-109-130, a utility must provide its conservation advisory group an electronic copy of all conservation filings that the utility intends to submit to the commission at least thirty days in advance of the filing. The filing cover letter must document the amount of advance notice provided to the conservation advisory group.	Completed	2017	Mark as complete at end of biennium	✓

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64	WAC 480-109-110(1) Conservation Advisory Group	(4) **Advance notification of meetings.** A utility must notify its conservation advisory group of company and commission public meetings scheduled to address its conservation programs, its conservation tariffs, or the development of its conservation potential assessment.	Completed	2017	Mark as complete at end of biennium	✓
	Annual Budgets					
65	UE-152058 (4)(a)	Puget Sound Energy must provide its proposed budget in a detailed format with a summary page indicating the proposed budget and savings levels for each electric conservation program, and subsequent supporting spreadsheets providing further detail for each program and line item shown in the summary sheet.	Completed-2017 ACP and 2018-2019 BCP Exhibit 1	2017	As part of conservation plans	✓
66	UG-011571 (2001 Rate Case Stipulation) E.14	Electric and gas conservation annual savings targets and budgets will be periodically adusted as presented below in Tables A-1 and A-2.	Completed-2017 ACP and 2018-2019 BCP Exhibit 1	2017	As part of conservation plans	✓
67	U-072375 (Merger) Appendix A 22	PSE and Puget Holding commit to maintain existing low-income programs or as such program may be modified in any future proceeding. In addition, the Joint Applicants commit to increase the budgeted funding of low-income energy efficiency programs in future years at a level commensurate with increased in funding for energy efficiency programs for other residential customers through the CRAG process.	Commitment has been met since 2010	Ongoing	Provided in conservation plans	✓
68	UE-121697 UG-121705 (Decoupling)	Section F, ¶ 178: […] The settlement included an additional $500,000 for low-income energy efficiency. […]	LIW 2017 and 2018-2019 anticipated spends included additional $500k	2017	Provided in conservation plans	✓
69	UE-121697 UG-121705 (Decoupling)	Section F, ¶ 178: […] In addition, PSE's investors offered to provide $100,000 per year for low-income energy efficiency funding. […]	LIW 2017 and 2018-2019 anticipated spends included additional $100k in shareholder funding	2017	Provided in conservation plans	✓
70	WAC 480-109-100(4)	**Prudence.** A utility retains the responsibility to demonstrate the prudence of all conservation expenditures, consistent with RCW 19.285.050(2).	Pending Commission review of 2016-2017 electric report	2018	Mark as complete at end of biennium	
	Program Details					
71	UE-152058 (5)	Puget Sound Energy must maintain its conservation tariffs, with program descriptions, on file with the Commission. Program details about specific measures, incentives, and eligibility requirements must be filed and updated in the Annual Conservation Plan in this Docket.	Ongoing	2017	Mark as complete at end of biennium	✓
	Strategies for Selecting & Evaluating					

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72	UE-152058 (6)(a)	Puget Sound Energy has identified a number of potential conservation measures described in the BCP. The Commission is not obligated to accept savings identified in the BCP for purposes of compliance with RCW 19.285.	Pending Commission review of 2016-2017 electric report	2018		
73	UE-152058 (6)(b)	When Puget Sound Energy proposes a new tariff schedule, it must present it to the CRAG for comment with program details fully defined. After consultation with the CRAG in accordance with WAC 480-109-110(1)(h), Puget Sound Energy must file a revision to its currently-filed Conservation Plan in this Docket.	Completed	2017	Mark as complete at end of biennium	
74	UE-152058 (6)(c)	Puget Sound Energy must spend a reasonable amount of its conservation budget on EM&V, including a reasonable proportion on independent, third-party EM&V. Puget Sound Energy must perform EM&V annually on a four-year schedule of selected programs such that, over the EM&V cycle, all major programs are covered. The EM&V function includes impact, process, market and cost test analyses. The results must verify the level at which claimed energy savings have occurred, evaluate the existing internal review processes, and suggest improvements to the program and ongoing EM&V processes. Evaluation reports involving analysis of both program impacts and process impacts of the programs evaluated in the prior year must be part of the Annual Report on Conservation Acquisition described in WAC 480-109-120(3)(v).	Completed. PSE indicates percent of overall anticipated expenditures in Exhibit 1	2017	Mark as complete at end of biennium	
75	UE-152058 (6)(d)	An independent third-party review of portfolio-level electric energy savings reported by Puget Sound Energy for the 2016-2017 biennial period, from existing conservation programs operated during that period, shall be conducted, per WAC 480-109-120(4)(b)(v). The independent third-party reviewer shall be selected through an RFP process, unless unanimously agreed by the CRAG. The review will be funded by the Puget Sound Energy Electric Conservation Service Rider. The review will be managed by UTC and Puget Sound Energy staff with input on the scope, cost, RFP development, reviewer selection and ongoing oversight by the CRAG.		2018	Included as part of 2016-2017 BCR	
76	UE-152058 (6)(e)	A final report for the entire 2016-2017 biennium may be implemented in phases and delivered as a final product at an earlier date, as needed by Puget Sound Energy.		2018	Included as part of 2016-2017 BCR	
77	WAC 480-109-100(10) Low Income Weatherization	(a) A utility may fully fund low-income conservation measures that are determined by the implementing agency to be cost-effective consistent with the *Weatherization Manual* maintained by the department. Measures identified through the priority list in the *Weatherization Manual* are considered cost-effective. In addition, a utility may fully fund repairs, administrative costs, and health and safety improvements associated with cost-effective low-income conservation measures.	Ongoing	2017	Mark as complete at end of biennium	
79	WAC 480-109-100(10) Low Income Weatherization	(c) A utility must count savings from low-income conservation toward meeting its biennial conservation target. Savings may be those calculated consistent with the procedures in the *Weatherization Manual*.	Ongoing	2017	Reflected in Exhibit 1 of Annual Reports	
80	¶ 48, Commission Policy Statement, UG-121207	We also ask (utilities) to standardize the unit energy savings (UES) values for natural gas measures, as the Council's Regional Technical Forum does for the electric sector.	Ongoing	2014	Included in Exhibit 5 of Annual Reports	
81	¶ 49, Commission Policy Statement, UG-121207	A reasonable first step towards this standardization is for each natural gas utility to file an annual or biennial conservation plan, and for each natural gas utility to publish its technical workbooks supporting the calculation of UES values on the Northwest Energy Efficiency Association's ConduitNW.org website.	Ongoing	2014	One-time request	
	Program Design & Implementation					

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82	WAC 480-109-100(1)	(a) Process. A utility's obligation to pursue all available conservation that is cost-effective, reliable, and feasible includes the following process:		Not Applicable	Not Applicable	Not applicable -- No deliverable
83	WAC 480-109-100(1)(a) Process for pursuing all conservation	(i) Identify potential. Identify the cost-effective, reliable, and feasible potential of possible technologies and conservation measures in the utility's service territory.	Included in 2017 CPA, IRP and 2018-2019 BCP	2017	4	✓
84	WAC 480-109-100(1)(a) Process for pursuing all conservation	(ii) Develop portfolio. Develop a conservation portfolio that includes all available, cost-effective, reliable, and feasible conservation. A utility must develop programs to acquire available conservation from all of the types of conservation identified in subsection (b) of this section. If no cost-effective, reliable and feasible conservation is available from one of the types of conservation, a utility is not obligated to acquire such a resource.	Completed with 2018-2019 BCP	2017	4	✓
85	WAC 480-109-100(1)(a) Process for pursuing all conservation	(iii) Implement programs. Implement conservation programs identified in the portfolio to the extent the portfolio remains cost-effective, reliable, and feasible. Implementation methods shall not unnecessarily limit the acquisition of all available conservation that is cost-effective, reliable and feasible.	Ongoing	2017	4	✓
86	U-072375 (Merger Agreement) Appendix A 23	PSE and Puget Holdings commit to continue to work with low-income agencies to address issues of low-income customers.	Ongoing	2017	Mark as completed at end of biennium	✓
87	UE-152058 (7)(a)	Modifications to the programs must be filed with the Commission as revisions to tariffs or as revisions to Puget Sound Energy's current Conservation Plan, as appropriate.	Ongoing--Standard Business Practice	2017	Mark as completed at end of biennium	✓
88	UE-152058 (7)(b)	Incentives and Conservation Program Implementation —Programs, program services, and incentives may be directed to consumers, retailers, manufacturers, trade allies or other relevant market actors as appropriate for measures or activities that lead to electric energy savings. Puget Sound Energy shall work with the CRAG to establish appropriate penetration levels consistent with Council methodology and the Energy Independence Act.	Ongoing--Standard Business Practice	2017	Mark as completed at end of biennium	✓
89	UE-152058 (7)(c)	Conservation Efforts without Approved EM&V Protocol — Puget Sound Energy may spend up to ten (10) percent of its conservation budget on programs whose savings impact has not yet been measured, as long as the overall portfolio of conservation passes the Total Resource Cost (TRC) test as modified by the Council. These programs may include information-only, behavior change, and pilot projects. Puget Sound Energy may ask the Commission to modify this spending limit following full CRAG consultation.	Ongoing--Standard Business Practice	2017	Mark as completed at end of biennium	✓
90	UE-152058 (7)(c)(i)	Information-only services refers to those information services that are not associated with an active incentive program or that include no on-site technical assistance or on-site delivery of school education programs. Information-only services and behavior change services shall be assigned no quantifiable energy savings value without full support of the CRAG.	Ongoing--Standard Business Practice	2017	Mark as completed at end of biennium	✓
91	UE-152058 (7)(c)(ii)	If quantifiable energy savings have been identified and Commission-approved for any aspect of such programs, the budget associated with that aspect of the program will no longer be subject to this ten percent spending restriction.	Ongoing--Standard Business Practice	Not Applicable	Not Applicable	Not applicable -- No deliverable

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92	WAC 480-109-100(1)(a) Process for pursuing all conservation	(iv) Adaptively manage. Continuously review and update as appropriate the conservation portfolio to adapt to changing market conditions and developing technologies. A utility must research emerging conservation technologies, and assess the potential of such technologies for implementation in its service territory.	Ongoing - Several noted instances of adaptive management throughout 2016-2017	2017	Indicated in annual reports	✓
93	WAC 480-109-100(1) Process for pursuing all conservation	(b) Types. Types of conservation include, but are not limited to: (i) End-use efficiency; (ii) Behavioral programs; (iii) High-efficiency cogeneration; (iv) Production efficiency; (v) Distribution efficiency; and (vi) Market transformation.	Ongoing - noted types in 2018-2019 BCP Overview	2017	Indicated in annual reports	✓
94	WAC 480-109-100(1) Process for pursuing all conservation	(c) Pilots. A utility must implement pilot projects when appropriate and expected to produce cost-effective savings within the current or immediately subsequent biennium, as long as the overall portfolio remains cost-effective.	Ongoing - noted in 2018-2019 BCP, along with pilot-analogous initiatives	Annually	Indicated in annual reports	✓
95	WAC 480-109-100(7)	Applicable sectors. A utility must offer a mix of conservation programs to ensure it is serving each customer sector, including programs targeted to the low-income subset of residential customers.	Ongoing	Ongoing	Mark as completed at end of biennium	✓
	Reporting & Filing					
96	WAC 480-109-120 (1) Biennial Conservation Plan	(a) On or before November 1st of every odd-numbered year, a utility must file with the commission a biennial conservation plan.	Completed	2017	BCP is filed	✓
97	WAC 480-109-120(1)	(b) The plan must include, but is not limited to: (i) A request that the commission approve its ten-year conservation potential and biennial conservation target. (ii) The extent of public participation in the development of the ten-year conservation potential and the biennial conservation target. (iii) The ten-year conservation potential, the biennial conservation target, biennial program details, biennial program budgets, and cost-effectiveness calculations. (iv) A description of the technologies, data collection, processes, procedures and assumptions the utility used to develop the figures in (b)(iii) of this subsection. (v) A description of and support for any changes from the assumptions or methodologies used in the utility's most recent conservation potential assessment. (vi) An evaluation, measurement, and verification plan for the biennium including, but not limited to: (A) The evaluation, measurement, and verification framework; (B) The evaluation, measurement, and verification budget; and (C) Identification of programs that will be evaluated during the biennium.	Completed	2017	BCP is filed	✓
98	WAC 480-109-120(1)	(c) For the purposes of this section, ten-year conservation potential is derived pursuant to WAC 480-109-100(2).		Not applicable	Not applicable	Not applicable -- No deliverable
99	WAC 480-109-120 (2) Annual Conservation Plan	On or before November 15th of each even-numbered year, a utility must file with the commission, in the same docket as its current biennial conservation plan, an annual conservation plan containing any changes to program details and annual budget.		2016	4	✓

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100	WAC 480-109-120 (3) Annual Conservation Report	(a) On or before June 1st of each year, a utility must file with the commission, in the same docket as its current biennial conservation plan, an annual conservation report regarding its progress in meeting its conservation target during the preceding year.		2018	First Annual Report for biennium filed in March 2017	
101	WAC 480-109-120 (3)	(b) The annual conservation report must include, but is not limited to: (i) The biennial conservation target. (ii) Planned and claimed electricity savings from conservation, including a description of the key sources of variance between the planned and actual savings. (iii) Budgeted and actual expenditures made to acquire conservation through the conservation recovery adjustment clause described in WAC 480-109-130. (iv) The portfolio- and program-level cost-effectiveness of the actual electricity savings from conservation. (v) All program evaluations completed in the preceding year. (vi) A discussion of the steps taken to adaptively manage conservation programs throughout the preceding year.		2017	First Annual Report for biennium filed in March 2017	
102	WAC 480-109-120 (3)	(c) A utility must submit to the department a conservation report as described in WAC 194-37-060, and file a copy of that report with the commission in the same docket as its current biennial conservation plan.		2018	EIA report is provided	
103	¶ 48, Commission Policy Statement, UG-121207	We ask that Commission staff, utilities and stakeholders standardize the format of biennial and annual conservation plans, and the schedule of when the utilities file these plans with the Commission	Ongoing--Standard Business Practice	2014	All Annual Reports and plans are consistently formatted	
104	WAC 480-109-120 (4) Biennial Conservation Report	(a) On or before June 1st of each even-numbered year, a utility must file with the commission, in the same docket as its current biennial conservation plan, a biennial conservation report regarding its progress in meitng its conservation target during the preceding two years.		2018	BCR is filed	
105	WAC 480-109-120(4)	(b) The biennial conservation report must include: (i) The biennial conservation target; (ii) Planned and claimed electricity savings from conservation; (iii) Budgeted and actual expenditures made to acquire conservation; (iv) The portfolio-level cost-effectiveness of the actual electricity savings from conservation; (v) An independent third-party evaluation of portfolio-level biennial conservation savings achievement; (vi) A summary of the steps taken to adaptively manage conservation programs throughout the preceding two years; and (vii) Any other information needed to justify the conservation savings achievement.		2018	BCR is filed	
106	WAC 480-109-120(4)	(c) A utility must provide a summary of the biennial conservation report to its customers by bill insert or other suitable method within ninety days of the commission's final action on the report.	Although not explicitly stated, "commission's final action on the report" is every even year.	2016	3	
107	WAC 480-109-120(4)	(d) A utility may file the annual conservation report and the biennial conservation report together as one report, provided that the report includes all of the information required in subsections (3) and (4) of this section and states that it serves as both the annual conservation report and the biennial conservation report.'		Not applicable	Not applicable	
108	WAC 480-109-120 (5) Plan and report review	(a) Interested persons may file written comments regarding the biennial conservation plan and biennial conservation report within thirty days of the utility's filing.		Not applicable	Not applicable	Not applicable-- No deliverable

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109	WAC 480-109-120 (5)	(b) Upon conclusion of the commission review of the utility's biennial report or plan, the commission will issue a decision accepting or rejecting the calculation of the utility's conservation target; or determining whether the utility has acquired enough conservation resources to comply with its conservation target. If the utility does not meet its biennial conservation target described in WAC 480-109-100, the commission will determine the amount in megawatt-hours by which the utility was deficient.		Not applicable	Not applicable	Not applicable--No deliverable
110	WAC 480-109-120 (5)	(c) If a utility revises its annual or biennial conservation report as a result of the commission review, the utility must submit a revised copy of the report required in WAC 480-109-120(3)(c) to the department.		2016	3	✓
111	WAC 480-109-120 (5)	(d) Annual plans and reports may be reviewed through the commission's open meeting process, as described in chapter 480-07 WAC.		Not applicable	Not applicable	Not applicable--No deliverable
112	WAC 480-109-120 (6) Publication of Reports	All conservation plans and reports required by RCW 19.285 and this section since January 1, 2010, as well as a summary of planned and actual savings and expenditures reflected in the plans and reports, must be posted and maintained on the utility's website. Plans and reports must be posted on the utility's website within 30 days of commission acknowledgement of the plan or order approving the report. A copy of any such plan, report, or summary must be provided to any person upon request.	Ongoing - last ten years' reports posted on PSE.com	2017	Mark as completed at end of biennium	✓
	Public Involvement					
113	UE-152058 (10)(c)	Fuel switching program will continue to use current practice of upgrading only to high-efficiency gas measures.	Ongoing--Standard Business Practice	2010	4	✓
	Cost-Effectiveness Tests					
114	WAC 480-109-100(5)	Energy savings. A utility must use unit energy savings values and standard protocols approved by the regional technical forum, unless a unit energy savings value or standard protocol is:	Ongoing	2017	Mark as completed at end of biennium	✓
115	WAC 480-109-100(5)	(a) Based on generally accepted methods, impact evaluation data, or other reliable and relevant data that includes verified savings levels; and	Ongoing	2017	Mark as completed at end of biennium	✓
116	WAC 480-109-100(5)	(b) Presented to its advisory group for review. The commission retains discretion to determine an appropriate value or protocol.	Ongoing--included in detail tables of Exhibit 1 and annual evaluation reports	2017	Mark as completed at end of biennium	✓
117	WAC 480-109-100(8)	Cost-effectiveness. A utility's conservation portfolio must pass a cost-effectiveness test consistent with that used in the Northwest Conservation and Electric Power Plan. A utility must evaluate conservation using cost-effectiveness tests consistent with those used by the council, and as required by the commission, except as provided by subsection (10) of this section.	ongoing. Exhibit 2 of Annual Reports and Plans confirm Portfolio cost-effectiveness	2017	Mark as completed at end of biennium	✓
118	WAC 480-109-100(10) Low Income Weatherization	(b) A utility may exclude low-income conservation from portfolio-level cost-effectiveness calculations.	LIW is excluded from 2018-2019 Portfolio calculation	2017	Mark as completed at end of biennium	✓

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ID# (Internal PSE sorting reference)	Section or Condition Number	Detailed Condition	Deliverable Comment	Deliverable Provided Year	Deliverable Provided Quarter	Status: Completed in process Not Started Not Applicable
119	UE-152058 (8)(a)	The Commission uses the Total Resource Cost Test (TRC), as modified by the Council, as its primary cost-effectiveness test. The Council-modified TRC test includes quantifiable non-energy benefits, a risk adder, and a 10 percent conservation benefit adder. Puget Sound Energy's portfolio must pass the TRC test. All cost-effectiveness calculations will assume a Net-to-Gross ratio of 1.0, consistent with the Council's methodology.	This is standard business practice. No specific target deliverable date.	2017	Included in annual filings	✓
120	UE-152058 (8)(b)	Puget Sound Energy must also provide calculations of the Program Administrator Cost Test (also called the Utility Cost Test) as described in the National Action Plan for Energy Efficiency's study "Understanding Cost-Effectiveness of Energy Efficiency Programs."	Included in Exhibit 2	2017	Included in annual filings	✓
121	UE-152058 (8)(c)	Conservation-related administrative costs must be included in portfolio level analysis.	Completed	2017	Mark as completed at end of biennium	✓
	Recovery through Conservation Rider					
122	UE-152058 (9)(a)	Scope of Expenditures — Funds collected through the Electric Conservation Service Rider must be used on approved conservation programs and their administrative costs. Additionally, Rider funds may be used as approved by the Commission; for example, for net metering administration costs, small-scale renewable programs and demand response pilots.	Ongoing--Standard Business Practice	2017	Mark as completed at end of biennium	✓
123	UE-152058 (9)(b)	Recovery for Each Customer Class — Puget Sound Energy shall retain existing Rider mechanisms, subject to the Commission's Order in Docket UE-970686.[1] *Commision's, "Final Order" on May 16, 1997 to Puget Sound Energy's Petition for an Order (1) Authorizing Deferrals of Electricity Conservation Expenditures and (2) Approving a Tariff Rider for Concurrent Recover in Electric Rates of such Deferred Electricity Conservation Expenditures. Docket No UE-970686, It is important to note that there were two subsequent Orders in this Docket; the Second Supplemental Order and Order 03; both of which pertained to semi-annual reporting of conservation program progress.*		Not Applicable	Not Applicable	Explanation only -- No deliverable
124	UE-152058 (9)(c)	Recovery of costs associated with distribution and production efficiency initiative are not funded through the Electric Conservation Service Rider because these programs are not customer conservation initiatives. These are company conservation programs. As such, these costs are recovered in the general rate making process over time and may be requested through a general rate case, a deferred accounting petition or other allowed mechanism.		Not Applicable	Not Applicable	Explanation only -- No deliverable
125	UE-152058 (9)(d)	Puget Sound Energy must file revisions to cost recovery tariff (Schedule 120) by March 1 each year, with requested effective date of May 1 of that same year.	Ongoing--Standard Business Practice	2017	Schedule 120 filing	✓
126	WAC 480-109-130 Conservation Cost Recovery	(1) Utilities must file with the commission for recovery of all expected conservation cost changes and amortization of deferred balances. A utility must include its conservation cost recovery procedures in its tariff.	Ongoing--Standard Business Practice	2017	Schedule 120 filing	✓
127	WAC 480-109-130 Conservation Cost Recovery	(2) A utility must make a conservation cost recovery filing no later than June 1st of each year, with a requested effective date at least sixty days after the filing. If the utility believes that a filing is unnecessary, then it must file a request for exception and supporting documents no later than May 1st of each year demonstrating why a rate change is not necessary.	Ongoing--Standard Business Practice	2017	Schedule 120 filing	✓
128	WAC 480-109-130 Conservation Cost Recovery	(3) A utility may not accrue interest or incur carrying charges on deferred conservation cost balances. Utilities must base conservation recovery rates on forward-looking budgeted conservation program costs for the future year with revisions to recover only actual program costs of the prior year. Utilities must also include the effects of variations in actual sales on the recovery of conservation costs in the prior year.		Not Applicable	Not Applicable	Explanation only -- No deliverable

PUGET SOUND ENERGY

Exhibit 9

Condition Compliance Checklist

Last Updated: 3/1/2018

No highlighting	WAC 480-109
	2001 Stipulation
	2015 Conditions
	Decoupling
	2008 Merger
	2012 Gas policy statement
	2010 settlement agreement

ENERGY EFFICIENCY

PSE 2016-2017 ENERGY EFFICIENCY DELIVERABLES---COMPLIANCE STATUS

As of: 03/01/18

Completed year/quarter will remain constant until changed by new biennial requirements, updated tariff, etc.

ID# (Internal PSE sorting reference)	Section or Condition Number	Detailed Condition	Deliverable Comment	Deliverable Provided Year	Deliverable Provided Quarter	Status: Completed in process Not Started Not Applicable
	Additional Commitments					
129	UE-152058 (10)(a)	Puget Sound Energy will continue to review the feasibility of pursuing cost-effective conservation in the form of reduction in electric power consumption resulting from increases in the efficiency of energy use at electric power production facilities it owns in whole or in part and inform the CRAG at least semi-annually regarding progress in making efficiency improvements in those facilities. Puget Sound Energy shall work with the CRAG to identify options for overcoming obstacles.	Updated CRAG in two 2017 CRAG meetings	2017	Mark as completed at end of biennium	✓
130	UE-152058 (10)(b)	PSE shall also work with the CRAG to determine how to avoid double-counting of efficiency savings achieved at electric power production facilities owned in whole or in part by PSE and located within the service territory of a separate electric utility.	PSE continues to apply methodology developed in 2014. Presented to the CRAG in 2017.	2017	Mark as completed at end of biennium	✓
132	U-072375 (Merger) Appendix A 47	Each of the Joint Applicants agrees that PSE will undertake a study, in collaboration with stakeholders, to identify potential energy efficiency improvements in its distribution, transmission and generation assets (consistent with any analysis required as part of the Integrated Resource Plan ("IRP") process) and present the results of such study to the Conservation Resource Advisory Group (CRAG) for its consideration and potential inclusion as part of PSE's energy efficiency portfolio. These potential improvements in PSE's energy efficiency improvements in its distributio, transmission and generation assets are in addition to end-use energy efficiency improvements.		2010	4	✓
	Sections Still in Effect from 2010 Settlement Agreement, UE-100177					
133	L(22)	The Executing Parties agree to support the terms and conditions of this Agreement, as described above. The Executing Parties understand that this Agreement is subject to Commission approval.		Not Applicable	Not Applicable	Explanation only -- No deliverable
134	L(23)	The Executing Parties have negotiated this Agreement as an integrated document. Accordingly, the Executing Parties agree to recommend that the Commission adopt this Agreement in its entirety.		Not Applicable	Not Applicable	Explanation only -- No deliverable
135	L(24)	This Agreement represents a fully negotiated agreement. Each Executing Party has been afforded the opportunity, which it has exercised, to review the terms of the Agreement. Each Party has been afforded the opportunity, which it has exercised, to consult with legal counsel of its choice concerning such terms and their implications. The Agreement shall not be construed for or against any Executing Party based on the principle that ambiguities are construed against the drafter.		Not Applicable	Not Applicable	Explanation only -- No deliverable
136	L(25)	This Agreement may be executed by the Executing Parties in several counterparts, through original and/or facsimile signature, and as executed shall constitute one agreement.		Not Applicable	Not Applicable	Explanation only -- No deliverable
	Requirements not outlined in Orders, RCW or WAC					
137		Issue conservation RFP by June 30, 2017 for 2018-2019 programs		2016	2	✓

- Unless specified, the below conditions are treated as equal requirements for both electric and gas conservation efforts.
- This table is intended to provide an overview of PSE's achievement of the conditions and the status of conservation deliverables. It is revised to reflect the conditions included in Attachment A of Order 01, Docket No. UE-132032, which does not address sectio (UE-100177). Those deliverables are also still in force. Effective June, 2013, natural gas-specific requirements enumerated in E

PUGET SOUND ENERGY

Exhibit 10

2017 NEEA Accomplishments

Electric and Natural Gas Market Transformation Initiatives

PSE PUGET SOUND ENERGY

2017 Annual Report for Puget Sound Energy

INTRODUCTION

The Northwest Energy Efficiency Alliance (NEEA or "the alliance") is a non-profit organization working in collaboration with Puget Sound Energy and more than 140 other Northwest utilities and energy efficiency organizations to accelerate the innovation and adoption of efficient products, services and practices throughout the region. With funding and direction from Puget Sound Energy and these other entities, the alliance intervenes in the market to create lasting change by removing barriers and leveraging opportunities to accelerate the adoption of cost-effective energy efficiency.

NEEA's vision is energy efficiency as a cornerstone of a vibrant and sustainable Northwest. Two interdependent strategic goals guide alliance efforts to achieve this vision:

1. **Fill the energy efficiency pipeline with new products, services and practices**

2. **Create market conditions that will accelerate and sustain the market adoption of emerging energy efficiency products, services, and practices.**

This report summarizes the alliance's 2017 energy efficiency activities and accomplishments on behalf of Puget Sound Energy. For additional information about NEEA's programs or to read the 2015-2019 Business Plan, please visit neea.org.

ELECTRIC MARKET TRANSFORMATION

Goal 1: Fill the energy efficiency pipeline

To ensure the continued availability of energy-efficient products, services and practices to Northwest consumers, the alliance identifies emerging energy efficiency opportunities and works with manufacturers and the market to ensure that they are ready for utility programs. These efforts are coordinated through the Regional Emerging Technology Advisory Committee (RETAC), which is facilitated by NEEA staff. Puget Sound Energy is a member of RETAC.

2017 EMERGING TECHNOLOGY HIGHLIGHTS

Filling the Pipeline: In 2017, NEEA staff scanned the market to identify promising new energy-efficient products, services and practices, prioritizing commercial HVAC, motor driven systems, televisions, advanced heat pump water heaters and ductless heat pumps. Staff conducted research, testing and vetting of several promising opportunities, including:

- Advanced Occupancy Sensors (supporting the U.S. Department of Energy's Advanced Research Projects Agency Energy 'ARPA-e' program to develop a test method and evaluate the next generation of building occupancy sensors)

- Combination Space and Water Heating units with CO_2 refrigerant (seven demonstration projects)
- Commissioning of pivot irrigation equipment (technology and market survey)
- Inverter-Driven Packaged Heat Pumps (modeling study)
- Quick-Connect Ductless Heat Pumps (four in-field test units)
- Split-System Heat Pump Water Heaters (lab testing)
- Surface-Applied Window Films (modeling study)
- Smart Thermostats (convening region to explore opportunity)
- Very High Efficiency Dedicated Outside Air Supply systems for commercial buildings (nine demonstration projects)

In 2017, the alliance added two new products – low-emissivity (low-e) storm windows and split-system water heaters – to its portfolio. NEEA staff incorporated both technologies into existing alliance programs (Window Attachments and Heat Pump Water Heaters) to create efficiencies, leverage shared opportunities and more effectively reach the target markets.

Increasing Pipeline Visibility: In 2017, the alliance launched the region's first shared emerging technology database. The database, maintained by NEEA staff on ConduitNW.org, increases regional visibility into emerging technology activities across organizations and reduces development costs by avoiding redundancies.

Conducting Research: The alliance commissioned and published four emerging technology research reports in 2017, which are available on neea.org:

- Energy Efficiency Test Procedure for Residential Clothes Dryers
- Interaction between Heat Pump Water Heaters and Heating Systems
- Window Attachment Opportunity Assessment for the Northwest
- Clothing Wear and Tear of Heat Pump vs. Electric Clothes Dryers with Addendum

Goal 2: Creating market conditions for energy efficiency

As a member of the alliance, Puget Sound Energy works with NEEA staff to identify and remove market barriers to energy efficiency across the region for the benefit of PSE customers. NEEA's 2015-2019 Business Plan focuses its market transformation efforts on four strategic markets: Consumer Products, Residential New Construction, Commercial New Construction, and Commercial and Industrial Lighting.

CONSUMER PRODUCTS

Consumer Products Regional Strategic Market Plan – In 2016, regional energy-efficiency experts collaborated to create the first Consumer Products Regional Strategic Market Plan in a process that was co-led by Puget Sound Energy and facilitated by NEEA staff. In 2017, the Consumer Products Steering Committee, which was born out of this process, prioritized heat pump water heaters as the top regional priority and established a shared regional goal. To support the goal, the committee compiled organizational-level plans for program support and created a process for regional tracking and reporting. This coordinated effort contributed to strong growth in the heat pump water heater market in 2017 – with total regional sales increasing more than 50 percent over 2016 (alliance-incented sales

grew 80%). The same committee identified Smart Thermostats as a secondary priority for the region. In January 2018, NEEA staff convened a group of regional stakeholders, including Puget Sound Energy, to explore barriers, opportunities and next steps for Smart Thermostats. A recap of the workshop, including presentations and discussion notes, is available at: **https://conduitnw.org/Pages/Article.aspx?rid=3218**.

Heat Pump Water Heaters – To reduce the cost of heat pump water heaters for Puget Sound Energy customers, in 2017 the alliance partnered with major water heater manufacturers to provide manufacturer markdowns. NEEA staff also coordinated retail promotions with Puget Sound Energy staff to increase customer awareness of PSE's heat pump water heater rebate program and launched a new effort to drive sales through the wholesale channel, where 90 percent of emergency replacement units are sold. In 2017, NEEA paid incentives for 985 heat pump water heaters in Puget Sound Energy service territory through November (the most recently available data at the time of this report). Region-wide, sales of heat pump water heaters increased by over 50 percent in 2017, indicating strong market momentum for this product.

Ductless Heat Pumps – In 2017, the alliance supported manufacturer promotions and conducted distributor orientations and installer technical trainings to increase customer awareness and market adoption of ductless heat pumps in Puget Sound Energy service territory. NEEA staff hosted "Meet the Manufacturer" events with Haier, Fujitsu and LG to introduce their product lines and share North American market strategies to utility program planning. NEEA also partnered with Panasonic and Platt Electric to market ductless heat pumps to electrical contractors, a typically untapped market.

Retail Product Portfolio (RPP) – RPP provides incentives to retailers to preferentially stock efficient products with the goal of influencing manufacturers to produce increasingly efficient consumer products. In 2017, the alliance added clothes washers and refrigerators to RPP bringing the number of products in the portfolio to seven (Soundbars, Air Cleaners, Freezers, Electric Dryers, Room ACs, Clothes Washers, and Refrigerators). NEEA staff worked with Puget Sound Energy staff to refine and finalize the product selection process and to prepare an analysis of recommended incentive tiers for the two new products. Also in 2017, RPP welcomed Nationwide Marketing to the program. Nationwide, the largest buying and marketing group for independent retailers in the U.S, has more than 90 member locations in the Northwest, including more than a dozen in the Puget Sound area. Partnering with Nationwide ensures that RPP products are available to a greater number of Puget Sound Energy customers.

Super-Efficient Dryers – In 2017, the alliance completed message testing to better understand consumer motivation for dryer purchases and conducted multi-family research to gain deeper insight into the total addressable market for super-efficient dryers. After several years of engagement, NEEA staff successfully influenced Whirlpool to seek ENERGY STAR® Most Efficient certification for its heat pump products. This designation clearly differentiates the product for consumers addressing a known barrier for super-efficient dryers: customer awareness. ENERGY STAR certification will also allow Puget Sound Energy's dryer program to leverage the ENERGY STAR qualified products list.

RESIDENTIAL NEW CONSTRUCTION

Next Step Homes –The Next Step Homes program creates a framework for Puget Sound Energy and NEEA to identify the most cost-effective methods for achieving maximum energy savings in residential new construction, and to support local builders and homebuyers. In 2017, NEEA staff provided PSE with savings and volume estimates for residential new construction as well as guidance on

improvement thresholds, gas and electric savings, baselines, and costs to inform the development of the utility's Performance Path Program. Staff also provided technical and program support to rater/verifiers in anticipation of PSE's program launch and delivered 17 trainings to more than 250 builders, rater/verifiers, HVAC companies and other market actors who serve customers in the Puget Sound area.

Manufactured Homes – In 2017, the Regional Technical Forum approved the alliance-developed NEEM 2.0 (Northwest Energy Efficient Manufactured Home) higher efficiency specification, allowing future energy savings to be measured and captured by Puget Sound Energy. To prepare the supply chain for the new specification, the alliance engaged with large-volume manufactured home factories, encouraging them to offer NEEM 2.0 as a new product line and conducted demonstration home projects with manufacturers to help them gain experience building to the new specification. NEEA staff provided Puget Sound Energy staff with information on the NEEM 2.0 specification and planned 2018 upstream market activities to help inform PSE's Manufactured Home program.

COMMERCIAL NEW CONSTRUCTION

Commercial Code Enhancement – In May 2017, the Regional Portfolio Advisory Committee voted to advance the Commercial Code Enhancement program into the market development phase of NEEA's initiative lifecycle. Commercial Code Enhancement will drive better alignment between the market, utility programs and code to support the adoption of progressively effective energy codes. It gives utilities greater insight and influence into code change and supports long-term planning. In 2017 the program identified four code proposals that it will be supporting for the upcoming 2018 Washington Code development process. NEEA staff will work with the Integrated Design Labs and Pacific Northwest National Laboratory to conduct technical research and testing that highlight the value proposition of each measure to increase the chances of successful code adoption.

COMMERCIAL LIGHTING

Regional Strategic Market Planning – In 2017, the region completed the first review and update of the Commercial and Industrial Lighting Regional Strategic Market Plan. This process resulted in prioritization of four key focus areas: 1) helping customers make informed choices, 2) understanding key supply chain trends, 3) using data to improve program strategy, and 4) improving midstream coordination. To inform customer choice, a regional group of lighting experts led by Puget Sound Energy and facilitated by NEEA staff collaborated on a "Good-Better-Best" guide to LED retrofits. The guide will help Puget Sound Energy customers better understand the many aspects of LED and controls purchases and the full range of available options. This same group also completed the first prototype of a lamp and fixture pricing data dashboard to support utility program decision-making in this fast-moving market.

Luminaire-Level Lighting Controls (LLLC) – The LLLC program works to make sensors and luminaire-level controls standard for commercial light fixtures. In 2017, NEEA collaborated with the Design Lights Consortium to launch its newest specification for advanced lighting controls, the basis for its qualified products list, and worked with manufacturers to support and influence their adoption of the specification. As of Q3, there were 10 qualifying manufacturers and 14 systems, representing strong market adoption. The alliance also launched advanced lighting controls training to increase regional trade allies' capacity to design and install advanced lighting solutions. In Q4, Puget Sound Energy and NEEA staff collaborated on a case study detailing the utility's experience installing LLLCs in its offices.

The case study is available on the BetterBricks website at: https://betterbricks.com/solutions/lighting/luminaire-level-lighting-controls .

Reduced Wattage Lamp Replacement (RWLR) – The RWLR program offers support to participating electrical distributors to shift customers away from 32-watt T8 lamps toward more efficient 28-watt and 25-watt lamps, while simultaneously working with manufacturers to reduce costs. In 2017, the program worked with 34 branch offices across six electrical distribution companies located in Puget Sound Energy territory. Overall, market share for low-watt lamps in Puget Sound Energy territory reached 29 percent in 2017 (up from just 19 percent in 2016), despite a steady decline in the linear fluorescent market and increasing TLED sales.

OTHER MARKETS

Residential and Commercial Window Attachments – The Window Attachments program works in concert with the Attachment Energy Ratings Council (AERC) to increase the market adoption of high-performance window attachments in existing buildings and establish these products as standard practice. In May 2017, the alliance merged its commercial and residential window attachments programs, bringing Secondary Glazing Systems, Low-e Storm Windows, and other window products together as a single product family to yield economies of scale for program delivery. To support utility program development, NEEA staff completed a market characterization and baseline study of secondary glazing systems, delivered a secondary glazing system calculator to the Regional Technical Forum, and worked with ENERGY STAR® to support the release of the Version 1.0 specification for Low-e Storm Windows.

Certified Refrigeration Energy Specialist (CRES) Certification – In 2017, the alliance transitioned management and implementation of its CRES certification program to the national Refrigerating Engineers and Technicians Association (RETA). RETA will continue to provide program data so that NEEA can track and report associated savings to Puget Sound Energy.

INFRASTRUCTURE PROGRAMS

In addition to its market transformation programs, the alliance develops and delivers training, tools and resources that do not directly deliver energy savings but support Puget Sound Energy's local programs and the market as a whole.

Commercial Real Estate (CRE) – The CRE program creates market demand for energy efficiency and supports Puget Sound Energy in delivering customer efficiency solutions. In 2017, the program engaged 48 industry groups representing 75 million square feet of commercial real estate property in the Northwest and qualified 130 engineering service providers to provide building upgrades for Seattle's Tune-Up Accelerator program. NEEA staff also redesigned the BetterBricks website to better connect commercial building professionals with energy efficiency information and utility programs. CRE is an optional program that PSE chose to fund in NEEA's current Business Plan.

Top-Tier Trade Ally Advanced Training (TTTA): To support Puget Sound Energy to deliver energy-efficient lighting solutions for its customers, the alliance provides resources and tools that build awareness, demand and capability for designing and installing energy-efficient lighting. NXT Level training, the market-facing brand for the TTTA program, is the region's most comprehensive lighting training program serving trade allies who work on retrofit projects in commercial and industrial facilities. In 2017, one individual and one company in Puget Sound Energy territory were NXT Level designated,

for a total of five individuals and three companies in PSE territory. TTTA is an optional program that Puget Sound Energy chose to fund in NEEA's current Business Plan. NEEA staff coordinate throughout the year with PSE staff to ensure that NXT Level applicants are PSE Contractor Alliance Network members.

Commercial and Industrial Strategic Energy Management (SEM) – The alliance develops, maintains and delivers a holistic set of tools that support Puget Sound Energy in providing strategic energy management resources to its customers. In 2017, the alliance managed and maintained the SEM Hub, an online resource for contractors, utilities and other energy professionals to share resources and exchange ideas and information on regional SEM programs. The alliance also hosted the 7th annual Northwest SEM Collaborative Meeting and the first North American SEM summit for practitioners to exchange information and share best practices. Puget Sound Energy is a member of the SEM Collaborative Leadership team.

Industrial Technical Training (ITT): To support Puget Sound Energy's industrial energy efficiency efforts, the alliance provides coordinated technical training on key industrial energy efficiency concepts. In 2017, the program delivered two training sessions in western Washington: Motor Systems Management Best Practices and Compressed Air Challenge (Level 2). ITT is an optional program that PSE chose to fund in NEEA's current Business Plan. Staff from Puget Sound Energy are actively involved in annual planning for the ITT program, guiding course selection and recruiting customers to attend.

CODES AND STANDARDS

In collaboration with Puget Sound Energy, the alliance works at the state level to influence the adoption of increasingly efficient building energy codes and support code compliance. In 2017, to support code education and compliance in Washington, the alliance:

- Hosted a series of code compliance training in Puget Sound Energy service territory, attended by more than 230 residential and 530 commercial participants
- Launched an effort with New Buildings Institute to provide code support services in Washington, including the development of a multi-family code for the Washington State 2018 code development effort
- Delivered an in-house presentation to Puget Sound Energy staff on the new Washington commercial code online compliance tool, which provides an innovative framework for online submittal of compliance documents.

NATURAL GAS MARKET TRANSFORMATION

By pooling resources through NEEA and working in collaboration with the region, Puget Sound Energy is accelerating the development and market adoption of efficient natural gas products, services, and practices in the Northwest. The goal of this effort is to deliver more energy efficiency options to PSE customers and increase the efficiency of natural gas use in the region.

Scanning: NEEA staff scan the market to identify promising new energy-efficient natural gas products, services and practices. In 2017, NEEA staff identified modulating residential furnaces as a possible new opportunity, vetted residential laundry ozone systems and investigated a gas variable-refrigerant flow evaluation project in conjunction with high-efficiency dedicated outdoor air supply systems.

Mid-Cycle Assessment/ Research: In 2017**,** the alliance conducted an independent mid-cycle assessment of the implementation and progress of the Natural Gas Business Plan and presented findings to the NEEA Board in September. Staff also completed Natural Gas Customer Segmentation Research to inform the design and strategy of natural gas market transformation programs, Hearth and rooftop HVAC market characterization studies. All published alliance reports are publicly available at: neea.org/resource-center.

- NEEA Natural Gas Portfolio Mid-Cycle Assessment
- Market Characterization of the Northwest Natural Gas Hearth Market
- Natural Gas Segmentation Report
- Rooftop HVAC Market Characterization Report

NATURAL GAS MARKET TRANSFORMATION PROGRAMS

Efficient Gas Water Heaters: In 2017, the natural gas collaborative revised the name of this program from "Gas-fired Heat Pump Water Heaters" to "Efficient Gas Water Heaters". This change reflects the broad nature of the program, the importance of highlighting cost-effective efficiency shifts at multiple performance levels, and the need to remove perceived limitations on specific technology used to achieve more efficient gas water heating. In 2017, the alliance partnered with SaltX and Rheem to accelerate the development of a residential gas heat pump water heater and worked with A.O. Smith to develop and enhance its strategy for launching the first non-plug in ENERGY STAR gas water heater (overcoming a known market barrier and preparing the market for the introduction of higher efficiency products). The alliance also successfully influenced a gas technology developer to incorporate NEEA's Advanced Water Heater Specification testing and performance criteria into its gas heat pump water heater product development plan. Integration of these elements will ensure the unit performs well in cooler climates and product requirements remain consistent as new products are developed, thus influencing manufacturer interest and commitment.

Combination Water and Space Heating Systems: In 2017, the alliance concluded a successful field study of internal combustion engine heat pump technology to understand the energy savings opportunity for commercial buildings. NEEA is leveraging the promising results of this study to partner with major HVAC manufacturers exploring combination system collaborations. The alliance also launched a project with Blue Mountain Energy and Oak Ridge National Labs to value-engineer a commercial gas heat pump for residential purposes and build and test proof-of-concept prototypes. The goal of this effort is to identify a clear channel for commercialization of a cost-competitive residential gas heat pump. Finally, staff began creating a road map for the development and implementation of a commercial gas furnace test method in partnership with representatives from Canada and United States to ensure cross-border consistency for manufacturer partners.

Super-Efficient Gas Clothes Dryers: The alliance is working to influence the introduction of super-efficient, natural gas-powered clothes dryers. In 2017, the alliance conducted a market characterization study in partnership with NEEA's electric dryer program. Staff also updated the High Efficiency Residential Gas Dryers Specification Version 2.0 to include two additional tiers and kicked off lab testing of two ENERGY STAR qualified dryers to understand any changes made to the products since the last round of testing in 2015. At the request of Whirlpool, NEEA staff met with Whirlpool to discuss the potential for a Tier 3 (i.e., most efficient) product. NEEA will next develop a business case document for Whirlpool's marketing and product development teams.

Rooftop HVAC: In 2017, the alliance completed a four-unit demonstration project of condensing rooftop HVAC units, which successfully validated manufacturer energy savings claims and revealed some issues with condensation management. Following the study, staff created a set of Condensate Management Installation best practice guides. NEEA staff also launched market channel development efforts focused on building and developing key manufacturer partnerships to accelerate the market adoption and acceptance of condensing rooftop units. In 2017, the program advanced through NEEA's Initiative Start milestone following approval from NEEA's Natural Gas Advisory Committee.

Hearth Products: In 2017, the alliance kicked off testing of a low-capacity hearth product in an effort to decrease gas consumption while maintaining a robust and aesthetically pleasing flame. NEEA staff submitted comments on Canadian Standards Association/ANSI gas fireplace safety standards that are being revised to remove allowances for standing pilot lights and published a report characterizing the Northwest market for natural gas hearths.

DATA, RESEARCH AND ANALYSIS

The alliance pools regional resources to conduct research and evaluation and provide data and analytical services for the benefit of Puget Sound Energy customers.

EVALUATION AND MARKET RESEARCH

Market Research and Evaluation – The alliance commissions annual independent third-party evaluations of each of its market transformation programs. It also conducts robust market research to inform market transformation program design and provide critical data and analysis. In 2017, NEEA staff published 18 market research and evaluation reports, all of which are publicly available at neea.org/reports.

Regional Building Stock Assessments – In 2017, the alliance completed data collection for the Residential Building Stock Assessment (RBSA) and kicked off the Commercial Building Stock Assessment (CBSA). The RBSA and CBSA are comprehensive inventories of existing Northwest buildings that NEEA manages every five years. Results inform utility energy efficiency programs as well as regional power planning efforts. Puget Sound Energy is funding oversampling of the RBSA to ensure the results are statistically relevant to its service territory and customers. RBSA data and final reports will be available in March, 2018 (single-family) and April, 2018 (multi-family and manufactured homes).

Market Intelligence - Market Intelligence supports market transformation programs as well as NEEA stakeholders by analyzing regional data and utility data to identify energy efficiency opportunities and inform planning and evaluation activities. In 2017, NEEA staff worked with Puget Sound Energy to support the development of an RFP for a single-family renter program. This work resulted in approval to move forward with a Single-Family Rental Pilot in Puget Sound Energy's next RFP cycle.

Market Planning – In 2017, NEEA assumed responsibility for managing and maintaining the regional residential lighting model originally built by Bonneville Power Administration. The model provides information about the mix of products in the residential lighting market and their effects on total energy use. NEEA staff supplies data from the model to PSE to support its program planning and evaluation efforts.

End-Use Load Research – In 2017, the alliance obtained special funding for a five-year, $12.5 million effort to collect end-use load data on selected electric end-uses, including ductless heat pumps, ducted heat pumps, heat pump water heaters, central air conditioning, forced air furnaces and baseboard heaters. As the first end-use load research of any significance in the Northwest since the 1980s, this

work will greatly support regional planning and program design. Puget Sound Energy serves as a contributing funder for the research, which is conducted outside of NEEA's business plan.

REGIONAL COLLABORATION AND COORDINATION

REGIONAL COLLABORATION

EFFICIENCY EXCHANGE – In May, 2017, the alliance co-hosted the annual Efficiency Exchange conference in collaboration with Bonneville Power Administration and the Northwest Power and Conservation Council. The regional conference, which provides a forum for energy efficiency professionals to share knowledge, explore emerging innovations and discuss the direction of utility efficiency programs, drew more than 400 attendees.

CONDUITNW.ORG – Developed in partnership with the Bonneville Power Administration, the Conduit online community facilitates information-sharing, coordination and collaboration among energy efficiency stakeholders in the Northwest. More than 3,100 energy efficiency professionals across the Northwest, and approximately 115 active users from Puget Sound Energy, currently use Conduit.

REGIONAL COORDINATION

Alliance programs are coordinated through regional working groups and advisory committees, whose membership includes representatives from Puget Sound Energy staff. NEEA staff formally solicits approval from the Regional Portfolio Advisory Committee (RPAC), the body responsible for overseeing NEEA's market transformation portfolio, at critical program decision-points. In 2017, NEEA staff submitted one program to RPAC for advancement (Commercial Code Enhancement), which passed unanimously.

NEEA staff are grateful for the time and energy Puget Sound Energy staff have dedicated to participating in NEEA's Board and various sector advisory committees, including:

Board of Directors*:* Bob Stolarski, Director, Customer Energy Management

Regional Portfolio Advisory Committee*:* Jeff Tripp, Manager, Residential Energy Management

Commercial Advisory Committee: Mark Lenssen, Supervising Engineer

Industrial Advisory Committee*:* Chao Chen, Supervising Industrial Energy Management Engineer

Residential Advisory Committee*: Christina Crowell, Market Manager*

Regional Emerging Technology Advisory Committee*:* Rem Husted, Consulting Engineer

Natural Gas Advisory Committee*:* Andy Hemstreet, Regulatory Compliance Consultant; Rem Husted, Consulting Engineer

Cost Effectiveness Advisory Committee*: Michael Noreika, Senior Market Analyst*

ADDITIONAL INFORMATION

For additional information, NEEA's 2017 Quarterly Performance Reports and the 2016 Annual Report are available online. The alliance is committed to serving its regional stakeholders across diverse geographic areas and markets. NEEA staff encourage stakeholder participation and appreciate input at all NEEA board meetings, Advisory Committee meetings and energy efficiency events around the

region. The next NEEA Board of Directors meeting is March 6 in Seattle, WA. Meeting details will be posted on neea.org in advance.

Please direct questions or comments about this report to: Virginia Mersereau, NEEA Communications Manager, at vmersereau@neea.org.