

# Puget Sound Energy

2016-2017

Biennial Conservation Report

*Electric Programs*



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## Attachments

- 1) Exhibit 1: *2016-2017 Electric Savings and Expenses.*
- 2) Exhibit 2: *2016-2017 Electric Cost-Effectiveness Results.*
- 3) Exhibit 6, Supplement 1: *2017 Home Energy Report Evaluation Summary.*
- 4) Exhibit 9: *2016-2017 PSE Condition Compliance Checklist.*
- 5) Attachment 1: SBW Consulting, Inc.'s ("SBW" or "SBW's") final Biennial Electric Conservation Achievement Review (BECAR) report, "*Puget Sound Energy 2014-15 Biennial Electric Conservation Achievement Review (BECAR) Final Report*".
- 6) Attachment 2: The WA Department of Commerce EIA report, in its approved and final format.



## I. Executive Summary

Puget Sound Energy (PSE or the Company) presents this 2016-2017 electric Biennial Conservation Report (Report) to the Washington Utilities and Transportation Commission (UTC or Commission), consistent with WAC 480-109-120(4). PSE requests that the Commission issue an Order, determining that PSE met its Commission-approved biennial Energy Independence Act (EIA) Penalty Target (or biennial conservation target) of 537,078 Megawatt-hours (MWhs), and its Decoupling Penalty Target of 27,993 MWh, as discussed in this Report.

### A. PSE Exceeded its 2016-2017 Biennial Electric Savings Targets

Table I-1 shows that programs comprising the PSE electric conservation Portfolio achieved 633,155<sup>1</sup> MWhs of first-year electric conservation, as reported at the customer meter during the 2016-2017 period. A portion of the overall Portfolio is applicable to the biennial EIA Penalty Target.

**Table I-1: Portfolio 2016-2017 Electric Conservation Results**

2016-2017 Electric Portfolio Key Metrics			
Conservation Savings			
Description	MWh Target	MWh Actual (Verified)	Percent
<b>Total Conservation Goal</b>	<b>605,194</b>	<b>633,155</b>	<b>105%</b>
<i>Excess Savings (In WA Dept. of Commerce EIA form)</i>		<i>27,962</i>	
Subtract savings excluded from EIA Penalty Target:			
NEEA	(22,776)	(26,078)	114%
Pilots with uncertain savings	(17,347)	(20,016)	115%
<b>PSE-Specific Savings (Total of Penalty Targets)</b>	<b>565,071</b>	<b>587,061</b>	<b>104%</b>
Subtract Penalty Targets:			
Biennial EIA Penalty Target	537,078	(537,078)	100%
Decoupling Penalty Target	27,993	(27,993)	100%
<b>Excess Savings (available to apply to Penalty Targets)</b>		<b>21,990</b>	
Conservation Expenditures			
	Budget	Actual	Percent
Total Portfolio	\$198,984,818	\$201,939,446	101%
Cost-Effectiveness			
	Total Resource Cost Test	Utility Cost Test	
Benefit-to-Cost Ratios	1.92	2.62	

<sup>1</sup> This total includes all savings adjustments, discussed in section D.3.



In order to compare those savings to the EIA Penalty Target, it is necessary to exclude two programs from the total Portfolio achievement: the Northwest Energy Efficiency Alliance (NEEA) actual savings of 26,078 MWh and Individual Energy Report Pilot (IER Pilot or Pilot) actual savings of 20,016 MWh.<sup>2</sup> This is consistent with the Commission’s savings target composition standard practice, and agreements that PSE made with its Conservation Resource Advisory Group (CRAG) in the biennial target development process of 2015. The Commission approved these considerations in Order 01 of Docket UE-152058. PSE also considered and incorporated savings adjustments that resulted from independent evaluations and reviews: specifically, the annual evaluation of its Home Energy Reports and Pilot, and the Biennial Electric Conservation Achievement Review (BECAR).

When NEEA and Pilot savings of 46,094 MWh are subtracted from the verified Total Conservation Savings of 633,155 MWh, the result is 587,061 MWh (this value is also referred to as the Final Electric Savings Applicable to Penalties), which is 9 percent above the Commission-approved 537,078 MWh EIA Penalty Target. This accomplishment represents PSE’s total obligation, relative to attaining all available conservation that is cost-effective, reliable, and feasible, for the biennium. When the EIA Penalty Target is added to the Decoupling Penalty Target of 27,993 MWh, the Total Penalty Target is 565,071 MWh. PSE subtracted this from the Final Electric Savings Applicable to Penalties, resulting in an excess savings value of 21,990 MWh. The topic of excess savings is discussed in Chapter 2, section II.B.1. It is noteworthy that this excess value differs from that reported in the Washington Department of Commerce’s 2016-2017 EIA reporting spreadsheet,<sup>3</sup> which does not account for program exclusions.

As indicated in Table I-1, the 2016-2017 Portfolio electric conservation-specific expenditures were 101 percent of anticipated spending: \$201.94 million versus a budget of \$198.98 million.<sup>4</sup> The Portfolio-level biennial electric Total Resource Cost (TRC) Test benefit-to-cost ratio was 1.92, and the Utility Cost (UC) Test benefit-to-cost ratio was 2.62.

Within the Report, PSE provides details and references substantiating the Company’s electric conservation achievements, including:

- Verified biennial electric savings;
- Electric savings tracking, accounting and verification;

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<sup>2</sup> As discussed further in Chapter 2, although they are funded by the Conservation Rider, NEEA and Individual Energy Report Pilot savings are excluded from the EIA Penalty Target.

<sup>3</sup> Indicated in Table I-1 as “Excess Savings (in WA Dept. of Commerce EIA form)”.

<sup>4</sup> Exhibit 1: *2016-2017 Electric Savings and Expenses* also notes \$3.61 million in Other Electric Programs spending (lines *cf* through *ci*). This amount, attributable to Net Metering administrative expenses, Demand Response Pilot Development, and Electric Vehicle Incentives, is excluded from cost-effectiveness tests. PSE notes it on Exhibit 1 to indicate that these are Conservation Rider expenses.



- Examples of adaptive management throughout the biennium;
- Regulatory requirement compliance; and
- PSE Regulatory Stakeholder engagement.

## *B. Developing the Biennial Target and Budgets*

Consistent with WAC 480-109-100(1) and the process deliverables outlined in condition (8)(d),<sup>5</sup> PSE began developing its 2016-2017 conservation Target in January 2015. PSE engaged in close consultation with the CRAG beginning mid-way through the year, and agreed on key decisions for the program elements that would eventually result in the total Portfolio Savings Target composition. Those considerations included the treatment of NEEA savings, savings reported for existing behavioral programs, pilot behavioral programs, and PSE's Decoupling Penalty Target. PSE also ensured that it fully apprised the CRAG throughout the budget development process, providing ample time and resources to review program assumptions.

After PSE filed its 2016-2017 BCP on October 29, 2015, the Commission approved PSE's 2016-2017 biennial conservation target<sup>6</sup> (EIA Penalty Target) of 537,078 MWh in Order 01 of Docket UE-152058 on December 17, 2015. The Commission also acknowledged PSE's Decoupling Penalty Target of 27,993 MWh in the Order.

PSE updated elements of its BCP in the November 14, 2016 filing of its 2017 Annual Conservation Plan (ACP). The ACP reflected Energy Efficiency's commitment to adaptive management, detailing new and updated measures with their associated savings adjustments, updated program budgets and savings goals, enhanced marketing and outreach initiatives, and optimized organizational structures. As it did throughout the BCP development, PSE collaborated on the ACP development with the CRAG during the latter half of 2016.

## *C. Achieving the Biennial Savings and Managing Costs*

Throughout the biennium, PSE consistently demonstrated its commitment to adaptive management principles in developing the biennial Target and resourcefully managing a wide range of circumstances and conditions to ultimately exceed that Target. PSE's Energy Efficiency department proactively adjusted to marketplace and economic fluctuations, technological advancements, frequent measure UES reductions, and customer demand to maximize its electric conservation achievement.

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<sup>5</sup> Attachment 1 of Order 01, Docket UE-132052 pertains to the development of the 2016-2017 BCP, prior to the BCP's filing in Docket UE-152058.

<sup>6</sup> This is the terminology the Commission used in Order 01 of Docket UE-152058.



Program staff prudently and responsibly managed customer funding by conducting monthly expense reviews, rigorously overseeing contractual obligations, and ensuring accurate financial forecasting. The 2016 and 2017 PSE Reports of Energy Conservation Accomplishments (Annual Reports), filed in Docket UE-152058<sup>7</sup> provide extensive discussions of these efforts.

#### *D. Savings Verification*

In order to ensure the accuracy of its savings and financial reporting, Energy Efficiency consistently pursued continuous improvement in all organizations. Teams focused on streamlining data collection, proactive monthly review of vendor measure counts, reconciling measure databases, and monthly savings forecasting.

PSE completed the implementation of its DSMc project management system in 2017, which centralized key data acquisition and reporting. When adjustments were required, program staff completed adjustment requests consistent with Energy Efficiency's *Guidelines for Ensuring Accuracy of Electric and Gas Savings Reporting*.

#### **1) 2016-2017 Evaluations and Reviews**

In addition to operating internal business process controls, PSE managed several independent program impact evaluations, including the annual Home Energy Report (HER) and Individual Energy Report Pilot true-ups of deemed savings. As required in WAC 480-109-120(3)(b)(v), PSE included the 2016 evaluation report as *Exhibit 6, Supplement 1* in its 2017 Annual Report. Due to the evaluation timing, the 2017 report is included in this Report as *Exhibit 6, Supplement 1*.

Also consistent with condition (6)(d),<sup>8</sup> PSE engaged SBW Consulting, Inc. (SBW), in partnership with Commission staff, to conduct the 2016-2017 independent third party Biennial Electric Conservation Achievement Review (BECAR). PSE includes the completed review in this Report as Attachment 1: SBW Consulting, Inc.'s "*Puget Sound Energy 2016-17 Biennial Electric Conservation Achievement Review (BECAR) Final Report*".

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<sup>7</sup> PSE filed the 2016 Annual Report on March 31, 2017, and the 2017 Annual Report on April 2, 2018.

<sup>8</sup> Attachment A of Order 01, Docket UE-152058.

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Key observations in the BECAR include:

- a. The savings shown in the ACRs are substantiated by a thorough review by the BECAR team. No corrections are needed.<sup>9</sup>
- b. Unit energy savings derivations are sound for this biennium. Reviews in 2016 and 2017 of critical UES values found no errors, and that their derivations are reasonably consistent with the requirements of WAC 480-109-100.<sup>10</sup>
- c. (...) our observations in mid-2017 on a limited number (business case workbooks tend to be updated late in the year) of recently updated business case reviews indicate that UES business case documentation is improving markedly.<sup>11</sup>
- d. (...) PSE's internal adaptive management practices are embedded in program operations and, when needed, prompt timely mid-course program adjustments occur. Because this 2016-2017 biennium has gone smoothly and without any findings requiring re-estimation of savings, we recommend staying the course with the current BECAR structure for the 2018-2019 biennium.<sup>12</sup>

## 2) NEEA's Confirmed 2016-2017 Savings

PSE included NEEA's plan of 22,776 MWh in its 2016-2017 BCP savings Portfolio, and the Commission agreed with the CRAG's recommendation to exclude NEEA savings from PSE's EIA Penalty Target. PSE reported the annualized portions of this deemed figure in its 2016 and 2016 Annual Reports. Stakeholders had the understanding that NEEA's confirmed savings would be available subsequent to PSE conservation reporting, and the savings figures would be trued up in this Report.

On March 30, 2018, PSE received NEEA's official final 2016-2017 electric savings calculations, which indicated an overall achievement attributable to the PSE service territory of 26,078 MWh: a difference of +3,302 MWh, or 15 percent above NEEA's original plan.

## 3) Savings Adjustments

As a result of program staff due diligence, and external reviews and evaluations, PSE will make four adjustments to savings reported in its 2016 and 2017 Annual Reports, illustrated in Table I-2.

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<sup>9</sup> SBW's "Puget Sound Energy 2016-2017 Biennial Electric Conservation Achievement Review (BECAR) Final Report", Executive Summary, pg ES-2.

<sup>10</sup> Ibid, pg ES-4.

<sup>11</sup> Ibid.

<sup>12</sup> Ibid, pg ES-6.

**Table I-2: 2016-2017 Electric Savings Adjustments**

Source	Program	Originally-Reported MWh	Final MWh	Adjustment, MWh	Program Savings Adjustment %
Applicable to 2016-2017 Savings					
NEEA	Confirmed NEEA savings for PSE Territory	24,353	26,078	1,725	7.1%
DNV-GL Evaluation	Home Energy Reports (Legacy)	5,722	6,221	499	8.7%
DNV-GL Evaluation	Individual Energy Reports (Pilot)	22,670	20,016	(2,654)	-11.7%
REM Program Staff	Web-Enabled Thermostats <i>Uncounted 2017 NEST® Instant Rebates</i>	1,449	2,193	744	51.3%
TOTAL	Affected Programs	54,194	54,508	314	0.58%
	<b>Portfolio</b>	<b>632,842</b>	<b>633,155</b>		<b>0.05%</b>

The first adjustment results from NEEA’s confirmed 2016-2017 savings applicable to PSE as compared to planned NEEA deemed savings. The second and third savings adjustments apply the results of the Home Energy Reports (HER) and Individual Energy Report Pilot 2016 and 2017 evaluations performed by DNV-GL. Lastly, in mid-April 2018, Residential Energy Management (REM) program staff ascertained that Web-Enabled Thermostat electric savings for approximately 830 installations were unreported. While PSE paid the instant rebates for these units, the corresponding records were not provided in the upload into Energy Efficiency’s project management system DSMc. PSE notified SBW Consulting, Inc. (SBW) of this error upon its discovery, and SBW will add a comment to the BECAR, acknowledging PSE’s finding. Table I-2 is a summary of the aggregated adjustments.

PSE discusses NEEA savings results, Energy Reports evaluation results, and BECAR observations in Chapter 2, and provides the impact on total biennial savings in Table II-5: Verified 2016-2017 Savings with Adjustments. Table I-1 and *Exhibit 1: 2016-2017 Electric Savings and Expenses* reflect the incorporation of these 2017 adjustments.

#### 4) Excess Savings Available for Penalty Targets

Consistent with Order 05 in Docket UE-132043, PSE has 38,906 MWh of excess 2014-2015 electric savings available to apply to a potential 2018-2019 shortfall. Upon calculating the reported and verified electric savings totals and savings adjustments, PSE’s 2016-2017 excess savings will be 21,990 MWh.

This can be added to the 2014-2015 excess of 38,906 MWh, and applied to 20 percent of potential shortfall of 2018-2019. The 2014-2015 excess will no longer be available for application to a 2020-2021 potential shortfall.

### *E. Adaptation through a Focus on Continuous Improvement*

PSE adaptively managed its entire suite of customer offerings by consistently applying continuous improvement principles. Energy Efficiency added new measures, adjusted incentives according to key market drivers, improved internal and customer-facing operational efficiencies, streamlined rebate and grant application processes, provided customers with actionable information, and maximized customer outreach.

PSE provided extensive discussions on the steps that it took to adaptively manage its Energy Efficiency programs in its 2016 and 2017 Annual Reports, and highlights several of those key adaptive management accomplishments in Chapter 2, Table II-7 and Table II-8.

### *F. Compliance*

This Report complies with RCW 19.285.070(2), and all sections of WAC 480-109-120(4).

PSE also demonstrates compliance with all regulatory requirements outlined in:

- Sections A through J and L of the 2010 Electric Settlement Agreement, Docket UE-100177, and
- The conditions in Attachment A of Order 01, Docket UE-152058.

PSE presents its 2016-2017 condition compliance status in Exhibit 9: *Requirements Compliance Checklist*.

In many cases, PSE exceeded regulatory requirements by providing information transparently and in advance of requests, by adding valuable supporting data, and by adding—and in some cases, customizing—Exhibits in its conservation publications.

### *G. Stakeholder Engagement*

PSE engaged its Regulatory Stakeholders: the CRAG and members of Commission staff, in a pro-active and transparent manner, and regularly kept them abreast of its electric conservation progress and adaptive management steps throughout the biennium.

PSE adaptively managed its reporting and correspondence to exceed Stakeholder needs, along with providing a best-in-practice level of budget and planning documentation. PSE earned compliments from some CRAG members on the amount, detail, and quality of the energy-efficiency information that PSE provides.



In all cases, the CRAG received copies of reports, plans, Exhibit updates, and tariff revisions prior to their filing. PSE closely engaged the CRAG in the biennial and annual planning process, and in some cases, provided CRAG members with up to 120 days to review and comment on plan details. PSE provided prompt and thorough responses to all Commission staff and other Stakeholder queries on annual plans and accomplishment reports.

## *H. Supporting Documentation*

PSE presents all program result details for the 2016-2017 biennium in its Annual Reports of Energy Conservation Accomplishments, with copies provided to the CRAG, and subject to Commission staff review and follow-up. The 2016-2017 BCP and 2017 ACP, developed with comprehensive CRAG engagement and subject to a 60-day UTC review, are also filed in Docket UE-152058.

In addition to already-filed detailed information, readers may also refer to this Report's *Exhibit 1: 2016-2017 Electric Savings and Expenses*, *Exhibit 2: 2016-2017 Electric Cost-Effectiveness Results*, *Exhibit 6, Supplement 1: DNV-GL's 2017 Home Energy Reports Evaluation Summary*, and *Exhibit 9: Requirements Compliance Checklist* for additional 2016-2017 biennial details.<sup>13</sup>

For this Report, PSE includes two documents that do not align with its standard "Exhibit" nomenclature, primarily due to their specific nature and timing:

- Attachment 1: SBW Consulting, Inc.'s *"Puget Sound Energy 2016-17 Biennial Electric Conservation Achievement Review (BECAR) Final Report"*, and
- Attachment 2: The Washington Department of Commerce's Microsoft® Excel™ workbook that addresses conservation<sup>14</sup> *"PSE\_EIA-2018-ReportWorkbook.xlsx"*. PSE provided this document with the WA Department of Commerce concurrent with this Report.

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<sup>13</sup> Readers will recognize these as standard PSE Exhibits, which are provided as part of its biennial planning and annual reporting documents.

<sup>14</sup> A significant portion of the workbook addresses renewables, which PSE reports to the WA Department of Commerce in a separate presentation on June 1, 2018.

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## II. 2016-2017 Electric Conservation Results

The 2016-2017 total electric Portfolio Savings Target consisted of two sub-categories, described in Section A below: (1) PSE Program Savings,<sup>15</sup> and (2) Northwest Energy Efficiency Alliance (NEEA) + Individual Energy Report (IER) Pilots. PSE's electric Total Portfolio Achievement finished the biennium with reported savings of 632,842 MegaWatt-hours (MWh). Adjusting for [NEEA savings of 26,078 MWh + IER Pilot savings of 20,016 MWh + savings adjustments<sup>16</sup> of +313 MWh] equals Savings Applicable to Total Penalties of 587,061 MWh, which surpassed the EIA Penalty Target by 9 percent, or 49,983 MWh.

This PSE-specific value signifies sufficient savings to meet the EIA Penalty Target of 537,078 MWh and the Decoupling Penalty Target of 27,993 MWh. The remainder of 21,990 MWh of excess savings may be applied to potential future Penalty Target shortfalls, consistent with the Commission's standard practice. In comparing the overall Portfolio electric savings achievement of 633,155 MWh<sup>17</sup> to the overall Portfolio Savings Target of 605,194 MWh, PSE will indicate an excess of 27,961 MWh in the 2018 Washington Department of Commerce EIA form. Excluded programs account for the difference in the two excess values.

The achieved savings represent PSE's total obligation indicated in RCW 19.285.040(1)(a through f), relative to achieving all available conservation that is cost-effective, reliable, and feasible for the biennium. Accordingly, PSE requests that the Commission issue an Order, determining that PSE met its Commission-approved biennial Energy Independence Act (EIA) Target (or biennial conservation target) of 537,078 MWh, and its Decoupling Penalty Target of 27,993 MWh.

While surpassing aggressive savings goals, PSE consistently demonstrated a high degree of stewardship in managing customer funds, with 2016-2017 electric conservation-specific<sup>18</sup> Portfolio expenditures of \$201.94 million, which exceeded the budget of \$198.98 million by less than 2 percent. PSE also achieved an electric Total Resource Cost (TRC) Test benefit-to-cost ratio of 1.92, and a Utility Cost (UC) Test benefit-to-cost ratio of 2.62 at the Portfolio level.

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<sup>15</sup> Programs are detailed in the 2016 and 2017 Annual Reports of Energy Conservation Accomplishments and Exhibit 1: Savings and Expenditures. Residential programs are noted in the Residential Energy Management (REM) Sector, and business programs are listed in the Business Energy Management (BEM) Sector.

<sup>16</sup> PSE discusses electric savings adjustments in section II.J.3.b.iv.

<sup>17</sup> Consisting of 632,842 reported MWh in the 2016 and 2017 Annual Reports + adjustments of 313 = 633,155 MWh.

<sup>18</sup> Exhibit 1: *2016-2017 Electric Savings and Expenses* also notes \$3.61 million in Other Electric Programs spending (lines *cf* through *ci*). This amount, attributable to Net Metering administrative expenses, Demand Response Pilots, and Electric Vehicle Incentives, is excluded from cost-effectiveness tests. PSE notes it on Exhibit 1 to indicate that these are Conservation Rider expenses.



PSE provides program-level details of 2016-2017 savings, along with their commensurate expenditures, in this Report as *Exhibit 1: 2016-2017 Electric Savings and Expenses*. Exhibit 2: *2016-2017 Electric Cost-Effectiveness Results* provides a program-level view of the TRC and UC elements.

### *A. The 2016-2017 Electric Conservation Target*

Consistent with RCW 19.285 and the rules enumerated in WAC 480-109-100,<sup>19</sup> PSE began the 2016-2017 planning process early in 2015. Energy Efficiency engaged its Conservation Resource Advisory Group (CRAG) early in the biennial planning process to establish the 2016-2017 individual savings goals from the bottom-up.

Throughout 2015, The Energy Efficiency department coordinated with the PSE Resource Planning organization as the Conservation Potential Assessment (CPA) was developed, and the resulting guidance from the 2015 Integrated Resource Plan (IRP) informed Energy Efficiency's baseline two-year conservation goal. PSE provides additional Conservation Potential and Target development details in the 2016-2017 BCP's Exhibit i: *Ten-Year Potential and Two-Year Target*.

In compliance with condition (8)(d),<sup>20</sup> PSE provided the CRAG with drafts of its 2016-2017 program savings & budgets, program details, and tariff revisions over the course of three months prior to the BCP filing.

The Commission reviewed and considered the Company's ten-year achievable conservation potential and two-year biennial Target, filed on October 29, 2015 in Docket UE-152058. Consistent with its standard practice, the Commission approved the Company's biennial conservation target (EIA Penalty Target) of 537,078 MWh in Order 01 on December 17, 2015 with conditions. The Commission also acknowledged PSE's Decoupling Penalty Target of 27,993 MWh in its open meeting comments.

PSE also refreshed its savings—taking into account new measures, new delivery methods, updated UES values, etc.—and updated spending projections in its 2017 Annual Conservation Plan (ACP), filed on November 14, 2016 in Docket UE-152058.

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<sup>19</sup> Although WAC 480-109 had not been revised at the time the Commission issued Order 01, PSE and its Regulatory Stakeholders followed processes and considered program design elements that would eventually make their way into the revised WAC.

<sup>20</sup> Docket UE-132043 applied to the development of the 2016-2017 BCP. The Commission opened Docket UE-152058 when PSE filed the 2016-2017 BCP.



In Chapter 1, Table I-1 provides a summary Portfolio view of the 2016-2017 electric conservation goals/overall budgets, and savings results/overall expenditures. In this section, PSE will discuss the sub-totals comprising the Portfolio values in more detail.

### 1) Developing the Portfolio

Regulatory Stakeholders will recognize elements of Table II-1 on page 12 from Exhibit 1 of PSE's 2016-2017 Biennial Conservation Plan: "Building the Electric Target" page. This table is helpful in establishing a frame of reference for results reporting.

PSE presents the table here in a landscape orientation to enhance its legibility.

Table II-1: 2016-2017 Electric Portfolio: Sub-Total Targets versus Actuals

2016-2017 Electric Portfolio Savings							
Index	Description	MWh Target	MWh Reported*	Difference	Achieved	Comment	Calculation
a	Total Biennial Potential	554,132	576,456	22,324		Potential = Bundle D + DE from 2017 IRP	
b	Plus Legacy HER	5,722	5,722	0		Goal: claimed value from previous year's evaluation. Actual: 2016 + 2017 Annual Reports	= a + b
c	Total Base Savings	559,854	582,178	22,324		All programs contribute to the decoupling commitment savings. 5% is calculated on the "base" total savings.	= c * 0.05
d	Plus Decoupling Commitment (5% add)	27,993	27,993	0		MWh Reported = 2016 + 2017 Annual Reports.	
e	Plus Pilots With Uncertain Savings	17,347	22,671	5,324		This is the total savings value, including decoupling, that PSE is managing to. This is the total savings reported to Dept. of Commerce.	= c + d + e
f	Total 2016-2017 Portfolio Savings	605,194	632,842	27,649			
	Exclude:		MWh Verified				
g	NEEA	-22,776	-26,078	3,302		NEEA reports actual savings in May of year following program year.	
h	Pilots With Uncertain Savings	-17,347	-20,016	2,669		Verified MWh based on 2016 and 2017 DNV-GL evaluations.	
i	Total Biennial Adjustments		313			Adjustments based on evaluations, internal/external reviews, NEEA savings difference accounted for in "Total Adjustments" total and Table II-9.	= Table II-5, Line f
j	Total Exclusions	-40,123	-45,781	5,658			= g + h + i
k	Targets						
l	EIA Penalty Target	537,076	559,069	21,991	✔	Penalty: \$50/MWh shortfall, adjusted for inflation	Target = (f + j) - d ["Target"] Actual = (f + j) - d ["Reported"] + "Verified"
m	Decoupling Penalty Target	27,993	27,993	0	✔	Penalty: \$50/MWh shortfall, adjusted for inflation Difference = excess savings	Remainder = Excess Target = d Actual = d["Target"] - d["Reported"]
n	Total Utility Savings	565,071	587,062	21,991			Target = l + m Actual = f + j

\* MWh reported in 2016-2017 Annual Reports, prior to true-ups and adjustments. As a result of rounded reference figures, some totals may be 1 MWh different than those noted in the BQR discussions. Those figures indicated in the discussions are correct, and should be considered the prevailing totals.

PSE will reference this table to present its 2016-2017 Portfolio electric conservation achievement—noted in two additional, highlighted columns labeled **MWh Actual** and **Percent**.

In 2015, PSE and the CRAG discussed key issues that influenced elements of the Portfolio savings goal over the course of three CRAG meetings, and agreed that applicable programs or initiatives should be added to or excluded from electric savings totals that result in PSE's Total Utility Conservation Goals, its EIA Penalty Target, and its Decoupling Penalty Target.

**a. Additions**

1. “Legacy” Home Energy Report (HER) savings goal of 5,722 MWh (those associated with the HER program that has been in place since 2011) are added to the two-year Total Biennial Potential of 554,132 derived from the 2015 IRP. These two values comprise the “Base” savings benchmark, noted as line **c** of Table II-1, and result in the MWh Base Savings of 559,854 MWh.
2. The Decoupling Penalty Target of 27,993 MWh. Adding this value to the EIA Penalty Target results in a Total Penalty Target amount of 565,071 MWh: line **n** of Table II-1.

**b. Exclusions**

1. The NEEA savings goal of 22,776 MWh (line **g**) is excluded from the EIA Penalty Target.
2. Pilots with uncertain savings are excluded from the EIA Penalty Target. 17,347 MWh—applicable to Residential Individual Energy Reports—is noted on lines **e** and **h** of Table II-1. The CRAG agreed that these pilots had an unreliable expected savings persistence, and should therefore be excluded from the EIA Penalty Target.

To calculate the EIA Penalty Target, PSE subtracted (22,776 [NEEA] + 17,347 [Pilots] = 40,123 MWh) from PSE's Total Portfolio Savings target of 605,194 MWh noted in line **f** in Table II-1. This results in the key savings value: Total Utility Savings of 565,071 MWh (line **n**). This is comprised of the EIA Penalty Target, line **i**: 537,078 MWh, and the Decoupling Penalty Target, line **m**: 27,993 MWh.



PSE notes these values in the **MWh Target** column in Table II-1. Readers may think of the final Portfolio-level savings target figures as a top down-derived value in this column.<sup>21</sup>

## 2) Disaggregating the Achieved Savings

Table II-1 disaggregates the 2016-2017 overall Portfolio electric savings in the **MWh Reported/MWh Verified** column to compare actual savings achieved to the sub-total goals, following steps similar to those used to build the targets.

In the previous section, PSE discusses key savings sub-totals that comprise the overall electric total Portfolio Savings Target. To determine achievement of the two key values on which PSE may face potential fines for savings shortfalls, the EIA Penalty Target and the Decoupling Penalty Target, PSE performs these four calculations:

- a. Remove reported savings that are excluded from Target calculations. The first step in determining whether those programs that are completely managed by PSE met the two penalty targets, PSE adds (or subtracts) the actual savings achieved by NEEA (26,078 MWh, line **g**) and the Pilots with Uncertain Savings (20,016 MWh, line **h**) from the Portfolio Savings Total of 632,842 MWh (line **f**).
- b. Adjust savings for true-ups and reviews. Next, PSE applied savings adjustments—based on NEEA’s verification of actual savings, Energy Report program evaluations, any adjustments recommended by the BECAR, and program staff continuous improvement reviews. These added up to +313 MWh (line **i**).
- c. Compare results to Penalty Targets. PSE then compares the resulting PSE-specific savings of 587,061 MWh (line **n**) to the EIA Penalty Target of 537,078, noted in line **l**, and the Decoupling Penalty Target of 27,993 MWh (line **m**). In 2016-2017, PSE exceeded the Penalty Targets by 21,990 MWh<sup>22</sup> (indicated as the remainder on line **l**).

The remainder of 21,990 MWh is excess savings.

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<sup>21</sup> “Top-down” is only used in this discussion to describe the orientation of Table II-1, establishing the premise that PSE started the EIA Target-setting process using its 2015 IRP guidance, and making adjustments from there. In development and execution, all Energy Efficiency programs—consistent with regulatory requirements—built their 2016-2017 portfolios from the bottom-up.

<sup>22</sup> Please note that most tables in this 2016-2017 Biennial Conservation Report are linked and often reference calculations that result in several decimal places. This then can cause rounding disagreements. The amounts noted in the Report’s narratives should be considered the governing amounts.

The results of the above calculations indicate that PSE avoided potential penalties of \$50/MWh<sup>23</sup> by meeting its EIA Penalty Target and Decoupling Penalty Target commitments.

PSE provides program-level savings figures that comprise these totals in its 2016 and 2017 Annual Reports of Energy Conservation Accomplishments that are PSE's official records of conservation. *Exhibit 1: 2016-2017 Electric Savings and Expenses* provides a two-year view of program-level savings and expenditures.

Exhibit 1<sup>24</sup> sums the 2016 and 2017 results, and accounts for savings adjustments discussed in Section D.4. *Exhibit 2: 2016-2017 Electric Cost-Effectiveness Results* provides a two-year view of program-level cost-effectiveness calculations.

### **a. Decoupling Penalty Target**

In Docket UE-152058, the Commission acknowledged PSE's Decoupling Penalty Target of 27,993 MWh.<sup>25</sup> It is important to note that the decoupling value is based on the higher [EIA Target + Legacy HER] (line **c** in Table II-1) of 559,854 MWh, rather than the Commission-approved EIA Penalty Target of 537,078.<sup>26</sup> PSE continued this approach it established with the CRAG in the previous biennium. The CRAG agreed that the higher figure reflects the spirit of the commitment, and PSE's intention to demonstrate the effort to acquire the additional savings.

As discussed in Section A.2. part b, the total achieved electric savings attributable to the agreed-to PSE-specific programs<sup>27</sup> met PSE's 2016-2017 decoupling conservation commitment.

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<sup>23</sup> As adjusted for inflation from 2007.

<sup>24</sup> It is important to note that the goals and budgets indicated in the two-year view of Exhibit 1 represent the sum of those presented in the original 2016-2017 Biennial Conservation Plan.

<sup>25</sup> In Dockets UE-121697 and UG-121705, Amended Petition for Decoupling Mechanisms, Section G.31, PSE indicated it would agree to achieve electric conservation 5 percent above the biennial targets set by the Commission.

<sup>26</sup> It is noteworthy that in Order 01 of Docket UE-152058, this savings value is termed "biennial conservation target" [sic].

<sup>27</sup> "PSE-specific programs include those that comprise the Residential Energy Management and Business Energy Management Sectors, Regional Programs (NEEA and Transmission & Distribution), and Pilots.



## I. Excess Savings

RCW 19.285.040(1)(c)(i) and WAC 480-109-100(3)(c) indicate that utilities may use excess conservation achieved in one biennium to meet up to 20 percent of either of the two subsequent biennia:

### RCW 19.285.040(1)(c)(i)

(c)(i) Except as provided in (c)(ii) and (iii)<sup>28</sup> of this subsection, beginning on January 1, 2014, cost-effective conservation achieved by a qualifying utility in excess of its biennial acquisition target may be used to help meet the immediately subsequent two biennial acquisition targets, such that no more than twenty percent of any biennial target may be met with excess conservation savings.

### 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.

(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.

It is clear that, consistent with WAC 480-109-100(3)(c), and following applicable savings target sub-total calculations discussed in the previous section, PSE achieved electric excess savings conservation, which may be applied to potential biennial electric savings target shortfall reported in either of the next two biennia.

Neither the RCW nor the WAC define excess conservation and what types of electric conservation comprise excess. The specifics of PSE's Total Conservation Savings necessitate consideration of the components of excess savings as related to the EIA Penalty Target and Decoupling Penalty Target.

### 1) Components of Excess Conservation

As discussed in Section A.1.a. – d., there are certain programs that are excluded from the EIA Penalty Target, which the RCW and WAC did not contemplate.

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<sup>28</sup> Subparts (c)(ii) and (c)(iii) discuss single large facility conservation savings contributions to potential excess, and utilities with an industrial facility located in counties with a specific population for a specific period of time.

Similarly, PSE’s decoupling filing was in its early stages during the 2014 WAC revision process. In Order 02 of Docket UE-152058, the Commission granted PSE’s request to be able to apply excess savings from the 2014-2015 biennium (38,609 MWh) to a potential shortfall of its 2016-2017 Decoupling Penalty Target.

Based on PSE’s application of the three calculation steps discussed on page 14 in section II.A.2, application of that excess electric savings was unnecessary for either 2016-2017 Penalty Target. In addition to confirming that PSE met both Penalty Targets, the calculations also resulted in 21,990 MWh of excess savings.<sup>29</sup>

PSE may apply the 2016-2017 excess savings, along with eligible 2014-2015 excess savings of 38,906 MWh to make up for up to 20 percent of potential 2018-2019 shortfall, per RCW 19-285-040(1)(c)(i). Table II-2 illustrates the last two biennia’s excess electric savings availability, should PSE need it.

**Table II-2: Excess Savings Accounting**

Excess Savings for Penalty Target Accounting									
	a	b		c	= c - (a + b)				
	EIA Penalty Target	Decoupling Penalty Target	20% of EIA Penalty Target (WAC 480-109-100(3)(c))	Actual PSE-Specific Savings	Excess Value	Available for potential 2016-2017 Shortfall	Available for 2018-2019 Shortfall	Available for 2020-2021 Shortfall	Available for 2022-2023 Shortfall
2014-2015	485,770	27,920	97,154	552,596	38,906	38,906	38,906	-	-
2016-2017	537,078	27,993	107,416	587,061	21,990		21,990	21,990	-
2018-2019 2020-2021	448,109	23,658							
<b>Total Available Excess for Penalty Targets</b>			<i>(This is the amount of excess savings needed to meet the maximum allowed by the RCW.)</i>			<b>38,906</b>	<b>60,896</b>	<b>21,990</b>	-

This accounting is in accordance with WAC 480-109-100(3)(c), which indicates that excess electric savings may be used to meet no more than 20 percent of a utility’s electric Target achievement shortfall in subsequent two biennia.

Consistent with the principles discussed in the accounting petition that PSE filed in Docket UE-152058 on October 24, 2016, PSE requests that the Commission allow a portion of the 61,505 MWh be applied to potential 2018-2019 Decoupling Penalty Target shortfall, in addition to its applicability to potential EIA Penalty Target Shortfall.

<sup>29</sup> In Order 05 of Docket UE-132043, the Commission ruled that PSE’s 2014-2015 excess electric savings was 38,906 MWh, which was calculated using the steps indicated in section II.A.2.



## *J. Conservation Savings Verification*

Savings and financial reporting accuracy are of significant importance to PSE, and it is a charge that Energy Efficiency staff execute on a daily basis. The results of their efforts have been validated by independent sources and recognized by CRAG members for the past four biennia. PSE relies on conservation savings to reduce customer resource needs. Absent regulatory requirements, Energy Efficiency staff would continue to exercise the same degree of rigor, oversight, and continuous improvement management that it does today.

Throughout the just-completed biennium, PSE executed a wide range of strategies and tactics that ensured the veracity of its conservation savings and financial reporting while exceeding most examination criteria—both internal and external.

### **1) Internal Reviews**

PSE could not have achieved these results without Energy Efficiency staff's commitment to satisfying customer expectations, adaptively managing its programs using continuous improvement principles, focusing on innovation, and adaptively managing processes to optimize efficiency and effectiveness.

PSE's Energy Efficiency department, consisting of Residential and Business Energy Management (REM and BEM), Programs Support, and the Development & Evaluation organizations, employs rigorous and tested data assimilation and verification processes to ensure that monthly savings and financial data meet the department's exacting standards. The completed implementation of Energy Efficiency's new DSMc project management software<sup>30</sup> in 2017 provided enhanced tracking and reporting capabilities.

Similarly, those organizations that provide an ancillary, supporting role also adhere to strict expenditure and reporting guidelines.

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<sup>30</sup> DSMc is extensively discussed in PSE's 2017 Annual Report of Energy Conservation Accomplishments, filed on April 2, 2018 in Docket UE-152058.



A summary of several internal reviews processes that Energy Efficiency staff regularly employ include, but are not limited to:

- Department processes are consistently monitored, reviewed and updated throughout the year as needed—including Measure Revision (semi-annually), Savings Reporting (annually), Database Usage (annually), and Measure Creation Guidelines (annually)—that are Supplements to Exhibit 8: *EM&V Framework*.
- A documented savings and expenditure adjustment process that recognizes that it isn't possible to report savings on the magnitude of Energy Efficiency's scope without counting or multiplication errors occurring: either by customers, contractors, or program staff. PSE publishes every savings adjustment in its Annual Reports as *Exhibit 1, Supplement 2*.

PSE strives to prevent savings or expenditure accounting errors by reviewing monthly invoices, with market-or department managers validating expenses, monthly reviews of SAP program details, and SoX-level<sup>31</sup> reviews of major custom grant projects. Expenditure and savings forecasts are reviewed monthly, with senior management examining monthly actual savings and expense tracking.

- Customers, contractors, and vendors are also valuable sources of data validation: customers and contractors are quick to call if they receive a rebate amount that is less than expected (they also notify PSE if they are over-paid), and vendors are encouraged to self-report accounting errors.
- QC Review by senior engineering staff of Custom Grant analyses and PSE deemed Unit Energy Savings (UES) business cases, and 100 percent pre- and post-installation verification on all custom retrofit grants.
- Systematic data processing controls, with built-in rules designed to capture discrepancies.

One of the key rules is a reporting cross-check, where program data that is collected throughout the month is compared with archived values stored in DSMc, and against data already reported and logged. If the comparison reveals an error, program staff and Data and Systems Support staff complete the savings adjustment request form,<sup>32</sup> consisting of the questions:

1. What is the reporting discrepancy?
2. How was the discrepancy discovered?

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<sup>31</sup> SoX is the acronym that PSE uses for the Sarbanes-Oxley Act of 2002.

<sup>32</sup> PSE discusses this process in more detail on page 172 of the 2017 Annual Report of Energy Conservation Accomplishments.

4. What was the effect of the discrepancy?
5. How is it corrected?
6. How will program staff ensure that the discrepancy is not repeated?

- Verification Team on-site inspection of a wide range of residential and commercial measures prior to incentive payment.
- A robust evaluation process that includes an Evaluation Report Response follow-up by program staff, executed by senior Evaluation staff, as well as capable independent third-party professionals.
- A Measure Metrics archival system that links Energy Efficiency's tracking and reporting databases and archives measures' sources of savings.
- Key databases are routinely compared and reconciled each year—often more frequently.
- Recurrent subject matter expert training, including field experience, contractor interfacing, and customer engagement.
- REM and BEM staff review<sup>33</sup> all rebate eligibility criteria on each rebate application—including:
  - Is the applicant a PSE Customer?
  - Is the Schedule applicable for the rebate type?
  - Is the rebate applicable to the customer's fuel type (are they an electric customer, but applying for a gas rebate)?
  - Is the equipment on the application eligible?

***a. Web-Enabled Thermostat Program 2017 Savings Adjustment***

In April, 2018, Residential Energy Management (REM) program staff ascertained that a group of approximately 830 records associated with electric web-enabled thermostat instant rebate program were not uploaded into the Energy Efficiency project management system DSMc. Each record represented one thermostat purchased and rebated at the retail establishment. These records indicated that, although PSE paid the applicable incentives, commensurate savings were not reported.

Upon realizing the discrepancy, program staff immediately began thoroughly reviewing the affected records: properly classifying the savings and heating type for each unit, customer eligibility, installation location, etc.

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<sup>33</sup> Although this process may seem entirely expenditure-focused, the point is included due to the key savings reporting relationship: savings are not reported until a rebate or grant is paid.

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The results of the analysis is that PSE will true-up its biennial conservation reporting by adding 743,846 kWh (744 MWh), which is reflected in Table II-5 on page 30. PSE also alerted SBW Consulting Inc. (SBW) about this revelation upon its discovery, so that they could insert a comment in the final draft of the Biennial Electric Conservation Achievement Review (BECAR) acknowledging PSE's discovery.

## 2) Final Northwest Energy Efficiency Alliance (NEEA) Savings

When PSE created its 2016-2017 Biennial Conservation Plan in September 2015, NEEA provided an updated estimate of its corresponding electric savings for PSE. PSE and NEEA collaborated to further hone that estimate, taking into account the pertinent attributes of the 7<sup>th</sup> Power Plan, updated RTF UES values, and measure savings that were forecast to be unique to the Puget Sound area. The CRAG and the Commission, in accordance with its standard practice, agreed that the resulting NEEA savings goal—22,776 MWh—should be excluded from PSE's EIA Penalty Target.

The CRAG understands that NEEA savings values are calculated and vetted in the second quarter of each year, subsequent to PSE's filing of its Annual Reports. Therefore, PSE included the annualized portion of NEEA's deemed savings figures in its reported 2016 and 2017 electric savings totals, noting that the actual NEEA savings values would be reconciled and reported in PSE's electric Biennial Conservation Report.

On March 30, 2018, NEEA confirmed its final official results for electric savings calculated for PSE. As indicated in Table II-3, NEEA's results exceeded its plan by 15 percent: 26,078 MWh versus a plan of 22,776 MWh, or a difference of +3,302 MWh. It is noteworthy that NEEA reports savings at the average megawatt (aMW) level, while PSE reports conservation savings at the MWh level, and only converts the Portfolio to aMW.



Applying the standard conversion of [8,760 hours \* # aMW = MWh], the goal of 2.6 aMW = 22,776, and the actual savings of 2.98 aMW = 26,078 MWh.

**Table II-3: 2016-2017 Final NEEA Electric Savings**

Northwest Energy Efficiency Alliance 2016-2017 Electric Savings Results (aMW)			
Savings Applied to PSE Service Territory	Actuals	Goals	Percent
Residential	1.93	1.67	115%
Industrial	0.03	0.01	292%
Commercial	1.02	0.89	115%
Agricultural	0.00	0.00	
<b>TOTAL</b>	<b>2.98</b>	<b>2.57</b>	<b>116%</b>
Convert to MWh	26,078	22,776	Difference 3,302 (Overachieved)

### 3) External Reviews

PSE engaged several outside entities over the course of the 2016-2017 biennium to provide independent opinions and review of its electric conservation programs, including evaluation and engineering consultants,<sup>34</sup> and third-party reviewers. PSE also collaborated with the CRAG and Commission staff on savings and financial forecasts, annual Schedule 120 reviews, and conservation planning. This working relationship enabled the Company to adaptively and effectively manage its conservation programs.

Applicable evaluations and reviews resulted in measure savings adjustments going forward, in keeping with PSE's *Measure Revision Guidelines*. Two resulted in retroactive savings adjustments, as discussed in the following sections. PSE did not adjust the 2016-reported or the 2017-reported electric savings in either Annual Report to preserve archived data and historical reconciliation.

As discussed in the previous section, NEEA savings applicable to PSE are finalized in the late second quarter of the year following a biennium. The Home Energy Reports ex-post evaluations were unavailable at the time of Annual Report filings. As it did in the 2014-2015 Biennial Electric Conservation Report, PSE will true up the Home Energy Report savings at the June 1, 2016 filing timeframe. Similarly, PSE makes any electric savings adjustments that are recommended as a result of the Biennial Electric Conservation Achievement Review (BECAR) as a part of the Biennial Electric Conservation Report.

<sup>34</sup> Some of whom assisted in the development of several measure business cases.

PSE presents the electric conservation results of independent reviews and evaluations in Table II-5.

### **a. 2016-2017 Biennial Electric Conservation Achievement Review (BECAR)**

In March, 2016, PSE and Commission staff selected SBW Consulting, Inc. (SBW) to perform the 2016-2017 BECAR. The final BECAR is included in this Report as Attachment 1: *Puget Sound Energy 2016-17 Biennial Electric Conservation Achievement Review (BECAR) Final Report*. Commission staff and PSE staff managed SBW's charter, scope of work, work plan, and review progress throughout the biennium and into the first half of 2018.

The review was less labor-intensive for Energy Efficiency staff than in past biennia; less program staff time was spent analyzing and researching SBW data requests, thanks mostly to the efforts of the Data & Systems Services team and the implementation of DSMc. Other contributors were SBW's BECAR experience with Energy Efficiency programs, better data organizations, and more direct lines of communications between SBW and subject matter experts. These efficiencies provided SBW with the capacity to effectively review over 28,000 Business Energy Management (BEM) files, and more than 600,000 individual Residential Energy Management (REM) records.<sup>35</sup>

The direct cost to PSE ratepayers was \$188,000 for this biennial review, which is approximately \$100,000 more than the previous biennium.<sup>36</sup>

In the 2016-2017 BECAR, SBW concluded that:

- The savings shown in the ACRs are substantiated by a thorough review by the BECAR team. No corrections are needed.<sup>37</sup>

And that PSE's derivations of Unit Energy Savings (UES) values are sound:

- Reviews in 2016 and 2017 of critical UES values found no errors, and that their derivations are reasonably consistent with the requirements of WAC 480-109-100.<sup>38</sup>

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<sup>35</sup> SBW's "Puget Sound Energy 2016-2017 Biennial Electric Conservation Achievement Review (BECAR) Final Report", Section 2.2.1, Methodology, pg 8.

<sup>36</sup> Invoiced cost only. This amount does not include PSE staff labor costs.

<sup>37</sup> SBW's "Puget Sound Energy 2016-2017 Biennial Electric Conservation Achievement Review (BECAR) Final Report", Executive Summary, pg ES-2.

<sup>38</sup> SBW's "Puget Sound Energy 2016-2017 Biennial Electric Conservation Achievement Review (BECAR) Final Report", Section 2.2.1, Executive Summary, pg ES-4.

SBW also observed that:

- The BECAR review did not find any calculation or data errors in either the REM or the BEM sector data sets. We carefully examined program data fully and have verified its accuracy.<sup>39</sup>
- The derivations [*ed.: Residential Sector UES Findings*] are consistent with the requirements of WAC 480-109-100, Washington’s administrative code governing energy efficiency activities for investor-owned utilities.<sup>40</sup>
- **Perform additional lighting UES reviews in mid-2017:** More than 60% of the residential and business energy management portfolio savings consist of lighting measure savings, with LED technology accounting for most of those savings.
  - **Recommendation status:** Completed. In September 2017, a second round of UES reviews were done for the four business case workbooks that were updated since the 2016 UES review.<sup>41</sup>
- In two instances, SBW recommends that PSE re-assess its application of conservative savings values:
  - 1) Single Family Existing,
  - 2) Lighting to Go.

SBW notes that the CRAG indicated<sup>42</sup> that “(...) broad, systemic bias towards conservative savings values was not warranted, but that making conservative assumptions for limited, specific instances when better information was unavailable was acceptable. (...)”<sup>43</sup>

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<sup>39</sup> SBW’s “Puget Sound Energy 2016-2017 Biennial Electric Conservation Achievement Review (BECAR) Final Report”, Section 2.2.1, Methodology, pg 9.

<sup>40</sup> Ibid, Section 2.3.2.2, Residential Energy Management, pg 17.

<sup>41</sup> Ibid, Section 2.3.3, General Recommendations, pg 19.

<sup>42</sup> In Section 2.3.3, Recommendations, SBW references the May 31, 2017 CRAG meeting, where, on page 80, PSE stated: “PSE may make conservative assumptions where there is uncertainty about the impact of a particular parameter that is difficult to quantify to ensure that customer value is not overstated. PSE does not believe its estimates are overly conservative.” The corresponding CRAG Meeting Summary notes also relate that “(...)The attendees generally agreed that PSE is taking adequate steps to ensure its energy savings estimates are realistic.”

<sup>43</sup> SBW’s “Puget Sound Energy 2016-2017 Biennial Electric Conservation Achievement Review (BECAR) Final Report”, Section 2.3.3, Recommendations, pgs 19 & 20.

And, from Section 2.4.2, “Future Improvements in PSE Adaptive Management and BECARs,” in recommending that PSE add more detailed program explanations, SBW found that a key 2014-2015 recommendation was resolved:

- Comparison of the 2016 ACR with the 2015 ACR shows some variance on the level of detail provided on programs with respect to accomplishments. Overall, given that PSE has worked closely with the Commission staff and the CRAG to determine the appropriate level of detail to include in ACRs, the BECAR team believes the level of detail in the 2016 and 2017 ACRs is acceptable.<sup>44</sup>

PSE engaged SBW much earlier in the 2016-2017 biennium, so that SBW could conduct a UES value review earlier in the biennium. The review commenced in the second quarter of 2016, rather than early 2017. Thus, if any retroactive savings revisions were necessary, Energy Efficiency could make program adaptations to account for potential shortfalls earlier in the biennium. This circumstance was not necessary, however, as SBW concluded that the reviewed PSE UES values were calculated appropriately.

The complete 2016-2017 BECAR is available for review as Attachment 1 to this Report.

### ***b. DNV - GL Home Energy Reports Evaluations***

REM’s Home Energy Reports (HER) program is evaluated each year for verified savings from the previous program year. As it relates directly to 2016-2017 results, and due to the short measure life of this program, it is necessary to apply the result of that evaluation to the year in which the savings occurred on a retroactive basis, rather than on a going-forward basis, as is standard practice for evaluations. PSE also applies this principle to its Individual Energy Reports pilot program.

This approach results in (1) PSE reporting the Deemed program savings in each Annual Report of Energy Conservation Accomplishments, and (2) adjusting, or truing-up—when indicated by the annual evaluations—those reported savings in the Biennial Electric Conservation Report. This is consistent with PSE’s agreement with the CRAG.

#### ***i. Home Energy Reports Verified Savings***

In 2016, PSE applied an electric HER placeholder savings value based upon the previous year’s evaluation and the trends from the program’s historical data of 310 kWh per customer. PSE terms this the “deemed value”, having a 2-year measure life.

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<sup>44</sup> SBW’s “Puget Sound Energy 2016-2017 Biennial Electric Conservation Achievement Review (BECAR) Final Report”, Section 2.4.2, Future Improvements in PSE Adaptive Management and BECARs, pg 24.



With an expected participation of 18,459 customers, this resulted in a savings projection of 5,722,290 kWh or 5,722 MWh. The DNV-GL verified 2016 savings total savings of “current” + “suspended” + “unmatched” households was 6,221,378 kWh (6,221 MWh).

The verified savings equated to an average of 243.2 kWh/customers, with 25,583 households counted. The verified savings is an incremental value of 499,088 kWh (499 MWh). PSE included the 2016 DNV-GL evaluation of HER in Exhibit 6, Supplement 1 of the 2017 Annual Report of Energy Conservation Accomplishments.

In 2017, with no incremental savings or additional customers projected, PSE filed a savings forecast of zero kWh for HER in its 2017 Annual Conservation Plan (ACP). DNV-GL’ 2017 impact evaluation indicated an average of 249.1 kWh per customer, with 23,930 households counted. The resulting 2017 savings was 5,962,021 kWh, or 5,962 MWh. The 2017 verified savings did not indicate an incremental value over the 2016 verified savings. PSE includes the DNV-GL 2017 Energy Report evaluation as Attachment 2 to this Report.

#### *ii. Individual Energy Reports Pilot Verified Savings*

For its Residential Individual Energy Reports (IERs) Pilot<sup>45</sup> in 2016, PSE applied a Deemed savings value across four customer segments: Electric-only; High Relative Usage; Rural; and Refill.<sup>46</sup>

The household total of the four segments was 100,000, with aggregate deemed savings planned of 17,346,930 kWh, or 17,347 MWh. In the 2017 ACP, PSE forecasted an incremental 5,322,641 kWh (5,323 MWh) of savings from the 2016 value, with no additional households projected from the 2016 value.

This brought the total program forecasted savings to the deemed value of [17,346,930 + 5,322,641 = 22,669,571 kWh].

The DNV-GL verified 2016 savings total savings of the Pilot households was 20,015,895 kWh (20,016 MWh). The verified savings equated to an average of 201.1 kWh per household, with 99,516 households counted. Therefore, the verified savings represented a decrease in value of -2,655,050 kWh (-2,655) from PSE’s reported 2016-2017 deemed savings.

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<sup>45</sup> The Pilot is also sometimes referred to as “Residential Energy Reports” and “HER Expansion”.

<sup>46</sup> The “refill” category represents customers who generally match the “legacy HER” customer profile, and are added to supplant those customers who were no longer participating in the program.



DNV-GL's 2017 impact evaluation indicated a 15,780,453 kWh aggregate savings, indicating that there were no incremental savings from 2016.

PSE included the 2016 DNV-GL evaluation of HER in Exhibit 6, Supplement 1 of the 2017 Annual Report of Energy Conservation Accomplishments. PSE includes the DNV-GL 2017 Energy Report evaluation as Attachment 2 to this Report.

### *iii. Energy Reports Adjustment Methodology*

In its approved savings true-up methodology, PSE uses the following tenets:

- Energy Reports have a 2-year measure life.
- Savings are evaluated each year.
- Savings are deemed from the previous year's verified figure (only at the start of a biennium).

*It is important to note that, due to the planning process timing, it isn't possible to deem the second year's savings value from the first year's evaluation results. Second-year savings are only indicated if program staff have a reasonable expectation that they will increase (as a result of additional households or additional savings per household) in the second-year planning.*

- Savings are reported only for the first year (consistent with all prescriptive measures).
- Savings are only reported for a new biennium (the start of the two-year measure life), or
  - If the program plans for the addition of new customers, or
  - Changes are planned in the deemed savings value.

(Legacy) Home Energy Report customer classifications are:

- 1) Current (still receiving reports)
- 2) Suspended (at some point received reports, but now no longer receiving reports)
- 3) Unmatched (treatment households that are not matched to a control group. This stemmed from original geographically-clustered customers that were not matched to a control group.)



Residential Individual Energy Report (Expansion) customer classifications are:

- 1) Electric-only;
- 2) High Relative Usage;
- 3) Rural; and
- 4) Refill.

Adjustments (positive or negative) to reported savings occur when the verified first-year savings is different than the deemed value in either of the program years.

These approaches also apply to the Individual Energy Report pilot.

#### *iv. 2016-2017 Energy Reporting Adjustments*

Consistent with PSE's Energy Report true-up process outlined in the preceding discussion, program staff compared the DNV-GL verified first-year savings to the filed deemed savings values to arrive at the verified HER and Individual Energy Report pilot electric savings for 2016-2017. If the DNV-GL evaluation revealed incremental savings in 2017, program staff incorporated those figures into the comparison. PSE presents the Home Energy Report-specific final savings true-up calculation steps in Table II-4.

The deemed savings portion of HER and IER calculations are made up of the 2016 deemed savings value + the 2017 deemed savings value. Therefore, in the HER comparison, the overall deemed savings value is [5,722,290 (2016) + 0 (2017) = 5,722,290 kWh]. In the Individual Energy Report comparison, however, the overall deemed savings value is [17,346,930 (2016) + 5,323,641 (2017) = 22,669,571 kWh].

The resulting 2016-2017 total HER electric savings adjustment is +499 MWh [6,221,378 kWh (verified) – 5,722,290 kWh (deemed)]. The resulting 2016-2017 total IER savings adjustment is -2,654 MWh [20,015,895 kWh (verified) – 22,669,571 kWh (deemed)].

PSE reflects these adjustments in the final savings totals in Table II-5.

**Table II-4: Energy Reporting Ex-Post Savings True-ups**

2016-2017 Energy Reporting Electric Savings Adjustments				
Index	Factoring in Year 2 incremental savings (ignoring Year 2 decremental savings)			Computation
		Home Energy Report (Legacy)	Individual Energy Reports (Pilot)	
a	Reported savings in 2016 Annual Report	5,722,290	17,348,304	
b	Incremental reported savings in 2017 Annual Report	0	5,322,641	
c	<b>Total reported saving for the biennium</b>	<b>5,722,290</b>	<b>22,670,945</b>	= a + b
d	Savings per 2016 (year 1) DNV-GL analysis	6,221,378	20,015,895	
e	Savings per 2017 (year 2) DNV-GL analysis	5,962,021	19,551,860	
f	Incremental verified savings from 2016 to 2017	0	0	Compare: (1) if e > d, = e - d. (2) if e < d, = 0.
g	Adjustment to 2016-2017 Biennial Electric Conservation Report.	499,088	-2,655,050	= (f + d) - c

#### 4) Savings Review Results: Verified 2016-2017 Electric Savings

Electric savings, along with associated adjustments discussed in the previous sections and included in Table II-5, represent PSE's final, verified 2016-2017 totals.

**Table II-5: Verified 2016-2017 Savings with Adjustments**

Index	Source	Megawatt-Hours	Discussion
a	2016 Annual Report	314,526	From 2016 Annual Report Exhibit 1
b	2017 Annual Report	318,316	From 2017 Annual Report Exhibit 1
<b>c</b>	<b>Subtotal</b>	<b>632,842</b>	= a + b
d	<i>NEEA Savings</i>	24,353	2016-2017 Deemed value, as represented in Annual Reports.
e		26,078	2016-2017 trued-up value, as reported by NEEA
f	NEEA 2016-2017 Savings Adjustment	1,725	= e - d
g	<i>Legacy Home Energy Reports</i>	5,722	2016-2017 Deemed value, as represented in Annual Reports.
h		6,221	2016-2017 trued-up value, as evaluated by DNV-GL
i	DNV-GL ex-post Home Energy Reports True-up	499	= h - g
j	<i>Individual Energy Reports Pilot</i>	22,671	2016-2017 Deemed value, as represented in Annual Reports.
k		20,016	2016-2017 trued-up value, as evaluated by DNV-GL
l	DNV-GL ex-post Evaluation Total	-2,655	= k - j
m	<i>PSE Program Staff Continuous Improvement Reviews</i>	1,449	2016-2017 Web-Enabled Thermostat reported savings
n		2,193	Web-Enabled Thermostat instant rebate file reconciliation correction
o	Recommended adjustment provided to SBW for inclusion in BECAR	744	= n - m
<b>p</b>	<b>Total Electric Savings Adjustments</b>	<b>313</b>	= f + i + l + o
<b>q</b>	<b>FINAL VERIFIED ELECTRIC CONSERVATION—PORTFOLIO, MWh</b>	<b>633,155</b>	= c + o
r	Less:		
s	Final NEEA Reported Savings	26,078	= e
t	Final Verified Pilots Savings	20,016	= k
<b>u</b>	<b>Final Electric Savings Applicable to Penalties</b>	<b>587,061</b>	= q - (s + t)
v	2016-2017 EIA Penalty Target	537,078	2016-2017 Exhibit 1, line "bg" and Order 01, Docket UE-152058
<b>w</b>	<b>Difference</b>	<b>49,983</b>	= u - v
x	Decoupling Penalty Target	27,993	
<b>y</b>	<b>Remainder (Excess Savings)</b>	<b>21,990</b>	= x - w Available MWh for 20% of potential shortfall of 2018-2019 or 2020-2021 achieved savings

Figures noted in the “Index” column will provide readers with a consistent nomenclature for questions or citation. Line **c** indicates the as-reported cumulative 2016 + 2017 electric savings.<sup>47</sup> Line **p** provides the total of the 2016-2017 [NEEA savings final savings + DNV-GL Home Energy Reports evaluations + PSE reviews] adjustments, labeled “Total Electric Savings Adjustments”. Line **q** sums the as-reported savings + the savings adjustments. Line **u** sums those savings that are excluded from the EIA Penalty Target [NEEA + IER pilots] and subtracts them from the sub-total in line **q**. Line **w** indicates the difference, in megawatt-hours, of the achieved electric savings versus the EIA Penalty Target. Line **y** subtracts the Decoupling Penalty Target value from the difference in line **w** to indicate the excess savings.

### K. Cost-Effectiveness

PSE combined the overall 2016 and 2017 electric Portfolio cost-effectiveness results indicated in Exhibit 2 of each year’s Annual Report, taking into account the above-noted savings adjustments, to develop a biennial view of program cost-effectiveness. PSE provides the cost-effectiveness results in Table II-6.

**Table II-6: 2016-2017 Electric Cost-Effectiveness**

2016-2017 Electric Benefit-to-Cost Ratios		
	Total Resource Cost Test	Utility Cost Test
TOTAL PORTFOLIO	1.92	2.62

Source: 2016-2017 Exhibit 2: Cost-Effectiveness Calculations

Indicated TRC includes the application of a 10 percent conservation credit value.

<sup>47</sup> Apparent differences between tables in the two-year electric savings totals stems from rounding functions applied to earlier summary tables.



### *L. Adapting the Portfolio through the Application of Continuous Improvement Management Principles*

As discussed throughout the 2016 and 2017 Annual Reports of Energy Conservation Accomplishments, PSE consistently applied continuous improvement principles in every aspect of managing its suite of electric Energy Efficiency programs. While not a comprehensive listing of every continuous improvement application Energy Efficiency staff employed to exceed the electric savings target while prudently managing customer Rider funds, Table II-7 provides some of the more significant highlights of Energy Efficiency's adaptation steps discussed in the 2016 Annual Report.

PSE notes many other instances in various chapters of the Annual Report.

**Table II-7: Highlights of 2016 Energy Efficiency Adaptive Management Initiatives**

2016	Detailed in: <i>Annual Report Page Number Reference</i>
As a result of pending RTF UES value updates, Energy Efficiency executed an unprecedented one-time savings adjustment of approximately 42,000 MWh in four REM programs.	36
Retail Lighting staff removed CFLs from its suite of measure offerings at the end of 2016.	57
As a result of reduced LED prices in the retail market, the Retail Lighting program made two incentive level reductions. Similarly, the Business Lighting Grants program put plans in place to reduce 2017 incentive levels.	57 & 103
The refrigerator replacement program ended in 2016 as a result of reduced demand and reduced cost-effectiveness as a standalone measure.	58
PSE developed a new method to validate web-enabled thermostats that significantly reduced customer wait times and improved the customer experience.	61
PSE updated the Home Energy Assessment program, formerly known as HomePrint™, as the PSE Home Energy Assessment. The name change was done to provide a more clarity around the offering and the benefits to the customer.	64
Manufactured/mobile home offerings were expanded to include Home Energy Assessments and ductless heat pumps.	65
By implementing standards compatible with the SIR test, the LIW program was able to achieve conservation savings on measures that are considered cost effective by DOC.	76
By adding a Portfolio Manager to its program field team, 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.	82
Multifamily Retrofit's Strategic Energy Management initiative, counted 15 large properties participating by year-end.	82
PSE partnered with the Cascade Water Alliance (CWA), where CWA paid PSE one-half of the measure cost for the installation of water-saving measures in locations that spanned both utilities' service territories. The added revenue helps to offset a portion of the program's overall costs.	83
PSE merged some 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.	90
The Commercial/Industrial New Construction team updated the Lighting Power Density (LPD) worksheet to accommodate the recently-adopted 2015 Washington State Energy Code and to enhance the ease-of-use for customers.	110
The RCM program completed a significant upgrade to the Resource Accounting Software, enhancing its ease-of-use for customers.	119
The RCM program developed the Urban Smart Bellevue program, in which 60 businesses enrolled by year-end.	122
Dealer Channel staff added new commercial kitchen measures in order to provide a more comprehensive suite of offerings.	134
In order to accommodate the different rate Schedules and meter configurations found on many small farms, PSE bases program eligibility on gross sales, rather than rate Schedule.	139
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.	173
As a result of the continuous improvement efforts and focus of the Data and Systems Services Team, program staff, and the Budget & Administration Team, the number of savings adjustments declined 21 percent from 2015.	173
The Energy Efficient Communities managed the refinement of its Home Energy Assessment blitz contractor to refine their presentation to best pique the customers' interest on the benefits of the program right when the customer answers the door.	200
PSE Evaluation staff have reviewed the concepts, potential benefits, and potential increased costs of an "M&V 2.0" pilot. Staff plan to recommend a potential pilot project in 2017.	216



**Table II-8** provides some of the more significant highlights of Energy Efficiency’s adaptation steps discussed in the 2017 Annual Report. PSE notes many other instances in various chapters of that Report.

**Table II-8: Highlights of 2017 Energy Efficiency Adaptive Management Initiatives**

2017	Detailed in: <i>Annual Report Page Number Reference</i>
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.	67
PSE used customer data to redesign the tiered approach to a flat rebate amount in the Home Appliance program. 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.	67
PSE retired the clothes washer replacement program.	67
In order to respond to customers' perceived rebate delays, program staff rolled out an instant web-enabled thermostat rebate campaign coordinated closely with a manufacturer partner, Nest.	70
The Dealer Channel launched an online customer-facing application for space heating, water heating, windows and home performance with Energy Star® rebates.	73
During the second half of the year, Home Energy Assessment program staff increased total maximum lamps allowed to be installed per home from 20 to 30.	74
Many programs put a hiatus on advanced (IR) power strips, due to a lower persistence (often, customers were not installing, or removed the power strip).	75
During the second half of the year, Single Family Weatherization program staff developed a process to better track referrals and re-engage contractors to improve savings moving forward.	76
The Multifamily Retrofit team partnered with 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.	88
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.	90
In October 2017 the Business Lighting Grant team developed reduced incentive rates and started development of a new application/calculator.	112
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.	113
The Commercial/Industrial New Construction program 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.	119
RCM program staff worked with customers to develop forms of reporting that are less burdensome for customers, yet meet the requirements of the program and met with customers in geographic cohort groups to foster customer relationships and sharing of resources and best practices.	128
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.	140
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.	143
The Lodging Direct Install program designed a "hybrid" approach to offer this customer segment a more engineering-grade energy audit, that also combines a 50 percent customer co-pay with direct-install measures.	146
DSMc's Public User Interface (PUI) was implemented in September. The PUI allows customers to submit and track their rebates online.	195
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.	191
The Market Research team provided a dashboard standardizing satisfaction and performance across EES residential programs to guide program management throughout year.	212



As indicated in the above tables, supporting functions, including but not limited to Data and Systems Support, Budget-Evaluation-Administration-Regulatory, and the Events and Energy Efficient Communities teams, also made significant operational improvements throughout the biennium.



### III. Regulatory Compliance

PSE submits this biennial report of its 2016-2017 electric conservation to the UTC, consistent with RCW 19.285.070, which states:

- (1) On or before June 1, 2012, and annually thereafter, each qualifying utility shall report to the department on its progress in the preceding year in meeting the targets established in RCW [19.285.040](#), including expected electricity savings from the biennial conservation target, expenditures on conservation, actual electricity savings results, the utility's annual load for the prior two years, the amount of megawatt-hours needed to meet the annual renewable energy target, the amount of megawatt-hours of each type of eligible renewable resource acquired, the type and amount of renewable energy credits acquired, and the percent of its total annual retail revenue requirement invested in the incremental cost of eligible renewable resources and the cost of renewable energy credits. For each year that a qualifying utility elects to demonstrate alternative compliance under RCW [19.285.040\(2\)](#) (d) or (i) or [19.285.050\(1\)](#), it must include in its annual report relevant data to demonstrate that it met the criteria in that section. A qualifying utility may submit its report to the department in conjunction with its annual obligations in chapter [19.29A](#) RCW.
- (2) A qualifying utility that is an investor-owned utility shall also report all information required in subsection (1) of this section to the commission, and all other qualifying utilities shall also make all information required in subsection (1) of this section available to the auditor.
- (3) A qualifying utility shall also make reports required in this section available to its customers.

The report is also consistent with WAC 480-109-120(4), stipulating the Report's contents. PSE will post a copy of the report on the PSE.com website within 30 days of the Commission's Report acknowledgement. Concurrent with this Report, PSE is providing the Washington State Department of Commerce with a copy of the Department's 2018 EIA Report Microsoft® Excel™ workbook (reflecting 2016 and 2017 electric conservation accomplishments). A copy of the conservation portion of that workbook is included with the Report as Attachment 2.

#### A. [RCW 19.285.040\(1\)](#)

The Report and its Exhibits clearly demonstrate that PSE is in full compliance with RCW 19.285.040 (1) (a through f):

Each qualifying utility shall pursue all available conservation that is cost-effective, reliable, and feasible.

*(continued)*

- (a) By January 1, 2010, using methodologies consistent with those used by the Pacific Northwest electric power and conservation planning council in its most recently published regional power plan, each qualifying utility shall identify its achievable cost-effective conservation potential through 2019. At least every two years thereafter, the qualifying utility shall review and update this assessment for the subsequent ten-year period.
- (b) Beginning January 2010, each qualifying utility shall establish and make publicly available a biennial acquisition target for cost-effective conservation consistent with its identification of achievable opportunities in (a) of this subsection, and meet that target during the subsequent two-year period. At a minimum, each biennial target must be no lower than the qualifying utility's pro rata share for that two-year period of its cost-effective conservation potential for the subsequent ten-year period.
- (c)(i) Except as provided in (c)(ii) and (iii) of this subsection, beginning on January 1, 2014, cost-effective conservation achieved by a qualifying utility in excess of its biennial acquisition target may be used to help meet the immediately subsequent two biennial acquisition targets, such that no more than twenty percent of any biennial target may be met with excess conservation savings.
- (ii) Beginning January 1, 2014, a qualifying utility may use single large facility conservation savings in excess of its biennial target to meet up to an additional five percent of the immediately subsequent two biennial acquisition targets, such that no more than twenty-five percent of any biennial target may be met with excess conservation savings allowed under all of the provisions of this section combined. For the purposes of this subsection (1)(c)(ii), "single large facility conservation savings" means cost-effective conservation savings achieved in a single biennial period at the premises of a single customer of a qualifying utility whose annual electricity consumption prior to the conservation savings exceeded five average megawatts.
- (iii) Beginning January 1, 2012, and until December 31, 2017, a qualifying 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 conservation from that industrial facility in excess of its biennial acquisition target to help meet the immediately subsequent two biennial acquisition targets, such that no more than twenty-five percent of any biennial target may be met with excess conservation savings allowed under all of the provisions of this section combined.
- (d) In meeting its conservation targets, a qualifying utility may count high-efficiency cogeneration owned and used by a retail electric customer to meet its own needs. High-efficiency cogeneration is the sequential production of electricity and useful thermal energy from a common fuel source, where, under normal operating conditions, the facility has a useful thermal energy output of no less than thirty-three percent of the total energy output. The reduction in load due to high-efficiency cogeneration shall be: (i) Calculated as the ratio of the fuel chargeable to power heat rate of the cogeneration facility compared to the heat rate on a new and clean basis of a best-commercially available technology combined-cycle natural gas-fired combustion turbine; and (ii) counted towards meeting the biennial conservation target in the same manner as other conservation savings.
- (e) The commission may determine if a conservation program implemented by an investor-owned utility is cost-effective based on the commission's policies and practice.
- (f) The commission may rely on its standard practice for review and approval of investor-owned utility conservation targets.

As part of its Biennial Conservation Plan, PSE filed its 2016-2017 electric conservation Target (also, "EIA Penalty Target") with the UTC on October 29 2015 in Docket UE-152058.



The Commission approved the EIA Penalty Target of 537,078 MWh on December 17 with conditions, thus signifying that the savings value represented PSE's total obligation to pursue all available conservation that is available, cost-effective, reliable, and feasible for 2016-2017. In Order 01, Commission comments acknowledged PSE's 2016-2017 Decoupling Penalty Target of 27,993 MWh.

An overview discussion of the development of the two-year Target, including the determination of PSE's pro-rata share, is available in *Exhibit i: Ten-Year Potential and Two-Year Target* of the 2016-2017 BCP. Details of the biennial acquisition target methodology are available in PSE's 2015 IRP.<sup>48</sup>

Relative to PSE's demonstrated compliance with part (c) of RCW 19.285.040(1), PSE engaged in dialogue with multiple customers and consultants regarding potential combined heat and power projects that met the RCW criteria during the 2016-2017 biennial conservation period, but no projects were pursued beyond initial feasibility studies since they were not financially viable.

PSE sought to apply energy efficiency incentives to these projects to improve their financial attractiveness, but still no customers moved forward with projects. In fact, PSE launched a webpage that provides more information regarding the incentives and technology:

<http://www.pse.com/savingsandenergycenter/ForBusinesses/Pages/Combined-Heat-and-Power.aspx>

Additionally, relative to PSE's compliance with section (d) of RCW 19.285.040 (1), PSE demonstrated rigor and consistency with the NW Power and Conservation Council (Council) methodology in its calculations of all 2016-2017 electric cost-effectiveness results as reported and filed in Exhibit 2: *Cost Effectiveness Results* in each Annual Report, and was consistent with all regulatory requirements.

Relative to the RCW 19.285.040(1) stipulation that the available, reliable and feasible conservation must be cost-effective, PSE fully complied with condition (10)(a), that indicates that the Total Resource Cost (TRC) is the Commission's primary cost-effectiveness test:

The Commission uses the TRC, as modified by the Council, as its primary cost-effectiveness test. PSE's portfolio must pass the TRC test. In general, each program shall be designed to be cost-effective as measured by this test. PSE must demonstrate that the cost-effectiveness tests presented in support of its programs and portfolio are in compliance with the cost-effectiveness definition (RCW 80.52.030(7)) and system cost definition (RCW 80.52.030(8)) and incorporate, quantifiable non-energy benefits, the 10 percent conservation benefit and a risk adder consistent with the Council's approach.

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<sup>48</sup> Docket UE-141170.

An outline of the major elements of the Council's methodology for determining achievable conservation potential, including the Total Resource Cost test, is available on the Council's website at(:

[http://www.nwcouncil.org/energy/powerplan/6/supplycurves/I937/CouncilMethodology\\_outline%202 .pdf](http://www.nwcouncil.org/energy/powerplan/6/supplycurves/I937/CouncilMethodology_outline%202.pdf)

### *M. WAC 480-109*

This report complies with WAC 480-109-120(4), which requires utilities to report by June 1 of each even-numbered year on its progress in meeting the electric conservation Target. Consistent with subpart (a), the Report contains the conservation Target, the expected and actual electricity savings from conservation, and expenditures made to acquire conservation.

PSE will post the Report contemporaneously on PSE.com, as required by WAC 480-109-120(6), following the Commission's ruling on PSE's 2016-2017 electric conservation achievement.



PSE provides references to the applicable locations within this report that comply with WAC 480-109-120(4)(b) in Table III-1.

**Table III-1: 2016-2017 Report References to Applicable WAC 480-109-120(4) Requirements**

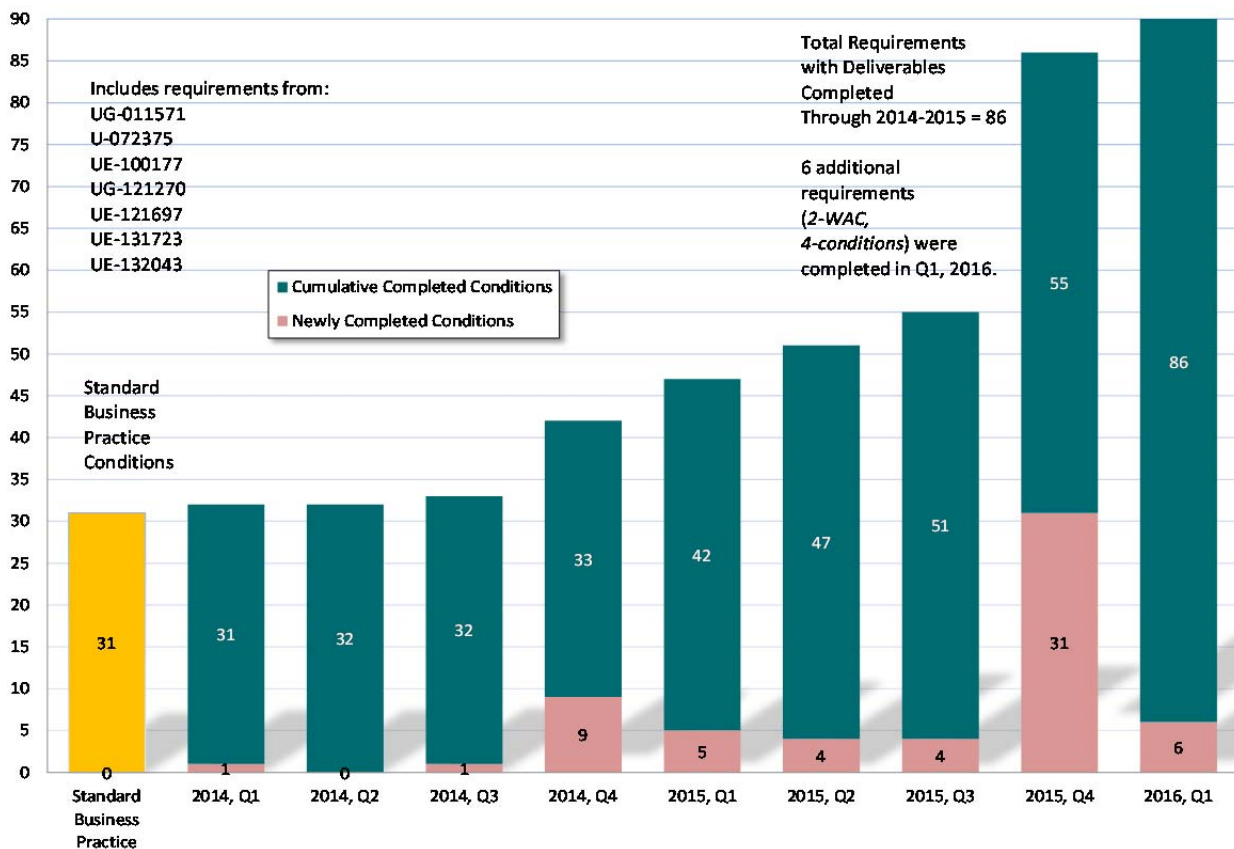
WAC 480-109 Compliance	
Section 120(4)(b) Requirement The biennial conservation report must include:	Chapter & Section of BCR
(i) The biennial conservation target;	Chapter 1, Part I.A provides the target in Table I-1.
(ii) Planned and claimed electricity savings from conservation;	Chapter 1, Part I.A provides the target in Table I-1.
(iii) Budgeted and actual expenditures made to acquire conservation;	Chapter 1, Part I.A provides the target in Table I-1.
(iv) The portfolio-level cost-effectiveness of the actual electricity savings from conservation;	Exhibit 2: 2016-2017 Electric Cost-Effectiveness provides cumulative two-year Portfolio results.
(v) An independent third-party evaluation of portfolio-level biennial conservation savings achievement;	Attachment 1 provides SBW's Biennial Electric Conservation Achievement Review.
(vi) A summary of the steps taken to adaptively manage conservation programs throughout the preceding two years; and	Chapter 2, Part F, Tables II-11 and II-12 provide summaries and references of adaptive management steps discussed in the 2016 and 2017 Annual Reports of Energy Conservation Accomplishments.
(vii) Any other information needed to justify the conservation savings achievement.	Chapter 2, Part D provides background on PSE's savings validation processes. Chapter 3 provides summary discussions of regulatory compliance, and Chapter 4 provides background on Stakeholder Engagement.

Please note that it is likely that there are more than one location for the indicated discussion. Those listed in the "Chapter & Section" column indicate the primary discussion location.

## N. Orders and Conditions

Figure III-1 presents PSE’s compliance with all Order deliverables throughout the 2016-2017 biennium, and indicates that PSE complied with all regulatory requirements. It is noteworthy that eight conditions overlapped the biennium into 2018, six of which<sup>49</sup> are completed as of the filing of this Report and its supporting documents.

**Figure III-1: Completion Status of all 2016-2017 Requirements**



It is important to recognize that PSE manages electric conservation deliverables from four separate Commission Orders:

- 1) The 2008 Merger Agreement, Docket U-072375, commitments number 22 and 23, regarding the funding of low-income programs;

<sup>49</sup> The two remaining requirements are pending Commission approval of this 2016-2017 electric Biennial Conservation Report.



- 2) The 2010 Electric Settlement Agreement, Sections A through J and L, Docket UE-100177;
- 3) The amended decoupling petition in Docket UE-121697, relative to achieving 5 percent above the Commission-approved Target; and
- 4) Conditions in Attachment A of Order 01 of Docket UE-152058.

Further, with reference to condition (10)(a), PSE's application of cost-effectiveness is consistent with the definitions enumerated in RCW 80.52.030(7) and (8):

- (7) "Cost-effective" means that a project or resource is forecast:
  - (a) To be reliable and available within the time it is needed; and
  - (b) To meet or reduce the electric power demand of the intended consumers at an estimated incremental system cost no greater than that of the least-cost similarly reliable and available alternative project or resource, or any combination thereof.
- (8) "System cost" means an estimate of all direct costs of a project or resource over its effective life, including, if applicable, the costs of distribution to the consumer, and, among other factors, waste disposal costs, end-of-cycle costs, and fuel costs (including projected increases), and such quantifiable environmental costs and benefits as are directly attributable to the project or resource.



## IV. Stakeholder Engagement

In addition to Integrated Resource Plan Advisory Group (IRPAG) and CRAG involvement in the IRP development throughout 2015, PSE maintained a close association with the CRAG throughout 2016 and 2017. CRAG meetings that focused on 2016-2017 planning began with the May 21, 2015 meeting. Savings goals were the primary topic of the July 16, 2015 meeting. In the August 20 CRAG meeting, PSE shared its draft budget and program details, and the draft tariff revisions were presented in the September 17 meeting. PSE also partnered with CRAG members throughout the last half of 2015 to collaboratively design the set of biennial conditions listed in Attachment A of Order 01 in Docket UE-152058. This work led to the Commission approving the Ten-Year Achievable Conservation Potential and Two-year Conservation Target on December 17, 2015 in that Docket.

Consistent with regulatory requirements and continuous improvement principles, PSE provided numerous opportunities for the CRAG to review the progress of program development and implementation, its suite of customer offerings, preview measure and savings plans and measure revisions, and BECAR drafts throughout the biennium. PSE presented a major update to its programs, measure offerings, and budgets in the 2017 ACP to the CRAG for review and comment prior to its filing on November 14, 2016.

PSE consistently demonstrated its adaptive management in sharing details of new and modified programs, updated Exhibits, marketing initiatives, current and forecast expenditures, and reviews of measure revisions. These efforts have been acknowledged by certain CRAG members.

Relative specifically to measure offerings and their savings values, PSE also provided several updates to its Exhibit 4: *Energy Efficiency Measures, Incentives & Eligibility* to the CRAG. To make document review more effective, PSE provided CRAG members with a mark-up Exhibit 4, that made comparing existing versus updated values more straightforward, in addition to the “clean” version of Exhibit 4. In its 2016 and 2017 Annual Reports of Energy Conservation Accomplishments and the 2016-2017 planning documents,<sup>50</sup> PSE included a comprehensive list of prescriptive and selected calculated measures that were available for or planned for program use during the reporting period. PSE provided all files to CRAG members via a PSE secure FTP (File Transfer Protocol) access site prior to or concurrent with its filing.

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<sup>50</sup> The 2016-2017 Biennial Conservation Plan and the 2017 Annual Conservation Plan.



Throughout the biennium, PSE met with the CRAG nine times to provide program updates, discuss program implementation strategies, and long-term conservation goals. CRAG members received each meeting's presentation slides, along with meeting summary notes that capture agreements, decisions, and action items.

PSE also provided comprehensive reviews of program, sector, and portfolio-level cost-effectiveness calculations, leading to Total Resource Cost (TRC) Test and Utility Cost (UC) Test results. PSE includes Exhibit 2: *2016-2017 Electric Cost-Effectiveness Results* in this Report, which reflects the savings revisions discussed in Chapter 2.

## V. References

PSE provides Docket numbers<sup>51</sup> for all publications filed with the UTC relative to the 2016-2017 electric conservation EIA Penalty Target and UTC filings pertaining to the development, progress reporting, and confirming results of the 2016-2017 biennial conservation achievement in Table V-1. This electric Biennial Conservation Report of verified 2016-2017 electric conservation savings and expenditures summarizes information contained in these publications and reviewed with the CRAG at prescribed intervals throughout the biennium.

**Table V-1: Substantiating 2016-2017 Electric Savings Documents and Their Associated Docket Numbers**

Document Description	Pertaining to	WUTC Docket Number	Date Filed
2015 IRP	Development of the 10-year Potential and 2-year target	UE-141170	November 25, 2015
2016-2017 Biennial Conservation Plan	Documentation of the 10-year Potential and 2-year Target, along with program and measure details.	UE-152058	October 29, 2015
2016-2025 Ten-year Potential & 2016-2017 Two-year Conservation Target	RCW 19.285.040 requirement (Exhibit I of the 2016-2017 BCP)	UE-152058	October 29, 2015
2016 Annual Conservation Report & Exhibits	Reporting 2016 conservation accomplishments and program details	UE-152058	March 31, 2017
2017 Annual Conservation Plan	Detailed plan revisions, updating the 2016-2017 BCP, for 2017 spending and savings	UE-152058	November 14, 2016
2017 Annual Conservation Report & Exhibits	Reporting 2017 conservation accomplishments and program details	UE-152058	April 2, 2018

<sup>51</sup> Please note that these are the descriptions of the documents, rather than the formal names.



## VI. 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<sup>52</sup> 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

<p><b>Conditions</b></p>	<p>Also “2010 Electric conservation Settlement Agreement Terms conditions”, “Energy Independence Act conditions” or “Order 01, Docket UE-152058 conditions”.</p> <p>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 UE-152058.</p>
<p><b>Deemed Measure</b></p>	<p>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.</p>
<p><b>Electric Savings</b></p>	<p>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.</p>
<p><b>Energy Efficiency</b></p>	<p>A department of Puget Sound Energy that implements energy conservation programs. Formerly referred to as Energy Efficiency Services or Customer Solutions.</p>

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<sup>52</sup> 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

<b>Measure</b>	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. <sup>53</sup> Measures must also meet cost-effectiveness standards.
<b>Program</b>	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.
<b>System</b>	In this document, System may have the following meanings: <ol style="list-style-type: none"> <li>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.</li> <li>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.</li> </ol>

*B. Savings-Specific Definitions*

<b>Decoupling Penalty Target</b>	5 percent above the “Total Base Savings”: $[(\text{Total Biennial Potential} + \text{Legacy HER}) * 0.05]$
<b>EIA Penalty Target</b>	PSE-specific electric conservation savings, less decoupling: $[\text{Total Portfolio Savings} - (\text{NEEA deemed savings} + \text{Pilots With Uncertain Savings} + \text{Decoupling Penalty Target})]$

<sup>53</sup> Schedule 83, section 4, Definitions, #m. Schedule 183, section 4, #l.



### Savings-Specific definitions, continued

<b>Excess Savings</b>	<p>There are two classifications of Excess Savings:</p> <p>(1) The difference of [Total Utility Conservation Achievement – Total Utility Conservation Goal]. This is the “Excess Savings” reported in the WA Department of Commerce EIA report.</p> <p>(2) The difference of [Total Portfolio Savings – (EIA Penalty Target + Decoupling Penalty Target)]. This is the “Excess Savings” that are applicable to UTC rulings of PSE’s achievement of its Penalty Targets.</p>
<b>Portfolio Savings Target/Achievement</b>	All programs and initiatives that comprise the entire suite of Energy Efficiency services, as listed in PSE’s Exhibit 1: Savings and Budgets.
<b>PSE Deemed</b>	<p>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).</p> <p>This term is used in the <u>Savings Type</u> field in Appendix B, List of Measures.</p>
<b>PSE-Specific Savings</b>	<p>Savings attributable to programs directly managed by PSE, and programs with savings confidence:</p> <p>[Portfolio Savings Achieved – (NEEA + Pilots with Uncertain Savings)]</p>
<b>RTF Deemed</b>	Former reference to the RTF’s UES (Unit Energy Savings).
<b>Total Utility Savings</b>	This is the sum of PSE’s two Penalty Targets.

### C. 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.

<b>aMW</b>	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.
<b>BEM</b>	Business Energy Management. Programs comprising commercial/industrial grants, large power users, custom lighting grants, and business rebates.

## Acronyms, continued

<b>CRAG</b>	Conservation Resource Advisory Group
<b>DSM</b>	Demand-Side Management. Typically used as an acronym for energy conservation.
<b>EM&amp;V</b>	Evaluation, Measurement and Verification
<b>HVAC</b>	Heating, Ventilation and Air Conditioning
<b>kWh</b>	Kilowatt Hour. 1,000 watt-hours = 1 kWh, which is equivalent to 10 100-watt incandescent lamps being turned on for one hour.
<b>MWh</b>	Megawatt-hour. 1,000 kWh = 1 MWh
<b>NEEA</b>	Northwest Energy Efficiency Alliance
<b>RCW</b>	Revised Code of Washington
<b>REM</b>	Residential Energy Management. Programs comprising consumer rebates, weatherization, space and water heating, multifamily structures, and low-income weatherization.
<b>TRC</b>	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). <sup>54</sup>
<b>UC</b>	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. <sup>55</sup>
<b>WAC</b>	Washington Administrative Code
<b>WUTC</b>	Washington Utilities and Transportation Commission. Also referred to as UTC.

<sup>54</sup> Schedule 83, section 4, Definitions, #z. Schedule 183, section 4, #x.

<sup>55</sup> Schedule 83, section 4, Definitions, #bb. Schedule 183, section 4, #z.



## Acknowledgements

Puget Sound Energy believes that it is important to recognize our customers, who provide the energy efficiency funding and make efficient choices daily. PSE appreciates retailers, contractors, and its trade allies, who act as our partners, providing expertise and installation “boots on the ground” to engage our customers.

PSE also appreciates the concerted and focused effort of its CRAG members throughout the 2016-2017 biennium. CRAG members demonstrated a commitment to our shared vision for success by actively participating in all planning and review processes, and were forthcoming and positive in expressing their ideas and suggestions. Together, we made significant strides in establishing a candid forum, focusing on customer needs, maximizing business transparency, and earned a healthy level of trust. We look forward to an energized and positive 2018-2019 biennium.

Lastly, as SBW indicated in their 2016-2017 electric savings review, the veracity of PSE’s electric conservation savings is well-documented and carefully verified. This would not be possible without our dedicated Energy Efficiency staff, who consistently exceed customer expectations while meeting challenging goals and demonstrate fiscal responsibility with a high degree of attention to detail.

*Thank you!*

*The men and women of Energy Efficiency*