PACIFIC POWER
A DIVISION OF PACIFICORP

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October 30, 2015

VIA ELECTRONIC FILING
AND OVERNIGHT DELIVERY

Steven V. King
Executive Director and Secretary
Washington Utilities and Transportation Commission
1300 S. Evergreen Park Drive SW
P.O. Box 47250
Olympia, WA 98504-7250

RE: Docket UE-15_____—PacifiCorp's 2015 Biennial Conservation Plan

In accordance with WAC 480-109-120, Pacific Power & Light Company, a division of PacifiCorp (PacifiCorp or Company), submits its 2015 Biennial Conservation Plan to the Washington Utilities and Transportation Commission. The 2015 Biennial Conservation Plan includes the company's Ten-Year Conservation Potential and 2016-2017 Biennial Conservation Target (Plan), and its Demand Side Management (DSM) Business Plan. The DSM Business Plan is provided as Appendix 7 to the Plan. The appendices are provided on the attached CD.

The Company maintains a group of external stakeholders, the Washington Demand-Side Management Advisory Group (Advisory Group), to advise the Company in accordance with WAC 480-109-110. In 2015, the Advisory Group met with the Company on March 18, 2015, June 9, 2015, August 20, 2015, September 14, 2015 (conference call), and October 23, 2015 (conference call), in addition to email correspondence and exchanges. The Company appreciates the guidance and input the Advisory Group provided during development of this plan.

It is respectfully requested that all data requests be sent to the following, with copies to the Company's counsel:

By Email (preferred): datarequest@pacificorp.com

By Regular Mail: Data Request Response Center
PacifiCorp
825 NE Multnomah Street, Suite 2000
Portland, OR 97232

If you have any informal inquiries, please contact Ariel Son at (503) 813-5410.

Sincerely,

R. Bryce Dalley /AS
R. Bryce Dalley
Vice President, Regulation

Enclosures

PacifiCorp's Ten-Year Conservation Potential and 2016 - 2017 Biennial Conservation Target for its Washington Service Area

October 30, 2015

PACIFIC POWER
A DIVISION OF PACIFICORP

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Introduction

Seeking to increase energy conservation in Washington, voters passed Initiative Measure No. 937 (codified as RCW 19.285 and WAC 480-109) in 2006. As a result, each electric utility subject to the jurisdiction of the Washington Utilities and Transportation Commission ("Commission") is required to project its cumulative ten-year electric conservation potential and to establish biennial conservation targets.

WAC 480-109, as revised in 2015, requires electric utilities to establish their initial ten-year conservation potential by January 1, 2010, and to revise their ten-year conservation potential every two-years thereafter.[1] In approving PacifiCorp's 2014-2015 biennial conservation target in Docket UE-132047, and through the approval of the revised WAC 480-109 rules in March of 2015,[2] the Commission provided direction for the Company to file its biennial conservation plan for 2016-2017 together with identification of its 2016-2025 achievable conservation potential by November 1, 2015.[3]

In determining its ten-year conservation potential, WAC 480-109-100 directs utilities such as PacifiCorp to pursue all available conservation that is cost-effective, reliable, and feasible. The potential must be derived from the utility's most recent Integrated Resource Plan ("IRP"), including any information learned in its subsequent resource acquisition process, or the utility must document the reasons for any differences. When developing this projection, utilities must use methodologies that are consistent with those used in the Northwest Conservation and Electric Power Plan. The projection must include a list of each measure used in the potential, its unit energy savings value, and the source of that value.[4]

With respect to establishing a biennial conservation target, WAC 480-109-100 (3) states that: a) The biennial conservation target must identify, and quantify in megawatt-hours, all available conservation that is cost-effective, reliable, and feasible, and b) The biennial conservation target must be no lower than a pro rata share of the utility's ten-year conservation potential. In WAC 480-109-060 (19) "pro rata" share was defined as "the calculation dividing the utility's projected ten-year conservation potential into five equal proportions to establish the minimum biennial conservation target."

In compliance with these requirements and the Commission's direction, the Company provides this report and filing for Commission consideration and approval.

Overview of 2016-2017 Biennial Conservation Plan

As required by WAC 480-109-100 (2) (b), the key source of PacifiCorp's ten-year conservation potential is the Company's 2015 IRP, which was filed with the Commission in Docket UE-140546, a copy of which is provided as Appendix 1 to this report.

[1] WAC 480-109-100 (2).
[2] WAC 480-109 revised rules became effective April 12, 2015, 30 days after approval.
[3] Docket UE-132047, Order 01, Attachment A, Section 8(d) and WAC 480-109-100 (2).
[4] WAC 480-109-100 (2) (a) through (c).

The Company's 2015 IRP was informed by the energy efficiency potential identified in PacifiCorp's *Demand-Side Resource Potential Assessment for 2015-2034* ("Conservation Potential Assessment", or "CPA")[5] and represents loads and opportunities specific to the Company's Washington service area. A copy of the Conservation Potential Assessment is provided as Appendix 2 to this report.

Efficiency opportunities from waste heat to power and regenerative technologies were not captured in the Company's Conservation Potential Assessment or offered as a resource option in the 2015 IRP since the study schedules did not align. For the development of this conservation forecast the Company relied on a 2014 evaluation of these technologies performed by CLEAResults in response to a Company commitment in its 2013 IRP Action Plan. The CLEAResults evaluation is included as Appendix 6 to this report. Additional information on the opportunities identified are included in the "Conservation Potential and Conservation Target" section of this report and in Appendix 4, "Additional Detail – Forecast Adjustments."

The potential assessment and costs of high-efficiency cogeneration resources was derived from a study conducted by Navigant Consulting, Inc. ("Navigant Study").[6] The Navigant study is an economic assessment and penetration forecast of Distributed Generation ("DG") resources within PacifiCorp's service areas through 2033. The Navigant Study forecast was applied as a decrement to the company's base load forecast used in the development of the 2015 IRP and is provided as Appendix 12 to this report. No economic high-efficiency cogeneration opportunities were identified in the study for inclusion in the Company's 2016-2025 conservation forecast. More information on high-efficiency cogeneration is provided in both Appendix 4 (to this report) and in the "Conservation Potential and Conservation Target" section on this report.

The conservation potentials for distribution efficiency and production efficiency were based on 2011-2012 studies conducted by Commonwealth Associates, Inc. ("Commonwealth study")[7] and Cascade Energy, Inc. ("Cascade studies"),[8] respectively. Like the 2014-2023 conservation forecast and biennial target, no measurable and cost-effective distribution efficiency resource potential was identified for inclusion in the current plan. Cost-effective production efficiency project work began in 2012 at the Chehalis power plant (2012-2013 biennium) and concluded in 2015 (2014-2015 biennium) with project completions at the Hermiston power plant. A lighting upgrade project identified for the Jim Bridger power plant was not approved by the joint owner. The remaining facilities owned by the Company show no significant efficiency improvements available at this time. Additional information on both distribution efficiency and production efficiency forecasts and potential is provided starting on page 20. Copies of the Cascade and Commonwealth studies are provided as Appendices 10 and 11 to this report.

[5] This study, prepared by The Applied Energy Group (AEG), is included as Appendix 2 to this report. The study is also available at http://www.pacificorp.com/es/dsm.html. The study contains the most accurate assessment of conservation potential available in PacifiCorp's service territories to date.

[6] This study, prepared by Navigant Consulting, is included as Appendix 12 to this report. The study is also available at http://www.pacificorp.com/es/irp/irpsupport.html.

[7] Commonwealth Associates, Inc., PacifiCorp Washington service area, May, 2011. The study is included as Appendix 11 to this report.

[8] Seven studies conducted by Cascade Energy, Inc. between 2011 and 2012. These studies are included as Appendix 10 to this report.

Collectively these studies and evaluation represent independent and reliable assessments of the magnitude, timing, and costs of conservation potential available specific to PacifiCorp prior to screening for cost-effectiveness/economics, allowed and required adjustments and other considerations that impacted the Company's final consolidated conservation forecast and biennial target.[9] These adjustments and other considerations are explained further later in this report (see "Conservation Potential and Conservation Targets") and are detailed in Appendix 4.

The consolidated ten-year conservation potential determined by PacifiCorp and documented in this report is **457,530** Megawatt-hours ("MWh"). Consistent with the rules under WAC-480-109, PacifiCorp's ten-year conservation potential represents the Company's 2015 IRP results adjusted to account for recent developments affecting the magnitude of conservation opportunities (e.g., changes in Regional Technical Forum deemed measure savings, PacifiCorp program evaluation results, adjustments for additional opportunities not identified in the company studies, etc.), and cost-effective resource opportunities identified for distribution efficiency, production efficiency and high-efficiency cogeneration.

Areas reviewed for process differences included planning methodologies, modeling methodologies and practices and measure sets. In the case of distribution and production efficiency, considerations such as the ability to reliably measure distribution efficiency savings, system performance, system engineering practices, cost allocations for plant investments, plant reliability, and plant ownership, among other factors, had to be taken into consideration in assessing the conservation forecast from these sources.

Table 1 shows PacifiCorp's consolidated ten-year conservation potential for the 2016–2025 period by type of conservation sources considered.[10]

Table 1: Summary of 2016-2025 Conservation Potential (MWh)

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	10-Year	2-Year
Energy Efficiency	49,292	43,767	57,251	57,404	48,068	36,194	47,043	39,377	48,955	30,178	457,530	93,059
Distribution Efficiency	-	-	-	-	-	-	-	-	-	-	-	-
Production Efficiency	-	-	-	-	-	-	-	-	-	-	-	-
High efficiency Cogen	-	-	-	-	-	-	-	-	-	-	-	-
Total	**49,292**	**43,767**	**57,251**	**57,404**	**48,068**	**36,194**	**47,043**	**39,377**	**48,955**	**30,178**	**457,530**	93,059

Prior to adjusting the biennial target for the impacts of the Northwest Energy Efficiency Alliance ("NEEA"), as discussed in more detail later in this report on page 24, PacifiCorp's 2016-2017 biennium conservation target is 93,059 MWh and represents the first two years of the Company's ten-year conservation forecast, which for the biennium, is greater than the "pro rata" share[11] of the ten-year forecast as defined in WAC 480-109-060 (19). Following the adjustment

[9] Aligning Company methodologies with those of the Council and RTF , accounting for West Control Area (WCA) cost allocation methodology adopted by Washington for generating plant investments, plant ownership, plant maintenance schedules, economics, etc.

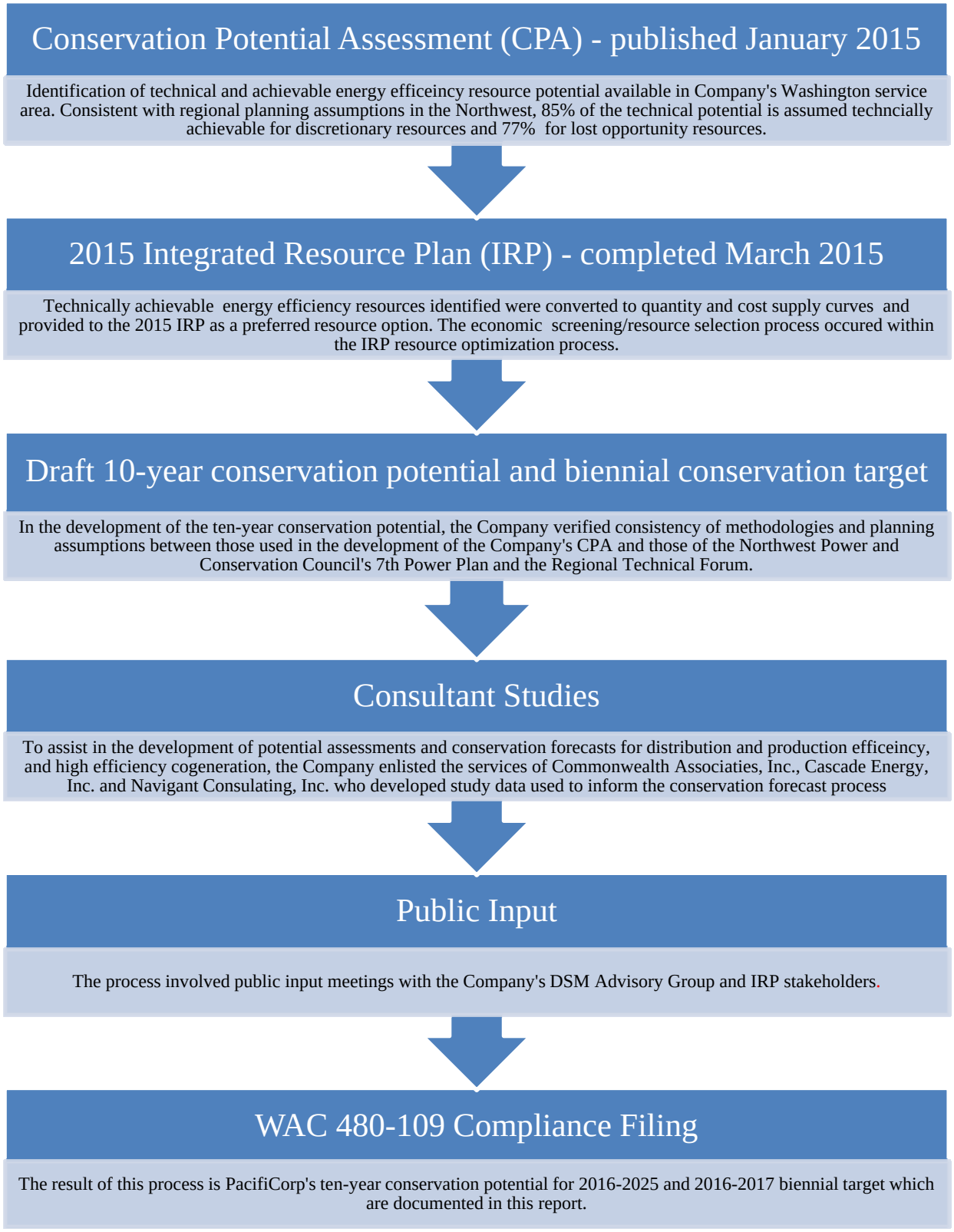
[10] Conservation potentials for end-use efficiency and behavioral programs are captured in the energy efficiency line in Table 1.

[11] WAC 480-109-060(19) defines "pro rata" as "means the calculation dividing the utility's projected ten-year conservation potential into five equal proportions to establish the minimum biennial conservation target."

for NEEA, PacifiCorp's 2016-2017 biennium conservation target for which the Company seeks approval through this report is **87,814 MWh**.

Figure 1 below presents an overview of the process used in the development of PacifiCorp's ten-year conservation forecast and the 2016-2017 biennium conservation target.

Figure 1: Overview of I-937 Conservation Forecast Process



Source Documents

As discussed above, the Company relied on several studies and PacifiCorp's 2015 IRP and related assumptions in developing its consolidated ten-year conservation potential. These studies included (1) PacifiCorp's January 2015 Conservation Potential Assessment, (2) The 2014 CLEAResult evaluation on waste heat to power and regenerative technology opportunities, (3) the Commonwealth study on distribution efficiency opportunities, (4) the Cascade studies on opportunities at the Company's non-hydro generation facilities, and (5) the Navigant Consulting study on DG resources, including high-efficiency cogeneration.

The relevant information used in preparing the Company's ten-year plan is outlined below.

2015 Integrated Resource Plan

Assumptions used for the 2015 IRP are documented throughout the IRP report and associated Appendices. References for key assumptions are provided below:

- Load forecasts, existing/new resources, and forecasted capacity and energy deficits are provided in Chapter 5 with further load forecast details included in Appendix A
- Resource option assumptions are provided in Chapter 6
- Financial assumptions are cited on pages 141-142
- Core and sensitivity case design assumptions are cited on pages 142-155
- Carbon dioxide compliance modeling and cost assumptions are cited on pages 143-149
- Wholesale electricity and natural gas price forecast assumptions for core cases are cited on page 148-149
- Alternative load growth assumptions for scenario analysis are cited on page 198

Conservation Potential Assessment (energy efficiency)

The Company's Conservation Potential Assessment, consisting of five volumes, documents the assumptions used to derive conservation potential estimates and associated costs. Appendices A through H in Volume 4 provide detailed supplementary information for conservation resources including assumed measure costs and savings, end-use saturations, electric fuel shares, current market shares, and calculated 2034 measure potential by state, sector, and market segment. Appendix G in Volume 4 provides a comparison between RTF or Northwest Power Planning and Conservation Council's ("Council") 6th Plan[12] unit energy savings values[13] and those used in the Company's Conservation Potential Assessment.

The Conservation Potential Assessment incorporated potential from emerging technology measures that are not yet widely available but are expected to become so over the planning horizon (See Appendix D to that study). Emerging technology measures are in varying stages of "market readiness," and the potential study includes measures only after they are expected to become market-ready. This is consistent with the Council's regional power plan.

[12] The Council's 7th Plan was not available at the time the Conservation Potential Assessment was developed.
[13] The RTF routinely updates unit energy savings values as new information becomes available. Appendix G of the 2015 CPA presents the RTF values as of mid-2014 when the CPA measure development work was performed.

CLEAResult Evaluation (waste heat to power and regenerative technologies)

The 2013 IRP Action Plan included a Company commitment to perform "an evaluation of waste heat to power where generation is used to offset customer requirements". The evaluation, performed by CLEAResult, was completed in mid-2014 and is included as Appendix 6 to this document. The evaluation estimated the cost and available potential of the following technologies in each of the Company's six states:

- Waste Heat to Power
    - High Temperature Waste Heat Recovery
    - Organic Rankine Cycle ("ORC")
    - Steam Power Generation Optimization
- Regenerative Braking
    - Elevators
    - Internal Conveyors
- Micro Hydro

Information on the Company's Washington service area from the evaluation was used in the development of the Company's 2016-2025 conservation forecast as described in more detail later in this report.

Commonwealth Study (distribution efficiency)

The purpose of the Distribution System Efficiency Study was to identify the potential energy and monetary savings associated with implementing a distribution system loss reduction and conservation voltage regulation application. Commonwealth Associates, Inc., with Utility Planning Solutions, PLLC, under contract to PacifiCorp, completed a Distribution System Efficiency Study on 19 distribution feeders located in PacifiCorp's Walla Walla, Yakima and Sunnyside, Washington service areas. The study addresses the actions and system improvement ("SI") necessary to comply with Voltage Optimization ("VO") protocol thresholds and estimates the potential for SI and VO efficiency energy savings. Energy savings for PacifiCorp's distribution system projects completed during the 2012-2013 biennium were not able to be measured (or confirmed) using the RTF's Simplified VO Measurement and Verification ("M&V") Protocol approved on May 4, 2010. This was due to threshold violations and the existing (lower end) voltage settings currently in place. Nevertheless, the protocol was used to estimate savings, which were found to be small or negative, and less than ten percent of forecast. The protocol has proved ineffective at M&V of VO reductions to PacifiCorp's distribution system.

Cascade Studies (production efficiency)

The purpose of the Cascade Energy production efficiency studies is to identify energy efficiency opportunities at the non-hydro generation facilities that provide electricity to customers in the State of Washington. Included in the studies are the audit results of the coal-fired, natural gas and wind generating facilities that PacifiCorp has full or part ownership[14]. The Cascade studies also

[14] Studies exclude an analysis of the Colstrip plant, the joint owner didn't agree to a study or committing to efficiency upgrades at this time.

included a preliminary analysis of the cost-effectiveness of the efficiency projects identified. Additional analysis of the costs of projects identified was conducted by other outside companies to provide more confidence on the cost-effectiveness of projects.

The cost-effectiveness methodology was further examined to determine its applicability to generation resources. Through this process, the Company determined that modifications were needed to align cost-effectiveness screening with how costs are recovered[15]. In particular, the credit in the calculation given to offset transmission and distribution costs was not a relevant credit to apply to savings originating at the generator. Details on the methodology for cost-effectiveness screening of production efficiency potential are provided in Appendix 2 of "PacifiCorp's Washington Demand-side Management 2016-2017 Business Plan" ("DSM 2016-2017 Business Plan"), Appendix 7 to this report.

Navigant Study (high efficiency cogeneration)

The key objective of the Navigant study was to develop distributed generation ("DG") resource penetration forecasts to support the 2015 IRP. The purpose of this study was to project the level of DG the Company's customers might install over the next twenty years. Two of the five resources evaluated were combined heat and power reciprocating engines and power micro-turbines. In assessing the technical and market potential of each distributed generation resource and opportunity, the study considered a number of key factors, including: technology, industry practices, net metering policies, tax incentives, utility rebates, O&M costs, historical performance and expected performance, availability, and consumer behavior and market penetration. Navigant conducted a Fisher-Pry[16] payback analysis to determine the cost-effective market penetration for DG technologies.

Basis of Savings

Sources of savings

The ten-year conservation potential identifies resource opportunities without regard to how these opportunities will be realized or achieved. Savings may be achieved using a variety of methods and strategies which may include but are not limited to the following:

- Customer participation in Company programs approved by the Commission,
- Utility system initiatives such as distribution and production efficiency,
- Savings acquisitions from regional efforts such as NEEA activities,
- Quantifiable savings from energy code and standards changes not already accounted for in the ten-year potential[17], and

[15] Where costs and benefits are distributed on a system basis and recovery is through general rate cases.
[16] Fisher-Pry are researchers who studied the economics of "S-curves", which describe how quickly products penetrate the market. Navigant codified their findings based on payback period, which measures how long it takes to recoup initial high first costs with energy savings over time.
[17] The Company's CPA accounted for known changes in codes and standards, including those that had been enacted, but had not yet taken effect. See pages 3-6 through 3-8 in Volume 2 of the CPA report for a list of recent and upcoming changes in standards considered in the analysis.

- Quantifiable savings from naturally occurring conservation[18] not already captured in one of the above types of resources.

As required in WAC 480-109-100 (1) (b) "Types of conservation include, but are not limited to:" PacifiCorp considered conservation potential from the following types of conservation sources in the development of its ten-year conservation forecast:

- End-use efficiency;
- Behavioral programs;
- High-efficiency cogeneration;
- Production efficiency;
- Distribution efficiency; and
- Market Transformation

Baseline Assumption

In response to stakeholder input during the 2014-2015 biennial target setting process, the Company is tracking changes in unit energy savings utilized in the program and will provide an estimate of the impacts as part of that biennium's reporting process. The intent is to provide information on the magnitude of risk associated with not freezing baselines in future conservation forecasts and target setting periods.

Given that the impacts will not be known in time to inform the target setting process for the current biennium period, the Company's DSM Advisory Group came to general agreement after a number of discussions in September, 2015, that the Company may continue to use the frozen baseline methodology for the 2016-2017 reporting period.

Budget and Savings by Program

The Company's DSM 2016-2017 Business Plan is provided as Appendix 7 to this report. The business plan contains forecasted savings and expenditures from the Company's existing programs as well as measure focus areas needing to be addressed to effectively pursue the Company's 2016-2017 biennial target. The business plan also provides cost-effectiveness results in support of the Company's direction and program strategies. The Company may add programs or make changes to existing programs as filed revisions to the business plan during the 2016-2017 biennium under the adaptive management program delivery structure, which includes consultation with PacifiCorp's DSM Advisory Group. A variance between planned and actual savings is likely given some level of uncertainty in customer participation levels in the programs during the biennium period. As required by WAC 480-109-120 (2) the Company will file an update to its DSM 2016-2017 Business Plan on or before November 15, 2016, any changes to program details and annual budget.

[18] Naturally occurring conservation refers to reductions in energy use that occur due to normal market forces, such as technological change, energy prices, market transformation efforts, and improved energy codes and standards. The Company will report the savings achieved by NEEA, which include quantifiable savings from market transformation and improved energy codes and standards, however these savings will not count towards the achievement of the Company's 2016-2017 biennial target.

Conservation Potential and Conservation Targets

Ten-Year Conservation Potential

This section describes how the individual conservation potentials for energy efficiency, distribution and production efficiency, and high efficiency cogeneration were determined in the development of the Company's ten-year conservation forecast.

Energy Efficiency

PacifiCorp's ten-year energy efficiency conservation potential includes the following components:

1. The completion of an update to the Company's Conservation Potential Assessment;
2. The economic screening/selection of resources through the 2015 IRP process;
3. Changes to the 2015 IRP conservation resource selections due to adjustments informed by recent RTF updates, errors found in the pricing or savings information of select measures that initially led to their omission from IRP selection, supplemental studies, etc., and the involvement from PacifiCorp's DSM Advisory Group and other interested parties as documented in this report; and
4. Company program evaluation information.

Table 2 and Table 3 below respectively show the annual and cumulative ten-year conservation potential for energy efficiency resources in MWh, before and after the adjustments informed by components 3 and 4 above[19].

Table 2: 2016 – 2025 Annual Energy Efficiency Potential (MWh)

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	10-Year	2-Year
2015 IRP Selections	41,200	44,600	44,260	48,610	38,230	40,240	41,910	44,270	43,740	36,040	423,100	85,800
Total of Adjustments	8,092	(833)	12,991	8,794	9,838	(4,046)	5,133	(4,893)	5,215	(5,862)	34,430	7,259
2015 IRP with Adjustments	**49,292**	**43,767**	**57,251**	**57,404**	**48,068**	**36,194**	**47,043**	**39,377**	**48,955**	**30,178**	**457,530**	93,059

Table 3: 2016 – 2025 Cumulative Energy Efficiency Potential (MWh)

[19] Adjusted forecast is prior to an adjustment for the impact of NEEA in 2016-2017 as described in more detail later in this report.

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	10-Year
2015 IRP Selections	41,200	85,800	130,060	178,670	216,900	257,140	299,050	343,320	387,060	423,100	423,100
Total of Adjustments	8,092	7,259	20,251	29,045	38,883	34,837	39,970	35,077	40,292	34,430	34,430
2015 IRP with Adjustments	**49,292**	**93,059**	**150,311**	**207,715**	**255,783**	**291,977**	**339,020**	**378,397**	**427,352**	**457,530**	**457,530**

Energy Efficiency Potential Identified in the 2015 IRP

Table 4 provides the ten-year annual and cumulative conservation potential in the 2015 IRP preferred portfolio.

Table 4: Preferred Portfolio, Washington Energy[20]

	Energy (MWh)									
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Annual	41,200	44,600	44,260	48,610	38,230	40,240	41,910	44,270	43,740	36,040
Cumulative	41,200	85,800	130,060	178,670	216,900	257,140	299,050	343,320	387,060	423,100

Pursuant to WAC 480-109-100 (2) (a), the Company's projection of its cumulative ten-year conservation potential considers conservation resources that are cost-effective, reliable and feasible. The energy efficiency resources identified in the Company's 2015 Conservation Potential Assessment (technical and technical achievable potentials) and the 2015 IRP preferred portfolio (technically achievable economic potential), reflecting adjustments detailed later in this report, are the energy efficiency related conservation resources available to PacifiCorp that are cost-effective, reliable and feasible. Provided below is further detail on the technologies, data collection, processes, procedures, and assumptions used to develop these figures as required by WAC 480-109-120 (1) (b) (iv).

Technologies

Integrated Resource Planning

PacifiCorp's IRP modeling approach determines the comparative cost, risk, and reliability attributes of different resource portfolios, each meeting a target planning reserve margin. These portfolio attributes form the basis of an overall quantitative portfolio performance evaluation. Of all the portfolios, one portfolio is selected as the Preferred Portfolio that best balances low-cost and low-risk planning objectives.

PacifiCorp relies on two models in the development and evaluation of resource portfolios: a deterministic capacity expansion optimization model called *System Optimizer ("*SO*"),* and a stochastic chronological production cost simulation model called *Planning and Risk* ("PaR)[21]. The vendor for both models is Ventyx (an ABB company). Both SO and PaR are modules in the Energy Portfolio Management ("EPM") client-server system that uses the Ventyx *ProSym* simulation engine and Microsoft SQL Server as the database server.

The SO model operates by minimizing operating costs for existing and prospective new resources, subject to system load balance, reliability and other constraints. Over the 20-year

[20] See 2015 IRP, Volume II, Appendix D, page 64. The 2015 IRP is attached as Appendix 1 to this report.

[21] See Chapter 7 of the Company's 2015 IRP for more detailed discussion on how the System Optimizer and Planning and Risk models are used in the development of PacifiCorp's IRP.

planning horizon, it optimizes resource additions subject to resource costs and capacity constraints (summer peak loads plus a planning reserve margin for each load area represented in the model). In the event that an early retirement of an existing generating resource is assumed for a given planning scenario, the SO model will select additional resources as required to meet summer peak loads inclusive of a target planning reserve margin. To accomplish these optimization objectives, the SO model simulates the dispatch of existing and potential planned generation, while considering cost and performance of existing contracts and new DSM alternatives within PacifiCorp's transmission system. In selecting potential resources, the model seek to minimize the system costs, which include the costs of existing contracts, spot market purchase costs, spot market sale revenues, generation costs (fuel, fixed and variable operation and maintenance, decommissioning, emissions, unserved energy, and unmet capacity), costs of DSM resources and amortized capital costs for existing coal resources and potential new resources. To reflect the limitation of the transmission resources, PacifiCorp uses a transmission topology that captures major load centers, generation resources, and market hubs interconnected via firm transmission paths. Transfer capabilities across transmission paths are based upon the firm transmission rights of PacifiCorp's merchant function, including transmission rights from PacifiCorp's transmission function and other regional transmission providers.

The PaR model evaluates the risk profiles of resource portfolios selected by the SO model. The stochastic simulation in PaR produces a dispatch solution that accounts for chronological commitment and dispatch constraints. The PaR simulation incorporates stochastic risk in its production cost estimates by using Monte Carlo random sampling of stochastic variables, which include: load, wholesale electricity and natural gas prices, hydro generation, and thermal unit outages. During model execution, the PaR model makes time-path-dependent Monte Carlo draws for each stochastic variable based on input parameters. The Monte Carlo draws are percentage deviations from the expected forward value of each variable. In the case of natural gas prices, electricity prices, and regional loads, the PaR model applies Monte Carlo draws on a daily basis. In the case of hydroelectric generation, Monte Carlo draws are applied on a weekly basis. For the 2015 IRP, PaR is configured to conduct 50 Monte Carlo iterations for the 20-year study period.

Conservation

PacifiCorp models conservation on a comparable basis with supply-side resources in the IRP models, consistent with state IRP standards and guidelines. For resource portfolio development, conservation is structured as a supply curve that provides capacity value and energy (based on predetermined hourly load shapes) at a given marginal levelized cost. The supply curve is specified as 189[22] distinct resource options, reflecting quantities available by load area, year, and cost.

The conservation potential assessment analysis (excluding Oregon) included a review of 458 unique measures across the residential, commercial, industrial, irrigation and street lighting sectors. Of those 458, there were 109 in the residential sector, 171 in the commercial sector, 150 in the industrial sector, 19 in the irrigation sector and 9 in the street lighting sector. Considering all permutations of these measures across all customer sectors, customer segments, and states,

[22] 2015 IRP p. 124

customized data was compiled and analyzed for roughly 50,000 measures. For a complete list of measures, see PacifiCorp's 2015 Conservation Potential Assessment Volume 4, Appendix H.[23]

For conservation resource selection using SO model, PacifiCorp used a load forecast that excluded reductions attributable to projected conservation. This is necessary because conservation is effectively treated as a supply resource in the model rather than a load reduction.

Data Collection

Integrated Resource Planning

PacifiCorp uses a variety of data sources for development of its IRP, including (1) in-house studies, databases, and monitoring systems, (2) non-IRP model outputs, such as the Aurora market fundamentals analysis model, (3) forecasting services, and (4) studies conducted by engineering and other consulting firms. Chapter 3 of the 2015 IRP discusses the current planning environment. Chapter 6 summarizes the data resources used to develop the resource options entered into the IRP models, and Chapter 7 discusses the modeling approach used.

Conservation

A number of data collection approaches were used by the DSM potentials development project team (PacifiCorp and contractor staff) to develop the 2015 conservation supply curves.[24] PacifiCorp provided load forecasts, economic assumptions (discount rates and inflation), historical energy-efficiency acquisition data, updated customer counts and forecasts, results of the Company's 2013 Oregon and Utah residential load forecast surveys, the 2012 Wyoming residential Market Decisions survey, 2007 multi-state commercial Energy Decisions surveys, and the 2006 multi-state residential Energy Decisions surveys. The contractor team, Applied Energy Group and the Brattle Group, updated measure lists, costs and savings assumptions, and other relevant data used in the development of the 2013 Conservation Potential Assessment in the development of the updated 2015 Conservation Potential Assessment.

The contractor team also relied on several entities for data, including but not limited to the Council, RTF, NEEA, California Energy Commission Database of Energy Efficiency Resources, Energy Information Administration and the American Council for an Energy-Efficient Economy[25]. This information included technical information on measure savings, costs, and lives, hourly end-use load shapes, and commercial building and energy characteristics. The contractor team also relied on equipment vendors for cost and technical information, as well as past DSM potential assessments and Company and publicly available survey data. The contractor team was also tasked with ensuring Washington resources were aligned and consistent with the

[23] The Company's Conservation Potential Assessment is provided as Appendix 2 to this report.

[24] The 2015 Conservation Potential Assessment data was relied upon to develop the energy efficiency resource supply curves in the states of Washington, California, Utah, Idaho, and Wyoming. PacifiCorp relied on supply curve data from the Energy Trust of Oregon to create Oregon-specific conservation resource options.

[25] For a full list of data sources used see the Conservation Potential Assessment Volume 2, Chapter 3 – Data Development.

RTF and/or 6th Power Plan whenever possible. A comparison is provided in Volume 4, Appendix G of the Company's 2015 Conservation Potential Assessment.

The Company's 2015 Conservation Potential Assessment is both included as Appendix 2 to this report and is available for download at http://www.pacificorp.com/es/dsm.html.

Processes and Procedures

Integrated Resource Planning

The PacifiCorp IRP modeling process entails the development of many alternative resource portfolios based on different combinations of input forecasts, followed by stochastic production cost simulation of the portfolios to determine their risk-adjusted cost and reliability performance. As indicated above, the portfolios are developed using SO model, and stochastic production cost simulation is conducted with the PaR model.

For the 2015 IRP, PacifiCorp developed 34 unique core case portfolios as well as 15 separate sensitivities for analysis, based on a combination of commodity natural gas price forecasts, wholesale electricity price forecasts, load forecasts, carbon dioxide costs, and other input assumptions, including assumptions around the proposed EPA Clean Power Plan. All cases developed were subsequently simulated using the PaR model.

To select its 2015 IRP preferred resource portfolio, PacifiCorp used a three-phase screening process to select the top-performing portfolio.

The pre-screening process is the initial step in the preferred portfolio selection process. The pre-screening process plots the mean present value revenue requirement ("PVRR") and upper-tail mean PVRR (net of fixed costs) for each unique resource portfolio using base, low, and high forward price curve assumptions, which eliminates outlier portfolios that have substantially higher cost and risk metrics relative to others. Pre-screening also eliminates portfolios produced for comparison purposes that may not meet future environmental compliance requirements.

Initial screening is step two and relies upon plots of the mean PVRR and the upper-tail mean PVRR (net of fixed costs) for each unique resource portfolio remaining after removal of portfolios during the pre-screening step. Based on the data used to produce these plots, PacifiCorp identifies resource portfolios with the best combination of cost and risk, such as portfolios that fall within the threshold amount as compared to the least cost portfolio, portfolios that fall within the threshold amount as compared to the least risk portfolio, and portfolios that fall within the least cost and least risk thresholds among any price curve scenario.

During the final screening process, resource portfolios remaining after the initial screening step are ranked by risk-adjusted mean PVRR, the primary metric used to identify top performing portfolios. Portfolio rankings are reported for the base, low, and high price curve scenarios. Resource portfolios with the lowest risk-adjusted mean PVRR receive the highest rank. The final screening process also includes review of deterministic risk analysis and other comparative portfolio analysis. Additional stochastic metrics from PaR, such as expected and upper tail

energy-not-served results and CO_2 emissions results, are also used to differentiate portfolios that might be closely ranked on a risk-adjusted mean PVRR basis. Comparative analysis of fuel source diversity and customer rate impacts is also performed.

Conservation

The general methodology used in the development of the Conservation Potential Assessment can best be described as a ”bottom-up” approach. It starts with performing market characterizations to describe electricity use for each customer sector. Then baseline projections of energy consumption by state, sector, segment, and end use are developed. As part of this process the vendor defines and characterizes the energy efficiency measures to be applied each sector, segments, and end uses and estimates the potential from each measure. For a full explanation of the analysis approach refer to the Conservation Potential Assessment, Volume 2, Chapter 2, “Analysis Approach.” Summaries of Class 2 DSM (energy efficiency) resource potential, by state and sector are available in the Volume 2, Chapter 4 in the Conservation Potential Assessment with additional end-use detail provided in Volume 4, Appendix C.[26]

Using the Conservation Potential Assessment data as the starting point, conservation resource supply curves by load area, marginal levelized cost, and year were developed for input into SO and the PaR models as discussed above. The prime contractor for the 2015 Conservation Potential Assessment study[27] assisted in converting the potential study conservation data into resource options suitable for entry into SO model. A complete description of the derivation and modeling attributes of the conservation resource options are provided in Chapter 6 of the 2015 IRP (See pages 122-127) included as Appendix 1 of this document.

The conservation resources entered into SO model reflect the technical potential adjusted for the impact of market barriers, or so-called technical achievable potential. PacifiCorp used a technical achievable potential assumption of 85 percent for non-lost opportunities and 77 percent for lost opportunities which are consistent with regional planning assumptions in the Council’s regional power plan.[28] The SO model performs the role of the cost-effectiveness screen, directly competing conservation against many other resource options including market purchases. The resulting optimized portfolio consists of conservation and other resources found to be cost-effective based on resource and system characteristics, load requirements, system constraints, and the set of scenario inputs used for the capacity expansion simulation.

Adjustments to the 2015 IRP Ten-Year Conservation Potential

Adjustments made to IRP selections to arrive at ten-year conservation forecasts and biennium targets generally fall into one of three categories:

[26] The Company’s Conservation Potential Assessment is provided as Appendix 2 to this report.
[27] Applied Energy Group, Inc.
[28] For information on achievable assumptions and ramp rates, refer to the 2015 Conservation Potential Assessment, Volume 2, Chapter 2 starting on page 2-7, and the 6th Power Plan, Chapter 4 and Appendix E.

1. **Updates to CPA measure savings and/or costs:** As discussed above, the Company's CPA relied on the most current and applicable data available at the time of the analysis. As part of the analysis to identify PacifiCorp's ten-year conservation potential and biennial conservation target, the Company reviewed updated data sources since the time of that analysis, including updates to RTF deemed measures and recent PacifiCorp program evaluations.
2. **Energy Efficiency opportunities not assessed in the CPA:** Opportunities from waste heat to power and regenerative technologies.
3. **Conservation opportunities assessed through other studies:** This category includes, where applicable, distribution efficiency improvements, production efficiency (in non-hydro generation facilities), and high-efficiency co-generation.

In the development of the 2016-2025 conservation forecast and 2016-2017 biennium target, the Company assessed possible adjustments from each category however only found adjustments needed based on category "one" and "two" reviews; see a summary of those adjustments in Table 5. There were no adjustments or additional opportunities from category "three" type adjustments which is explained in more detail below. Additional detail on the category "one" and "two" type adjustments is provided in Appendix 4 to this report.

Table 5: 2016-20125 Energy Efficiency Forecast – Summary of Adjustments

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	10-Year
2015 IRP Selection	**41,200**	**44,600**	**44,260**	**48,610**	**38,230**	**40,240**	**41,910**	**44,270**	**43,740**	**36,040**	**423,100**
Residential Lighting	-1,569	-1,687	-1,813	-1,779	-484	-459	-420	-345	-298	-241	-9,096
Residential HPWH	-17	-40	-64	-95	-127	-161	-196	-814	-794	-781	-3,088
Residential Behavior - Subtract IRP Selections	-2,758	-2,763	-86	-88	-79	-80	-81	-82	-84	-85	-6,187
Residential Behavior - Add Legacy and Expansion Forecasts w/ 2-year reporting convention	9,773	0	9,773	0	9,773	0	9,773	0	9,773	0	48,865
Residential Clothes Washers	122	163	205	249	294	341	389	398	378	365	2,904
Residential Ductless Heat Pumps	1,316	1,309	1,303	1,298	1,277	1,270	1,264	1,258	1,252	1,246	12,792
Appliance Recycling	-1,382	-1,369	-1,356	-1,343	-1,306	-1,288	-1,270	-1,251	-1,231	-1,210	-13,006
Residential Smart Plug Power Strips	1,579	1,635	1,697	1,762	1,815	1,886	1,961	2,037	2,117	511	16,999
Commercial Smart Plug Power Strips	419	417	416	416	416	401	402	404	405	407	4,104
Non-Residential Solid State Lighting	608	1,503	2,918	4,175	-5,078	-5,956	-6,691	-6,498	-6,303	-6,073	-27,394
Waste Heat to Power	0	0	0	4,199	3,338	0	0	0	0	0	7,537
Adjustment summary	8,092	-833	12,991	8,794	9,838	-4,046	5,133	-4,893	5,215	-5,862	34,430
Adjusted Energy Efficiency Forecast	**49,292**	**43,767**	**57,251**	**57,404**	**48,068**	**36,194**	**47,043**	**39,377**	**48,955**	**30,178**	**457,530**

Conservation Opportunities Assessed Through Other Studies and Actions

There weren't adjustments made to the ten-year conservation forecast or biennium target related to category "three" type adjustments, conservation opportunities assessed through other studies. The following detail is provided to explain the Company review process and findings related to

resource opportunities associated with distribution and production efficiency and high-efficiency cogeneration.

Distribution Efficiency Initiative

Distribution Efficiency was included in the Council's power plan's conservation assessment; however, this initiative was not part of the Company's Conservation Potential Assessment, and consequently these resources are not reflected in the 2015 IRP preferred portfolio directly.

Energy savings from distribution efficiency can come from both system improvements and reduced voltage (Conservation Voltage Reduction, or CVR). Improvements to the distribution system typically take the form of better phase balance, better reactive power management, and flattened voltage profile (less voltage drop from one location on the circuit to another location). These improvements result in energy savings from reduced line loss (less energy expended delivering the power to its destination).

PacifiCorp began detailed analysis of Washington distribution circuits in 2011 in order to ascertain what energy savings might be achievable from CVR[29]. The Company's CVR analysis in Washington resulted in four pilot projects designed to determine whether cost effective savings could be measured. The results of these projects are as follows:

- Of the 0.09 aMW predicted to be acquired through the four 2012 pilot circuits, less than 0.01 aMW was achieved. All four circuits failed to meet the protocol efficiency thresholds both before and after voltage reduction. This meant that energy savings could not be verified by an approved method, since the Simplified Protocol scope requires that the thresholds be met. The estimated savings from the metered data, ignoring the threshold violations, is 0.017 aMW at Clinton and zero or negative energy savings at Mill Creek.
- The Clinton pilot was not cost effective. Less than half of the anticipated reduction in average voltage was achieved, and the estimated cost of energy savings was $112.49/MWh, a value 23percent higher than the marginal (avoided) purchase energy rate used in Washington. These values come with the caveat that protocol thresholds were violated and confidence in both the voltage reduction value and energy savings value are consequently very low.

The 2012 pilot on four of the most promising circuits in Washington showed that voltage reduction as a distribution efficiency measure was not cost-effective for PacifiCorp and as a result of these pilots PacifiCorp did not forecast any reliable, feasible and cost-effective opportunity for distribution efficiency in its 2014-2023 conservation forecast.

Since that time the Company has continued to review the marketplace and has remained engaged with the Regional Technical Forum's voltage optimization subcommittee however is not aware of any substantial improvements in measurement and verification technology that would render its voltage optimization business cost effective. Methods of measurement for energy savings estimates, and specifically the energy/voltage relationship over time, continue to evolve. Where

[29] Commonwealth Associates, Inc., Study of PacifiCorp's Washington service area, May, 2011.

voltage changes are relatively small, as is the case in PacifiCorp's Washington service area, there is as yet no robust and low-cost mechanism to calculate savings, particularly where detailed end use parameters are unknown. Together with the cost of energy, these are the primary limiting factors that would have to be overcome before PacifiCorp could pursue savings from further voltage reduction. As a result, PacifiCorp is not forecasting any reliable, feasible and cost-effective opportunity for distribution efficiency in its 2016-2025 conservation forecast, and thus, no savings from distribution efficiency are included in the Company's 2016-2017 Biennial Conservation Target. These findings and conclusions were shared with the Company's Washington DSM Advisory Group at the June 9, 2015 meeting. The Company will continue to monitor the situation and should conditions change will look to incorporate measurable cost-effective savings from distribution efficiency opportunities in future conservation forecasts and targets.

Production Efficiency (in non-hydro generation facilities)

Production Efficiency in non-hydro generation facilities was not included in the Council's 6th Power Plan or the Company's Conservation Potential Assessment; however, this initiative, along with distribution efficiency, fall under the definition of "Conservation" in WAC 480-109-060, and therefore are included in the assessment of the Company's ten-year conservation potential.

The Company provides energy to customers in the State of Washington from the following plants:

- Thermal Plants
    - Jim Bridger (partly owned with Idaho Power)
    - Chehalis
    - Hermiston (partly owned with Hermiston Power)
    - Colstrip (part owner of units 3 and 4 with other utilities)
- Wind Projects
    - Goodnoe Hills
    - Marengo I
    - Marengo II
    - Leaning Juniper

Determining electrical energy savings opportunities and estimating the resultant energy savings for a thermal generation facility is a fairly straightforward process similar to that of a retail customer's industrial facility. As with any industrial facility, the results of the energy savings analysis must be modified to address:

- The impact of the introduction of new or modified equipment on the availability and reliability of the overall system,
- The ability to implement the recommendations given space, system compatibility and configuration, etc., and
- Costs refined through a procurement process.

Starting in 2011 through the end of 2012 detailed studies[30] were conducted by Cascade Energy at seven of the eight non-hydro facilities[31] that serve Washington customers. Initially 22 potential projects were identified for potential cost-effective energy efficiency upgrades. The Company did a comprehensive review of the cost test methodology and found some credits and methods needed to be assessed differently for the production side perspective. This "production side" cost test model was presented to the Washington Advisory group and accepted. Identified projects were then screened using the "production side" cost-effectiveness methodology, which is detailed in Appendix 2 to the DSM 2016-2017 Business Plan (Appendix 7 to this document). Fewer projects were available as a result of the new screening.

Of the plants above, only three had cost-effective energy efficiency projects identified: Chehalis, Hermiston and Jim Bridger. All of the cost-effective projects identified at the Company's wholly owned Chehalis plant have now been completed. The cost-effective projects at the Hermiston facility that were identified are scheduled to be completed in the 2014-2015 biennium. The cost-effective plant-wide capital lighting projects at the Jim Bridger facility were not approved by the joint owner, therefore are not being forecasted as available conservation potential at this time. However, plant personnel at the Jim Bridger plant have been slowly upgrading the high pressure sodium lighting to light emitting diode ("LED") lighting upon failure. This has resulted in a steady upgrade to LED lighting which will eventually capture much of the opportunity that had been identified.

The Company has reviewed costs for projects identified earlier that did not pass the cost test to see if changes in labor costs or equipment prices have changed. It was found that prices have not changed enough for the cost-effectiveness determination of these projects to have changed.

While the Company remains committed to installing energy efficient equipment at production facilities when systems are upgraded or replaced, the Company's review hasn't identified any additional cost-effective energy efficiency opportunities. This is due to the fairly static nature of production plant systems and processes. As a result, PacifiCorp is not forecasting any reliable, feasible and cost-effective opportunity for production efficiency in its 2016-2025 conservation forecast, and thus, no savings from production efficiency are included in the Company's 2016-2017 Biennial Conservation Target. These findings and conclusions were shared with the Company's Washington DSM Advisory Group at the June 9, 2015 meeting.

High-Efficiency Cogeneration

A utility's obligation to pursue all available conservation that is cost-effective, reliable and feasible includes the following process:

- *Identify potential*
- *Develop Portfolio*

[30] In total, 7 studies were conducted between 2011 and 2012. These studies are provided as Appendix 10 to this report.

[31] The majority owners of the plant do not sell power in Washington and didn't agree to study this plant or participate in any energy efficiency facility upgrades at this time.

- *Implement programs*
- *Adaptively manage*

Identify potential is further defined as: *Identify the cost-effective, reliable and feasible potential of possible technologies and conservation measures in the utility's service territory*[32].

As part of the 2015 IRP process, Navigant Consulting, Inc. prepared a Distributed Generation Resource Assessment for Long-term Planning Study on behalf of PacifiCorp. This study provided information on DG resource penetration forecasts by state and projected the level of distributed resources PacifiCorp's customers might install over the next twenty years. The report is available at http://www.pacificorp.com/es/irp/irpsupport.html and is included as Appendix 12 to this report.

Navigant evaluated five DG resources in detail in the report. Two of the resources evaluated, combined heat and power ("CHP") reciprocating engines and CHP micro turbines meet the WAC definition of high-efficiency cogeneration…. *"High-efficiency cogeneration" means the sequential production of electricity and useful thermal energy from a common fuel source….*[33]

The process to identify the potential for these resources is described on page 5-1 of the Navigant study. Three market penetration scenarios (low, base, and high) were developed for each resource and are described on page 5-13 of the study. In the 2015 IRP, distributed generation resources are treated as a reduction to load[34]. The 2015 IRP used the base case assumptions for analysis of the core cases and in its resource needs assessment. [35]

Specific information on the potential for the base case scenarios for the two CHP measures for Washington can be found on pages 6-15 and 6-16 of the Navigant study and is zero. Since the reliable and feasible potential for these resources is zero, the utility is not obligated to acquire such a resource or include it in its conservation portfolio. [36] These findings and conclusions were shared with the Company's Washington DSM Advisory Group at the September 15, 2015, teleconference.

Table 6 provides the energy efficiency, distribution efficiency, production efficiency and high-efficiency cogeneration aggregate ten-year conservation forecast net of all adjustments except the impact of NEEA initiatives in the 2016 and 2017 calendar years. As shown in the table, the ten-year conservation forecast is 457,530 **MWh.**

[32] WAC – 480-109-100 (1) (a) (i)
[33] WAC 480-109-060 (13)
[34] 2015 IRP – Volume 1, p. 72
[35] Ibid, p. 74
[36] WAC – 480-109-100 (1) (a) (ii)

Table 6: 2016-2025 Annual and Ten-Year Conservation Forecast

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	10-Year
Adjusted Energy Efficiency Forecast	49,292	43,767	57,251	57,404	48,068	36,194	47,043	39,377	48,955	30,178	457,530
Distribution Efficiency	-	-	-	-	-	-	-	-	-	-	-
Production Efficiency	-	-	-	-	-	-	-	-	-	-	-
High Efficiency Cogen	-	-	-	-	-	-	-	-	-	-	-
Total Conservation	**49,292**	**43,767**	**57,251**	**57,404**	**48,068**	**36,194**	**47,043**	**39,377**	**48,955**	**30,178**	**457,530**

2016-2017 Biennial Conservation Target

Conservation Target

PacifiCorp's biennial conservation target for 2016 and 2017 is **87,814 MWh**[37] and represents the sum of the first two years of the adjusted ten-year conservation forecast after an adjustment to remove the forecasted impacts of NEEA initiatives. The biennial target before the NEEA adjustment represents just over 20 percent[38] of PacifiCorp's 2016-2025 ten-year conservation potential forecast.

Table 7: 2016-2017 Biennial Conservation Target

	MWh		
Sector	**2016**	**2017**	**2016-2017 Total**
Ten-Year Energy Efficiency Forecast (Table 7)	49,292	43,767	93,059
NEEA Adjustment	-2,176	-3,069	-5,245
Adjusted Energy Efficiency Target	47,116	40,698	87,814
Distribution Efficiency	-	-	-
Production Efficiency	-	-	-
High-Efficiency Cogeneration	-	-	-
Total Conservation Target	**47,116**	**40,698**	**87,814**

[37] To remain consistent with the Council's regional power plan, the ten-year potential and two-year target values in this report are shown prior to any net-to-gross adjustment and except for production efficiency, where applicable, include line losses between the installed equipment or customer site and the generation source.

[38] The biennial target represents the first two years of the ten-year conservation forecast which is greater than the "pro rata" share as defined by WAC 480-109-060(19).

How the Target was developed from the Ten-Year Potential

Energy Efficiency

The ten-year conservation potential includes an estimate of the potential for each year. The values for energy efficiency specifically were derived from annual resources selections within the Company's 2015 IRP, informed by the 2015 Conservation Potential Assessment. These economic selections were then adjusted, as allowed by WAC 480-100 (2) (b), for information learned in the Company's subsequent resource acquisition process as documented in Appendix 4 to this report.

Treatment of NEEA Initiatives

The 2015 IRP energy efficiency selections, and thus, the ten-year energy efficiency forecast presented in the previous section of this document, represent savings that may be acquired through a number of means, including Company programs, market transformation, and improved building codes and equipment efficiency standards. Because of this, the forecasted potential implicitly includes both savings reasonably achievable through Company programs and those that will be acquired through NEEA market transformation initiatives.

Section 4 of Order 03 in Docket UE-100170 directed PacifiCorp to collaborate with Puget Sound Energy and Avista Corporation to develop a consistent approach to claiming NEEA savings in the 2014-2015 biennium. The three utilities met multiple times in the fall of 2012, arriving at and submitting a joint proposal for how savings from NEEA initiatives would be treated in the 2014-2015 biennium.[39] The key component of the joint proposal are:

- Each utility will work with NEEA to obtain a forecast of savings over the biennial period based on baseline and technical assumptions consistent with those found in the Council's current Power Plan.
- To avoid double-counting savings claimed through utility programs, the forecast provided by NEEA will represent the utility's share of Total Regional Savings ("TRS") less projected local utility program savings.
- Each utility will then subtract its adjusted estimate of TRS from the first two years of its ten-year electric conservation potential to determine its Biennial Conservation Target (BCT).
- Each utility will report actual NEEA savings (using the same methodology and baseline assumptions used in the forecast), however NEEA savings will not be credited to utilities for the purpose of achieving a utility's Biennial Conservation Target.

In preparation for the 2016-2017 biennium target setting process, the three utilities met in August 2015 and revisited the treatment and methodology with Commission staff and DSM advisory groups. It was determined that although there could be reporting clarifications made, particularly with how NEEA savings related to percent of goal achievement tracked by the Department of Commerce, the methodology worked well and would be used again for the coming biennium. As

[39] Joint Proposal for consistent approach to Northwest Energy Efficiency Alliance claimed conservation savings, filed October 31, 2012 in Docket UE-111880

a result, PacifiCorp requested NEEA prepare a 2016-2017 savings forecast for the Company's Washington service area for use in adjusting our 2016-2017 biennial target.

The forecast provided by NEEA to PacifiCorp detailing the methodology and forecast is included as Appendix 9 to this report. As NEEA forecasts savings at the customer site, the Company grossed the forecast up to the generator using PacifiCorp's sector-specific line losses, for consistency with the other numbers presented in this document. The generator-level savings are 2,176 MWh and 3,069 MWh for 2016 and 2017, respectively. As specified in the joint utility proposal, these savings are subtracted from the first two years of PacifiCorp's conservation forecast to arrive at the energy efficiency component of the Company's 2016-2017 biennial conservation target.

Distribution Efficiency

For the reasons discussed in the previous section of this document, no cost-effective, reliable, and feasible distribution efficiency potential was identified for inclusion in the Company's 2016-2025 conservation forecast. Thus, distribution efficiency is not included in the 2016-2017 biennial conservation target.

Production Efficiency (in non-hydro generation facilities)

For the reasons discussed in the previous section of this document, no cost-effective, reliable, and feasible production efficiency potential was identified for inclusion in the Company's 2016-2025 conservation forecast. Thus, production efficiency is not included in the 2016-2017 biennial conservation target.

High-Efficiency Cogeneration

For the reasons discussed in the previous section of this document, no cost-effective, reliable, and feasible high-efficiency cogeneration potential was identified for inclusion in the Company's 2016-2025 conservation forecast. Thus, high-efficiency cogeneration is not included in the 2016-2017 biennial conservation target.

Business Plan Summary Data

Table 8 provides individual program summary data for the Company's proposed programs for the 2016-2017 biennial period. The table provides projected costs, savings, and savings forecast as a percentage of customer sector and total portfolio savings. Actual savings and costs may vary over the course of the biennial period. Circumstances which result in significant variations will be addressed in a manner or process as described in the adaptive management strategies section of this report. The Business Plan in its entirety is provided as Appendix 7 to this report.

Table 8: 2016-2017 Demand-Side Management Business Plan Summary

Program	Biennial Budget	Year Offered	Biennial Target @ Gen (MWh)	Percent Sector (savings)	Percent Biennial Forecast (savings)
Low Income Weatherization (114)	$ 1,780,000	1980s	534	1%	1%
Home Energy Savings (118)	$ 6,843,322	2006	28,511	73%	31%
Home Energy Reports	$ 741,433	2012	9,773	25%	11%
Total Residential Programs	**$ 9,364,755**		**38,819**		**42%**
wattSmart Business (140) Commercial	$ 6,290,253	2000	24,108	46%	26%
wattSmart Business (140) - Industrial	$ 4,580,262	2004	25,705	49%	28%
WattSmart Business (140) - Agricultural	$ 746,099	2004	2,999	6%	3%
Total Business Programs	**$ 11,616,614**		**52,812**		**58%**
Northwest Energy Efficiency Alliance	$ 1,821,452	1997	5,245	N/A	6%
Total Other Conservation Initiatives	**$ 1,821,452**		**5,245**	**N/A**	**6%**
Be wattsmart, Begin at Home	$ 121,894	2012		N/A	0%
Customer outreach/communication	$ 500,000	2012	-	N/A	0%
Prorgam Evaluations (& savings verification)	$ 921,363	NA	-	N/A	0%
Potential Study update/analysis	$ 125,000	NA	-	N/A	0%
Technical Reference Library	$ 89,452	NA	-	N/A	0%
Total Portfolio-Level Expenses	**$ 1,757,709**		**-**		**0%**
Total PacifiCorp Conservation	**$ 22,739,078**		**91,630**		**100%**
Total System Benefit Charge Conservation	**$ 24,560,530**		**96,876**		**106%**
Total Conservation	**$ 24,560,530**		**96,876**		**106%**

Note(s):

1) The three totals presented in this table are defined as follows:
   - **a. Total PacifiCorp Conservation:** All expenditures and savings attributed to PacifiCorp's direct conservation efforts (excludes NEEA initiatives). Forecasted savings are directly comparable to the Biennial Conservation Target.
   - **b. Total System Benefit Charge Conservation:** All expenditures and associated savings that will be recovered through the System Benefit Charge.
   - **c. Total Conservation:** All expenditures and savings from all programs and initiatives shown in the table.

Stakeholder Engagement

To demonstrate the Company's compliance with Order 01 (section 9 of the ordering section) in Docket UE-132047, "Required Public Involvement in Preparation for the 2016-2017 Biennium", PacifiCorp provides the following summary of preparatory work and public involvement in the preparation of the Company's 2016-2017 Biennial Conservation Plan. In compliance with the Order's requirement to consult with the DSM Advisory Group by July 1, 2015 to facilitate the completion of a ten-year conservation forecast, the company held six DSM Advisory Group meetings, 7 IRP public input meetings, and one confidential technical conference between June 2014 and September 2015. These meetings, coupled with numerous email communications in which supporting information was shared, were pivotal in helping the Company develop the conservation forecast and biennial target. Dates and brief summaries of relevant biennial conservation forecast related topics of each meeting are provided below.

June 5, 2014 – IRP Public Input Meeting

- Kickoff meeting where IRP schedule was reviewed as well as status of 2013 IRP Action Plan items were reviewed

July 17, 2014 – IRP Public Input Meeting

- DSM resource planning overview
- 2015 DSM CPA initial results and comparison to 2013 DSM CPA results

July 31, 2014 – DSM Advisory Group Meeting

- Cursory reviewed 2015 conservation potential assessment ("CPA") scope of work and preliminary findings (data used to inform the 2015 IRP inputs and 2016-2025 energy efficiency conservation forecast)

August 7-8, 2014 – IRP Public Input Meeting

- Navigant study overview (high-efficiency cogeneration)
- Plant Efficiency overview/review

September 25-26, 2014 – IRP Public Input Meeting

- Smart-Grid activity status
- Conservation voltage reduction overview/review

October 30, 2014 – DSM Advisory Group Meeting

- Provided a production efficiency work plan progress report on identified projects (data used to inform likely residual projects available in the next biennial period)

November 14, 2014 – IRP Public Input Meeting

- Resource portfolio development draft results

December 10, 2014 – Westside 2015 IRP Confidential Technical Conference

- Federal carbon emissions (111d) modeling workshops

January 29-30, 2015 – IRP Public Input Meeting

- 2015 IRP Preferred Portfolio selection and sensitivity studies

February 26, 2015 – IRP Public Input Meeting

- 2015 IRP Action Plan
- Review of additional/revised sensitivity studies

March 18, 2015 – DSM Advisory Group Meeting

- Presented results of 2015 CPA and compared to the 2011 and 2013 CPA study results
- Presented economic energy efficiency selections in the 2015 IRP; 2016-2025
- Presented 2015 IRP action plan and implementation plan for DSM resources
- Identified "next steps" in development of 2016-2025 conservation forecast/biennial target
- Presented estimation of impact in 2014-2015 biennial period of application of a frozen verses flexible Unit Energy Savings ("UES") baseline (used to inform baseline approach in the 2016-2017 biennium)

June 9, 2015 – DSM Advisory Group Meeting

- Reviewed company's understanding of revised WAC 480-109 rules
- Presented types of adjustments and proposed criteria for adjustments in the development of the company's 2016-2025 conservation forecast
- Distribution efficiency overview and explanation of why distribution efficiency would not be included in the conservation forecast or biennial target
- Production efficiency overview and explanation of why production efficiency would not be included in the conservation forecast or biennial target
- Company's plan on incorporating high-efficiency cogeneration in conservation forecast
- Market transformation/NEEA baseline overview and proposed handling of savings in conservation forecast
- Review of preliminary scope of work for 2017 CPA (data to inform 2017 IRP and 2018-2027 conservation forecast and 2018-2019 biennial target) and CPA timeline
- Provided second update on frozen verses fixed UES analysis; results still preliminary

August 20, 2015 – DSM Advisory Group Meeting

- Presented proposed conservation forecast adjustments and preliminary target calculation
- Presented thinking on the continuation of appliance recycling and home energy report programs in the 2016-2017 biennium
- Discussed treatment of savings from market transformation activities/NEEA
- Overview of revised decrement values/avoided costs and discussed anticipated impacts

September 14, 2015 (teleconference) – DSM Advisory Group Meeting

- Presented revised economics on home energy reports (follow-up to August 20 meeting)
- Reviewed final round of proposed adjustments to ten-year conservation forecast
- Explanation of why high-efficiency cogeneration would not be included in the conservation forecast or biennial target
- Resolved understanding of around how to calculate biennial target
- Identified possible 2016-2017 pilot measures i.e. heat pump dryers, manufactured homes

- Discussed low-income economics based on revised rules
- Discussed use of frozen verses fixed UES baseline for 2017-2018 biennium
- Reviewed changes to the Company’s evaluation, measurement, and valuation framework

Program Descriptions

Program Details

Program details, including specific measures, incentives, and eligibility requirements are provided by program in the Washington Demand-side Management Business Plan attached to this report as Appendix 7. Also included is a program description, a description of planned program changes, program specific evaluation schedules and program and portfolio cost-effectiveness results.

Outreach on Programs

As required by Order 01 in Docket UE-132047 (section 7(b) of the ordering section), the Company developed an outreach and communication strategy complementary to the Company's existing customer communications efforts with the objective of increasing customer awareness of conservation program opportunities. The Company provided information regarding communications and outreach efforts in its 2014 annual report and will do so again in the 2015 annual report and/or 2014-2015 Biennial Conservation Report[40]. For the upcoming biennial period, information on the preliminary 2016 Outreach and Communications plan[41] is provided in the DSM 2016-2017 Business Plan, Appendix 7 to this report. Forecasted expenditures have been included as a line item in Table 9 above and in Table 1 of the DSM 2016-2017 Business Plan.

[40] WAC 480-109-120(4)(d) states "A utility may file the annual conservation report and the biennial conservation report together as one report, provided that the report includes all of the information required in subsections (3) and (4) of this section and states that it serves as both the annual conservation report and the biennial conservation report."

[41] The preliminary 2016 Outreach and Communications plan will be scheduled for review and comment by the DSM advisory group by November, 2016.

Adaptive Management and Implementation Strategies

Changes to conservation programs within the biennium are contemplated in Order 01 Attachment A in Docket UE-132047, in which PacifiCorp's 2014-2015 biennial conservation targets were approved, and WAC 480-109-100 (1) (a) (iv) which requires the Company's continuously review and update as appropriate its conservation portfolio to adapt to changing market conditions and developing technologies. Sections 5 and 7(a) of the ordering section of Order 01 provide for the following:

> (5) "Program Details. PacifiCorp must maintain its conservation tariffs, with program descriptions, on file with the Commission. Program details about specific measures, incentives, and eligibility requirements must be filed as tariff attachments or as revisions to PacifiCorp's DSM Business Plan. PacifiCorp may propose other methods for managing its program details in the Biennial Conservation Plan required under Paragraph 8(f) below, after consultation with the Advisory Group as provided in Paragraph 9(b) below."[42]
>
> (7)(a) "Modifications to the programs must be filed with the Commission as revisions to tariffs, as revisions to PacifiCorp's DSM Business Plan, or revisions as summarized in the process described in the DSM Business Plan[43]."

The Company intends to exercise changes as needed to maintain or improve the performance of programs or capitalize on opportunities not yet realized, however will only do so after consultation with the DSM Advisory Group. Updates to program tariffs and/or Business Plan revisions will accompany modifications made to programs.

Two programs within PacifiCorp's program portfolio for which tariff revisions are not required for measure and incentive changes are Schedule 118, the Home Energy Savings Program, and Schedule 140, Non-Residential Energy Efficiency ("***watt***smart Business"). The Commission approved process to modify these programs is defined in Schedules 115 and 140 as detailed below.

Home Energy Savings (Schedule 118)

Details for this program are contained in the program tariff provided as a part of the DSM 2016-2017 Business Plan in Appendix 7 to this report. Any changes to the details included in the program tariff must be filed and approved by the Commission prior to becoming effective; however, as noted, there are program details managed outside of the program tariff as well. The program tariff and the text below from the Advice Letter through which the program was originally proposed and approved (Docket UE-061297) describe the information that is managed outside of the tariff and the process for changes:

> "The comprehensive nature of the program and changing equipment standards indicate a flexible and market-driven program delivery is required. The Company is proposing that

[42] Note that paragraph citations refer to sections within Order 01 and not within this plan/document.
[43] DSM Business Plan is included as Appendix 7 to this plan.

Schedule 118 outline the basic program elements including customer eligibility, use of a program administrator for delivery, the seasonal nature of selected incentive offers, and that current incentive levels may change. Specific details such as incentive levels, eligible equipment specifications and dates for incentive availability would be managed by the program administrator using a dedicated program Web site with easy links from the Company web site.

Changes in equipment eligibility or minimum efficiency levels would be driven by program and market data. The Company and program administrator will be assessing program performance on an on-going basis and proposing changes at least once per year. Changes may be proposed more frequently if there is compelling market feedback that changes need to occur ahead of the annual changes. Similar to the filing process, the Company would present information on proposed changes to its Advisory Group and seek comments prior to making changes. Changes in equipment specifications or incentive levels would be clearly posted on the Web site and emailed to the appropriate Commission staff person with at least 45 days advance notice."

Program details, including specific measures, incentives, and eligibility requirements are posted on the Company's Web site at www.pacificpower.net/wattsmart. A summary table of incentives is also available at www.homeenergysavings.net/Washington/forms.html and is contained within Appendix 7, DSM Business Plan, to this report.

wattsmart Business (Schedule 140)

Details for this program are contained in the program tariff provided as a part of the DSM 2016-2017 Business Plan in Appendix 7 to this report. Any changes to the details included in the program tariff must be filed and approved by the Commission prior to becoming effective; however, as noted, there are program details managed outside of the program tariff as well. The program tariff describes the information that is managed outside of the tariff and the process for changes. Future changes in the incentive tables and definitions would be driven by program and market data. The Company assesses program performance on an ongoing basis and would propose changes at least annually. Changes may be proposed more frequently if there is compelling market data. Similar to the filing process, the Company would present information on proposed changes to its Advisory Group and seek comments prior to making changes. Changes would be clearly posted on the program web site and emailed to the appropriate Commission staff person with at least 45 days advance notice.

The following program details are managed outside of the program tariff on the Company Website via the process described above:

- Incentive tables
- Program definitions
- Custom incentive offering

This information, incentive tables, program definitions, and custom incentive offerings can all be found through the following link on the Company website:

https://www.pacificpower.net/content/dam/pacific_power/doc/Business/Save_Energy_Money/WA_wattsmartBusiness_Incentive_tables_information.pdf

This information is also included following the program tariff provided in Appendix 7 to this report.

The Company intends to follow these provisions when exercising changes to these programs within the 2016-2017 biennium unless the Commission directs otherwise.

Utility Evaluation, Measurement and Verification Activities

An evaluation, measurement and verification ("EM&V") framework document was prepared in response to the Commission's Order 02 in UE-100170 and updated in response to additional requirements noted in Docket UE-132047 Order 01. This document is intended to provide overall guidelines including principles, objectives, methods, responsibilities and reporting requirements to direct PacifiCorp's energy efficiency EM&V activities.

During the September 14, 2015 DSM Advisory Group meeting, PacifiCorp shared proposed changes to the EM&V Framework in an effort to update and capture current requirements from Docket UE-132047 Order 01 and Docket UE-131723 General Order R-578 . Those in attendance participated in the discussion and followed up with comments on the proposed changes. The updated version was finalized on September 28, 2015 and is provided as Appendix 8 to this document.

The EM&V Framework is considered to be a "living document" that will require modifications as appropriate. The DSM Advisory Group will be given the opportunity to participate in the discussions of the proposed changes and provide feedback that will be considered by the Company.

PacifiCorp continues to seek out cost-effective opportunities to improve its EM&V activities. Representative ongoing initiatives included are summarized below:

1. Through a Request for Proposal process, the Company awarded an independent third-party consulting firm the task of reviewing the portfolio-level energy savings reported for the 2014-2015 biennial period. Results of this review will be submitted in the June 1, 2016 biennial conservation report. This meets the requirements set forth in UE-132047 Order 01 (6) (f) and UE-131723 General Order R-578.

2. The Company has implemented a new system that will track project and/or program specific information at a more granular and process centric level. The enhanced functionality will help reduce compliance risk by enforcing business rules associated with each program; alert program managers of non-tariffed measures being offered by third party administrators; and system control of claimed savings using an interface with the Company's Technical Reference Library database.

3. The Company has adopted a methodology for tracking floating unit energy savings values that change after the approval of biennial conservation forecasts and targets. These values will be updated on January 1 of the second year of a biennial period with information that is available by October 1 of the first year of the biennium.

Cost Recovery Mechanism

PacifiCorp recovers costs associated with its demand-side management programs through the System Benefits Charge ("SBC"), which is administered through Schedule 191. The SBC was originally approved by the Commission in Docket UE-001457. The SBC was last adjusted in August 2015 when it was increased from an annual collection rate of $10.2 million to the current collection rate of $10.7 million. The current SBC collection rate was approved in Docket UE-151157 with an effective date of August 1, 2015. The current SBC collection rate represents approximately 3.35 percent of Washington retail electric revenues.

For the 2016-2017 biennium, PacifiCorp intends to recover through the SBC costs associated with approved conservation programs, planning and program administrative costs, and costs associated with compliance with Chapter 480-109 WAC and conditions consistent with the Commission's Order 01 in Docket UE-132047.[44] As specified in section (11)-(d) of that order, costs associated with distribution and production efficiency will be recovered through a general rate case, rather than through the SBC. Projected costs for the 2016-2017 biennium are provided in Table 9 of this report as well as in the DSM 2016-2017 Business Plan, Appendix 7 (Table 1) to this report.

Consistent with WAC 480-109-130, related to conservation cost recovery adjustment, PacifiCorp will review the adequacy of Schedule 191 collections each year and make a filing, if necessary, to adjust the collection rate no later than June 1, with an effective date of at least sixty days after the filing. If no adjustment is needed the Company will file a request for exception and supporting documents (in support of why no adjustment is needed) no later than May 1.

Plan Compliance Information and Other Key Issues

[44] Refer to section 11(b) of the ordering section of Commission's Order 01 in UE-132047.

Table 9 identifies a listing of key compliance requirements from Order No. 1, Attachment A received in Docket UE-132047 and from WAC 480-109 (requirements for the development of ten-year forecasts and biennial targets) and how the Company has addressed each requirement in the preparation of this report.

Table 9: 2016-2017 Plan Development Compliance Requirements[45]

Docket UE-132047 Order 01 (2) & WAC 480-109-100 (2) (b)	
Requires PacifiCorp to use methodologies consistent with those used by the Council.	Appendix 3 contains an outline of the methodology used and provided by the Northwest Power and Conservation Council in the development of the 6th regional power plan along with a description of the Company's aligning methodology (2013 IRP reference, 2015 relevant). These and the other regional documents are work products developed by the Methodology Sub-Committee of the Washington Collaborative Working group on Avoided Costs and Total Resource Cost determinants. Together these documents demonstrate the general consistency of the methodologies used in the development of both resource plans and development of utility ten-year conservation forecasts. In preparation for this report, the company reached out to the Council and requested a cursory review, in advance of the 7th Power Plan, of notable changes. No meaningful differences in methodologies relevant to the development of this report were identified. Upon the issuance of the 7th Power Plan PacifiCorp suggests the utilities in the region and the Council update these comparisons for future reference and demonstration of alignment.
Docket UE-132047 Order 01 (3) (a) (i) & WAC 480-109-110 (1) (b) and (c)	
The Company will consult with the DSM Advisory Group on modification of existing or development of new evaluation, measurement, and verification (EM&V) conservation protocols based on PacifiCorp's current evaluation, measurement and verification approach.	The development of a written EM&V framework in collaboration with the DSM Advisory Group is described in this Conservation Plan in the section entitled "Utility Evaluation, Measurement and Verification Activities"; a copy of the EM&V framework is provided as Appendix 8 to this report.
Docket UE-132047 Order 01 (3) (a) (ii) & WAC 480-109-110 (1) (e)	
The Company will consult with the DSM Advisory Group on development of conservation potential assessments under RCW 19.285.040(1) (a) and WAC 480-109-100 (2).	The DSM Advisory Group was consulted in the preparatory work for the 2015 Conservation Potential Assessment, participated in the 2015 IRP public process, was consulted on the adjustments to the 2015 IRP selections (as outlined in "Conservation Potential and Conservation Target" section of this report) and

[45] Paragraph references in Table 10 for Docket UE-132047 items refer to the ordering section of Order 01 Attachment A and revised WAC 480-109 rule references that became effective April 12, 2015.

	participated in the development of the Company's 2016-2025 conservation forecast as detailed in the "Stakeholder Engagement" section of this report.
Docket UE-132047 Order 01 (3) (c) & WAC 480-110-110 (2)	
The Advisory Group should meet quarterly at a minimum.	A list of the relevant 2014 and 2015 Advisory Group meetings and IRP Public Input meetings are provided in this biennial conservation plan in the section entitled "Stakeholder Engagement". To date the DSM advisory group has met its required 4 times in 2015 however in total there have been 6 relevant advisory group meetings including meetings in 2014 and 7 IRP public input meetings held in which information relevant to the preparation of this report was discussed.
Docket UE-132047 Order 01 (3) (e) & WAC 480-109-110 (4)	
Company will notify the Advisory Group of public meetings scheduled to address the Company's integrated resource plan and provide relevant assumptions and information utilized in the development of the integrated resource plan as they apply to development and/or modification of the ten-year conservation potential.	Upon the issuance of Order 01 in Docket UE-132047 the Company confirmed that all members of the Company's DSM Advisory Group were included on the Company's IRP stakeholder contact/email list. See section entitled "Stakeholder Engagement" in this Conservation Plan for the list of meetings where information relevant to the development of the ten-year conservation potential was presented.
Docket UE-132047 Order 01 (4)	
The Company must provide "Annual Budgets and Energy Savings" (planned budgets and savings).	See Appendix 7 to this report, "PacifiCorp's Washington Demand-side Management 2016-2017 Business Plan."

Docket UE-132047 Order 01 (5)	
Company must maintain its conservation tariffs with program descriptions on file with the Commission. Program details about specific measures, incentives, and eligibility requirements must be filed as tariff attachments or as revisions to the Company DSM Business Plan.	See Appendix 7 to this report, "PacifiCorp's Washington Demand-side Management 2016-2017 Business Plan."
Docket UE-132047 Order 01 (6) (b) & (c) & WAC 480-109-100 (5) (a) & (b)	
PacifiCorp must use RTF deemed savings or other reliable and relevant source data	Data sources are outlined beginning on page 3-1 of Volume 2 of "PacifiCorp's Demand-Side Resource

that has verified savings levels and been presented to the Advisory Group for comment.	Potential Assessment For 2015-2034" which is provided as Appendix 2 to this document. Volume 4, Appendix G of that report provides a comparison of savings values. Current RTF savings data also informed several of the adjustments to the Company's current ten-year conservation forecast; after consultation with the DSM Advisory Group. Adjustments are described in both the "Conservation Potential and Conservation Targets" section and in Appendix 4 to this report.
Docket UE-132047 Order 01 (6) (f)	
PacifiCorp must spend a reasonable amount of its conservation budget on EM&V. PacifiCorp must have completed an independent third-party review of portfolio level electric energy savings reported by PacifiCorp for the 2014-2015 biennium from existing conservation programs operated during that period.	See Appendix 7, "PacifiCorp's Washington Demand-side Management 2016-2017 Business Plan." The Business Plan provides an estimate of the evaluation expense and total expenditures for the next biennial period. The evaluation expenditures of $921,363 represent 3.8 percent of the preliminary budget of $24,560,530 or 4.1 percent of the preliminary budget if NEEA costs are removed (NEEA conducts their own evaluation efforts and reports savings to the Company). Third-party review has been commissioned and is currently underway; results will be provided in the June, 2016, 2014-2015 biennial period performance report.

Docket UE-132047 Order 01 (6) (h) & WAC 480-109-100 (1) (b)	
As part of PacifiCorp's biennial conservation acquisition efforts, PacifiCorp will continue to pursue regional electric market transformation.	The Company is a contributing funder to the NEEA, holds a seat on its Board of Directors, and participants on several key advisory committees. For additional information on the NEEA within this report see "Treatment of Northwest Energy Efficiency Alliance Initiatives" in the "Conservation Potential and Conservation Target" section of this report, in Appendix 7, "PacifiCorp's Washington Demand-side Management 2016-2017 Business Plan", and Appendix 9, "Northwest Energy Efficiency Alliance 2016-2017 PacifiCorp Forecast and Forecast Methodology."

Docket UE-132047 Order 01 (7) (a) & WAC 480-109-100 (7)	
PacifiCorp must offer a mix of tariff-based programs that ensure it is serving each customer sector, including limited income customers.	See Appendix 7 to this report, "PacifiCorp's Washington Demand-side Management 2016-2017 Business Plan." The comprehensive portfolio of programs and available services and incentives are relevant to all customer sectors, including limited income customers.
Docket UE-132047 Order 01 (7) (b)	
PacifiCorp must establish a strategy and proposed total planned expenditures for informing participants about program opportunities. The planned expenditures will include expenditures by PacifiCorp directly and not those of the Company's third party program delivery administrators who are primarily or solely contracted for program delivery. PacifiCorp will share these strategies and expenditures with the Advisory Group for review and comments.	A preliminary copy of the Company's 2016 Outreach and Communications plan has been provided in "PacifiCorp's Washington Demand-side Management 2016-2017 Business Plan.", Appendix 7 to this report. Forecasted expenses for the plan are provided as a line item in the DSM Business Plan budget (Appendix 7, Table 1). Outreach and Communication Plans for coming calendar years are presented for comment at the Company's 4th quarter DSM Advisory Group meetings each year. The 2015 plan was presented at the October 30, 2014 meeting.

Docket UE-132047 Order 01 (7) (c)	
PacifiCorp must offer a cost-effective portfolio of programs in order to achieve all available conservation that is cost-effective, reliable and feasible. Programs, program services, and incentives may be directed to consumers, retailers, manufacturers, trade allies or other relevant market actors as appropriate for measures or activities that lead to electric energy savings. Incentive levels and other methods of encouraging energy conservation need to be examined periodically for effectiveness in fulfilling the Company's obligation under WAC 480-109. To the degree the portfolio remains cost-effective, incentive levels and implementation methods should not unnecessarily limit the acquisition of all achievable energy conservation.	See Appendix 7 to this report, "PacifiCorp's Washington Demand-side Management 2016-2017 Business Plan." All the Company's programs are evaluated for cost-effectiveness on a prospective or filed basis, retrospectively each year in June in the Company's annual activity reports, and in the course of the completion of impact evaluations. Incentives are established to promote customer participation, while maintaining the cost effectiveness of the program and portfolio.
Docket UE-132047 Order 01 (7) (d)	
PacifiCorp may spend up to 10 percent of its conservation budget on programs whose savings impact has not yet been measured, as long as the overall portfolio of conservation passes the Total Resource Cost (TRC) test. These programs may include educational, behavior change, and pilot projects. The Company may ask the Commission to modify this spending limit following full Advisory Group consultation.	See Appendix 7 to this report, "PacifiCorp's Washington Demand-side Management 2016-2017 Business Plan." As described in the Business Plan, the only conservation effort without EM&V is the "Be ***watt***smart, Begin at Home" school initiative. Forecasted expenditures for this effort during the biennial period are $121,894 and represent 0.5 percent of the preliminary PacifiCorp conservation budget of $22,739,078.

Docket UE-132047 Order 01 (8) (d) & WAC 480-109-120 (1) (a) & (2)	
Required reports and filings. A Biennial Conservation Plan, including revised program details and program tariffs together with identification of 2016-2025 achievable conservation potential, by November 1, 2015.	The filing by October 30, 2015 of "PacifiCorp's Ten-Year Conservation Potential and 2016 - 2017 Biennial Conservation Target for its Washington Service Area," this report, and its supporting materials, satisfies the Company's requirement for 2015.
Docket UE-132047 Order 01 (9) (a) & (b) & WAC 480-109-110 (1) (k)	
Required Public Involvement in Preparation for the 2016-2017 Biennium.	See "Stakeholder Engagement" section of this report for an outline of the public process the Company facilitated in the development of its proposed 2016-2025 ten year conservation potential forecast and 2016-2017 biennial target.
Docket UE-132047 Order 01 (10) (a) - (c) & WAC 480-109-100 (8) & (10)	
Cost effectiveness Test is the Total Resource Cost Test, as modified by the Council. WAC 480-109-100 (10) provides alternative agency cost justification tests for low-income conservation measures/programs.	See Appendix 3 to this report, "Comparison of Regional Methodologies." In addition to resource planning and avoided cost development methodology comparisons provides information on how the Company's Total Resource Cost calculation complies with the cost-effectiveness definition (RCW 80.52.030(8)) and incorporates the ten percent conservation benefit and a risk adder consistent with the Council's approach. Cost effectiveness assessments at program and portfolio level are provided in the DSM 2016-2017 Business Plan, Appendix 7 to this report. Quantifiable non-energy benefits were included in these calculations. The 2015 potential study included the effects of non-energy benefits as a reduction to energy efficiency measure costs.
WAC 480-109-100 (2) (a) – (c)	
(2)(a) Beginning January 2010, and every two years thereafter, a utility must project its cumulative ten-year conservation resources that are cost-effective, reliable, and feasible. (2) (b) This projection must be derived from the utility's most recent IRP, including any information learned in its subsequent resource acquisition process, or the utility must document	See Appendix 1, "2015 Integrated Resource Plan," Appendix 2, "PacifiCorp's Demand-Side Resource Potential Assessment for 2015-2034," Appendix 10, "Cascade Energy, Inc. Study," Appendix 11, "Commonwealth Associates, Inc. Study," and Appendix 12, "Navigant Consulting Inc. Study." These appendices provide evidence the Company has identified and appropriately screened for

the reasons for any differences. When developing this projection, utilities must use methodologies that are consistent with those used in the Northwest Conservation and Electric Power Plan. (2) (c) The projection must include a list of each measure used in the potential, its unit energy savings value, and the source of that value.	all available conservation that is cost-effective, reliable and feasible. The "Conservation Potential and Conservation Targets" section of this report provides an overview of the Conservation Potential Assessment and 2015 IRP processes as well as how the Cascade, Commonwealth, and Navigant studies were used to arrive at the Company's ten-year conservation forecast provided in this report. Appendices A through H in Volume 4 of "PacifiCorp's Demand-Side Resource Potential Assessment for 2015-2034" (Appendix 2 to this report) provides detailed supplementary information for conservation resources including assumed measures, measure costs and savings, end-use saturations, electric fuel shares, current market shares, calculated 2034 measure potential by state, sector, and market segment, and savings source.

WAC-480-109-100 (3) (a) & (b)	
Beginning January 2010, and every two years thereafter, a utility must establish a biennial conservation target. (3) (a) The biennial conservation target must identify, and quantify in megawatt-hours, all available conservation that is cost-effective, reliable, and feasible. (3) (b) The biennial conservation target must be no lower than a pro rata share of the utility's ten-year conservation potential.	The filing by October 30, 2015 of "PacifiCorp's Ten-Year Conservation Potential and 2016 - 2017 Biennial Conservation Target for its Washington Service Area," this report, and its supporting materials, satisfies the Company's requirement for the 2016 and 2017 biennial period. As describe in more detail in the "Conservation Potential and Conservation Target" section of this document, the Company chose the first two years of its ten-year conservation potential, net of the detailed adjustments documented in Appendix 4 of this this report, as its 2016-2017 biennial target (total potential in the first two years of the ten-year conservation forecast, prior to the removal NEEA savings from the target, were greater than the "pro rata" share).

List of Appendices

1) 2015 Integrated Resource Plan - PacifiCorp's 2015 Integrated Resource Plan filed on March 31, 2015 (Docket No. UE-140546). The 2015 IRP is available at http://www.pacificorp.com/es/irp.html

2) PacifiCorp Demand-Side Resource Potential Assessment for 2015-2034. This report is available at http://www.pacificorp.com/env/dsm.html

3) Comparison of Regional Methodologies – Northwest Power and Conservation Council's Regional Power Plan and PacifiCorp's Integrated Resource Plan, relevant Washington Collaborative Working Group documents on comparisons

4) Additional Detail - Forecast Adjustments made to PacifiCorp's Ten-Year Conservation Forecast (adjustments to 2015 IRP selections, among others)

5) List of Measures selected for 2016 and 2017 in the Preferred Portfolio during PacifiCorp's 2015 IRP Process

6) CLEAResult 2014 evaluation of Waste Heat to Power and Regenerative Technology opportunities

7) PacifiCorp's Washington Demand-side Management 2016-2017 Business Plan

8) PacifiCorp's Evaluation, Measurement, and Verification Framework (E,M&V)

9) Northwest Energy Efficiency Alliance 2016-2017 forecast for PacifiCorp's Washington service territory, forecast and forecast methodology

10) Cascade Energy Inc. Studies of production efficiency opportunities in Washington

11) Commonwealth Associates, Inc. Study of DEI opportunities in Washington

12) Navigant Consulting, Inc. Study of distributed generation resource opportunities including high-efficiency cogeneration in Washington

Appendix 1
PacifiCorp's 2015 Integrated Resource Plan

(Appendix 1 is voluminous and therefore provided on compact disc)

Appendix 2
PacifiCorp Demand-Side Resource Potential Assessment For 2015-2034

(Appendix 2 is voluminous and therefore provided on compact disc)

Appendix 3
Comparison of Regional Methodologies

Northwest Power Plan and PacifiCorp Integrated Resource Plan Comparison Matrix, Washington Collaborative Working Group Documents on Avoided Cost and Total Resource Cost Methodology Comparisons (Methodology sub-group)

This appendix contains an outline of the methodology used and provided by the Northwest Power and Conservation Council in the development of the sixth regional power plan along with a description of the Company's aligning methodology. It also contains key work product documents (Tables A3-1 and A3-3) generated by the 2011 Washington Collaborative Working group on regional alignment of methodologies. This analysis demonstrates the consistency of the methodologies used in the development of regional plans and the Company's plan.

The information on the left side of Table A3-1 below is the Northwest Power and Conservation Council's outline of major elements for the Northwest Power and Conservation Council's Methodology for Determining Achievable Conservation Potential.[46] Tom Eckman stated the methodology outline below applies to both the 5th and the 6th regional power plans. The information on the right side is the comparable information related to PacifiCorp's 2013 Integrated Resource Plan methodology.

Information in the PacifiCorp column of Table A3-2 was updated to reflect approaches utilized in the 2015 IRP.

Table A3-1
Methodology for Determining Achievable Conservation Potential
Outline of Major Elements

Northwest Power and Conservation Council		**PacifiCorp 2013 IRP**
1) Resource Definitions	i) Technical Potential	
	ii) Economic Potential	
	iii) Achievable Potential	PacifiCorp used these same categories.
	(1) Non-lost opportunity resources ("schedulable")	In PacifiCorp's conservation potential assessment, these resources are referred to as "discretionary."
	(2) Lost opportunity resources	PacifiCorp uses same definitions, distinguishing between new construction and "normal replacement" as lost opportunity resources.

[46] http://www.nwcouncil.org/energy/powerplan/6/assessmentmethodology/

Northwest Power and Conservation Council		PacifiCorp 2013 IRP
2) Technical Resource Potential Assessment	a) Review wide array of energy efficiency technologies and practices across all sectors and major end uses	PacifiCorp examined 376 "unique" measures in its conservation potential assessment, inclusive of all measures included in the Council's 6th Plan. Production efficiency opportunities were identified in the Cascade Energy study.
	b) Methodology	
	i) Technically feasibility savings = Number of applicable units * incremental savings/applicable unit	PacifiCorp used same methodology.
	ii) "Applicable" Units accounts for	
	(a) Fuel saturations (e.g. electric vs. gas DHW)	PacifiCorp used the same variables based on the latest survey data available for the residential sector. Data for the commercial sector were obtained through field surveys and from the Northwest Commercial Building Stock Assessment (CBSA), the same source used by the Council.
	(b) Building characteristics (single family vs. mobile homes, basement/non-basement, etc.)	
	(c) System saturations, (e.g., heat pump vs. zonal, central AC vs. window AC)	
	(d) Current measure saturations	
	(e) New and existing units	
	(f) Measure life (stock turnover cycle)	Technical specifications for measures were compiled from secondary sources. Measure life estimates are consistent with Council's assumptions.
	(g) Measure substitutions (e.g., duct sealing of homes with forced-air resistance furnaces vs. conversion of homes to heat pumps with sealed ducts)	PacifiCorp examined and accounted for all measure interactions and substitution effects.
	iii) "Incremental" Savings/applicable unit accounts for	
	(a) Expected kW and kWh savings shaped by time-of-day, day of week and month of year	PacifiCorp used hourly (8760) end use load shapes to determine hourly impacts for all measures.
	(b) Savings over baseline efficiency	
	(i) Baseline set by codes/standards or current practices	PacifiCorp set baselines according to known codes and standards at the time of the analysis.
	(ii) Not always equivalent to savings over "current use" (e.g., new refrigerator savings are measured as "increment above current federal standards, not the refrigerator being replaced)	All lost opportunity savings were calculated based on existing *codes and standards*, and not existing *stock* characteristics.
	(c) Climate - heating, cooling degree days and solar availability	All analyses were based on typical meteorological year (TMY) data specific to the Company's service territory..
	(d) Measure interactions (e.g. lighting and HVAC, duct sealing and heat pump performance, heat pump conversion and weatherization savings)	Technical measure interactions were taken into account.

Northwest Power and Conservation Council		PacifiCorp 2013 IRP
3) Economic Potential - Ranking Based on Resource Valuation	a) Total Resource Cost (TRC) is the criterion for economic screening - TRC includes all cost and benefits of measure, regardless of who pays for or receives them.	
	i) TRC B/C Ratio $\geq$ = 1.0	
	ii) Levelized cost of conserved energy (CCE) $\leq$ levelized avoided cost for the load shape of the savings may substitute for TRC if "CCE" is adjusted to account for "non-kWh" benefits, including deferred T&D, non-energy benefits, environmental benefits and Act's 10% conservation credit	Total Resource Cost levelized cost of conserved energy is the criterion for economic screening in the 2013 IRP and included cost reduction credits for risk mitigation, transmission and distribution investment deferred benefits, environmental benefits and the 10% regional act credit.
	b) Methodology	
	i) Energy and capacity value (i.e., benefit) of savings based on avoided cost of future wholesale market purchases (forward price curves)	PacifiCorp used full energy and capacity avoided costs in its calculation of measure benefits, based on PacifiCorp's system avoided cost decrements.
	ii) Energy and capacity value accounts for shape of savings (i.e., uses time and seasonally differentiated avoided costs and measure savings)	
	iii) Uncertainties in future market prices are accounted for by performing valuation under wide range of future market price scenario during Integrated Resource Planning process (See 4.1)	Uncertainty is handled through both analysis of three (baseline, high, low) market price/natural gas price scenarios, as well as Monte Carlo production cost simulation using market and natural gas prices as stochastic variables.
	c) Costs Inputs (Resource Cost Elements)	
	i) Full incremental measure costs (material and labor)	PacifiCorp fully accounted for these costs, including 20% program administration expenses.
	ii) Applicable on-going O&M expenses (plus or minus)	
	iii) Applicable periodic O&M expenses (plus or minus)	
	iv) Utility administrative costs (program planning, marketing, delivery, on-going administration, evaluation)	
	d) Benefit Inputs (Resource Value Elements)	
	i) Direct energy savings	All included in the analysis.
	ii) Direct capacity savings	
	iii) Avoided T&D losses	
	iv) Deferral value of transmission and distribution system expansion (if applicable)	PacifiCorp applied a T&D investment deferral credit of $54/kW-yr. The 6th Plan uses a distribution-only credit of $25/kW-yr.
	v) Non-energy benefits (e.g. water savings)	Quantifiable non-energy benefits were captured in the development of the conservation resource supply-curves developed for use in the 2011 IRP.

Northwest Power and Conservation Council		PacifiCorp 2013 IRP
	vi) Environmental externalities	PacifiCorp and the Council use a carbon tax, and both include the tax for derivation of wholesale electricity prices. The Council treats the CO2 price as a stochastic variable for risk analysis (given a uniform distribution with values between $0 and $100), whereas PacifiCorp does not. The Council's forecast of expected CO2 allowance prices begins in 2012 at a price of $8/ton, increasing to $27/ton in 2020, and to $47 per ton in 2030. PacifiCorp considered five CO2 price scenarios in its 2013 IRP. Annual assumed costs under each scenario are provided in Table 7.3 of the 2013 IRP (Appendix 1 to this document).
	e) Discounted Present Value Inputs	
	i) Rate = After-tax average cost of capital weighted for project participants (real or nominal)	PacifiCorp used the after-tax weighted average cost of capital (WACC) for economic valuation of all measures.
	ii) Term = Project life, generally equivalent to life of resources added during planning period	PacifiCorp used the same methodology.
	iii) Money is discounted, not energy savings	Only monetary values (avoided cost benefits) were discounted.
4) Achievable Potential	a) Annual acquisition targets established through Integrated Resource Acquisition Planning (IRP) process (i.e., portfolio modeling)	PacifiCorp used the same methodology.
	b) Conservation competes against all other resource options in portfolio analysis	With the exception of discounts for risk mitigation and the 10% regional act credit PacifiCorp's 2013 IRP model treats energy efficiency resources and supply-side options equally.
	i) Conservation resource supply curves separated into	
	(1) Discretionary (non-lost opportunity)	PacifiCorp used identical definitions and reported the results in these formats in the conservation potential assessment.
	(2) Lost-opportunity	
	(3) Annual achievable potential constrained by historic "ramp rates" for discretionary and lost-opportunity resources	In its Conservation Potential Assessment, PacifiCorp used the Council's assumption of a maximum 85% achievable potential for retrofit or non-lost opportunity and 72% for lost opportunities; an effective achievable of 79%. Ramp rates were developed for each measure and state reflecting the relative state of technology and state program. New technologies and states with newer programs (e.g., Wyoming) assumed to take more time to
	(a) Maximum ramp up/ramp down rate for discretionary is 3x prior year for discretionary, with upper limit of 85% over 20 year planning period	
	(b) Ramp rate for lost-opportunity is 15% in first year, growing to 85% in twelfth year	

Northwest Power and Conservation Council		PacifiCorp 2013 IRP
	(c) Achievable potentials may vary by type of measure, customer sector, and program design (e.g., measures subject to federal standards can have 100% "achievable" potential)	ramp up than states and technologies with more extensive track records(e.g. Washington and Utah).
	c) Revise Technical, Economic and Achievable Potential based on changes in market conditions (e.g., revised codes or standards), program accomplishments, evaluations and experience	PacifiCorp incorporates the impacts of enacted legislation in the development of its Technical, Economic and Achievable potentials, even if the legislation will not go into effect for several years, The most notable, recent efficiency regulation captured is the Energy Independence and Security Act of 2007.
	i) All programs should incorporate Measurement and Verification (M&V) plans that at a minimum track administrative and measure costs and savings.	PacifiCorp routinely evaluates its programs to measure actual savings based on industry best practices, including the IPMVP. The Company's recently documented EM&V framework is included as Appendix 8 to this report.

Table A3-2
Methodology for Determining Avoided Costs
Washington Collaborative Comparison

	Council	PacifiCorp	Consistency with Council Method
Primary Inputs			
Long-term forward price forecast(s) for energy and capacity	Yes, based on Aurora forecast of 8760 market prices aggregated into 4 time segments per month (48 annual segments) for cost benefits analysis, wide ranges and volatility added for portfolio analysis to capture risk.	PacifiCorp uses the Aurora model which relies on 8760 market price forecasts for energy to meet projected loads which includes both market purchases and generated power.	All utilities rely on hourly market price forecasts, consistent with the Council. Values vary according to the resource needs and options available for each utility.
Deferred/avoided T&D system costs	Yes for distribution system. Based on kW avoided at coincident peak and $ value of deferred kW expansion.	Yes. PacifiCorp applies a T&D deferral credit for energy efficiency in the IRP, currently set at $54/kW-year. The credit reduces measure resource costs in the supply curves prior to IRP modeling.	All utilities, like the Council, include a T&D deferral credit. Values may vary across utilities based on their system characteristics.
T&D line loss adjustment	Yes, 3.9% WECC transmission losses and 5% distribution losses, average about 9% total. Transmission losses vary by load levels so losses differ by load profile of measures.	Yes - System wide sector specific (residential, commercial and industrial) line losses are added to the site level DSM measure savings. Incorporated when DSM costs are levelized in development of supply curves prior to IRP modeling.	All utilities include a line loss adjustment, as does the Council. Utilities are utilizing average system losses; Council assumes marginal losses.

Generation reserve margin adjustment	Not directly. Included in Aurora for cost benefit assessment. Based on resources needed to meet load reliably and avoid high price excursions in portfolio analysis.	Yes. We include a capacity contribution for energy efficiency in our determination of capacity requirements.	All utilities and the Council incorporate reserve margins as part of the avoided capacity costs.
Uncertainty/risk adjustment	Yes. Portfolio analysis evaluates risk level explicitly as a characteristic of a resource strategy, value of efficiency in reducing risk is calculated as a premium for efficiency over market price.	PacifiCorp's IRP modeling of energy efficiency includes a risk reduction credit. The analytical approach was outlined in Appendix 4 to the Company's 2010-2011 biennial conservation target report filed with the Commission in UE-100170 targets the value of energy efficiency for reducing high-cost outcomes in the context of stochastic Monte Carlo production cost modeling. While the analytics are not used specifically to determine DSM avoided costs, it does affect the selection of DSM resources in a manner consistent with the Council methodology. This approach was utilized again in the 2013 and 2015 IRP for energy efficiency resources selected in all states.	All utilities and the Council incorporate risk, although the values may vary.
10% Power Act credit	Yes. Applied to energy & deferred capacity components of value only.	Yes. The analytical approach was outlined in Appendix 4 of UE-100170 filed to support establishing the first biennial targets. The formula for calculating the $/MWh credit is: (Bundle price - ((First year MWh savings x market value x 10%) + (First year MWh savings x T&D deferral x 10%))/First year MWh savings. The levelized forward electricity price for the Mid-Columbia market is used as the proxy market value. While the analytics are not used specifically to determine avoided cost values, it does affect the selection of DSM resources in a manner consistent with the Council methodology. This approach was utilized again in the 2011, 2013 and 2015 IRP for Washington resources.	All utilities apply the 10% credit, but not as a direct adjustment to avoided cost in all cases. Avista applies it as benefit in its TRC calculation, rather than to the avoided cost. PacifiCorp applies the 10% adder as an additional benefit during the TRC calculation. PSE is consistent with the Council.

Shape of load (time and seasonality differentiation)	Yes. Four weekly time segments for each month and measure, aggregated from 8760 in Aurora and short-term demand forecast.	Yes. Avoided cost values (expressed in $/MWH for given year) are established by decrementing the load using 8,760 hour load shapes.	All utilities and the Council apply load shapes to their savings and costs. Methodology is generally consistent, but assumptions may vary.
Present Value Calculation Inputs			
Discount rate (real or nominal, pre-tax or post-tax, etc.)	Yes. Real after tax cost of capital. Rates vary for different types of utilities and consumers and debt versus equity.	Yes. 2015 IRP uses a weighted average cost of capital (currently 6.66 %).	All utilities use their weighted average cost of capital, while the Council uses a hybrid of utility cost of capital and customer long-term discount rate.
Time frame (program/measure life, other term)	Twenty-year program analysis. Measure lives <20 years are re-purchased, longer are prorated and truncated.	Twenty year planning horizon. Measure lives <20 years are repurchased, longer are prorated and truncated.	All utilities handle time frame and measure lives similarly to the Council in their IRP's. For non-IRP program analysis, utilities generally use one measure lifecycle as the time frame.
Calculation algorithms (generalized)	**Avoided Cost for a Measure =**	.	.
Energy (if calculated separately)	.	The approach to establishing the DSM avoided cost values is described in the 2015 decrement study and outlined briefly here. Values are established for resource types that align with measure types such as residential lighting, residential cooling, etc. where an 8,760 hourly load shape is available. Forecasted loads within the IRP preferred portfolio are reduced or decremented by an aggregate amount across each hour of the representative load shape. The change in the IRP preferred portfolio's present value of revenue requirements for each resource type is displayed in $/MWh and represent the avoided cost for that resource type.	See below

Capacity (if calculated separately)	.	Included in decrement analysis	See below
Energy & Capacity combined (if calculated together)	Avoided Cost for a Measure = Mean point forecast of market price of energy by measure (based on shape of savings) PLUS Uncertainty/Risk Adjustment from portfolio analysis	Decrement analysis is combined value for both energy and capacity.	All parties combine energy & capacity together. PSE: In program analyses outside the IRP, PSE calculates separate avoided cost streams for energy and capacity and brings them together in its TRC calculation. All other parties incorporate capacity into their forecasts of energy prices.

Table A3-3
Methodology for Calculating Total Resource Cost
Washington Collaborative Comparison

	Council	PacifiCorp	Consistency with Council Method
Benefits			
Avoided Energy & Capacity Benefits			
Direct avoided energy savings	Yes, based on Aurora forecast of 8760 market prices aggregated into 4 time segments per month (48 annual segments) for cost benefits analysis, wide ranges and volatility added for portfolio analysis to capture risk.	Yes. See avoided cost matrix.	See Avoided Cost matrix.
Direct avoided capacity savings	Yes, based on Aurora forecast of 8760 market prices aggregated into 4 time segments per month (48 annual segments) for cost benefits analysis, wide ranges and volatility added for portfolio analysis to capture risk.	Yes. See avoided cost matrix.	See Avoided Cost matrix.
Avoided T&D line losses	Yes, 3.9percent WECC transmission losses and 5percent distribution losses, average about 9percent total. Transmission losses vary by load levels so losses differ by	Yes. See avoided cost matrix.	See Avoided Cost matrix.

	load profile of measures.		
Deferred T&D system savings	Yes, for distribution only, at time of peak usage	Yes. See avoided cost matrix.	See Avoided Cost matrix.
Quantified Non-Energy Benefits			
Non-energy benefits (water, etc.)	Yes, for quantifiable benefits or costs such as water, detergent, and internal end-use heating and cooling interactions.	Yes. Quantifiable non-energy benefits (available in third-party databases) were incorporated in our 2013 potential study update that was used to inform the 2013 IRP DSM selections. Non-energy benefits and O&M savings are incorporated as an adjustment to measure costs.	All utilities are now including NEBs, consistent with the Council. Assumed values may vary.
Environmental externalities	Yes, emissions are tracked and will be reduced through less dispatch of generation. Include cost of required control technologies. Include a range of potential CO2 costs from $0 to $100, growing over time averaging $47 by 2030.	Yes. Included through use of carbon tax assumptions in the IRP modeling process. In addition, environmental externalities beyond carbon with an established compliance cost (i.e. SOX) are included in production costs resulting in the value being captured in the calculation of avoided costs.	All parties handle this similarly. Assumptions about values vary.
10% Power Act credit	Yes. Applied to energy & deferred capacity components of value only.	Yes. See avoided cost matrix.	All utilities apply the 10% credit, but not as a direct adjustment to avoided cost in all cases. Avista applies it as a benefit in its TRC calculation, rather than to the avoided cost. PacifiCorp applies the 10% adder as an additional benefit during the TRC calculation. PSE is consistent with the Council.
Un-quantified Non-Energy Benefits (if/how included)	Not directly, may be partly reflected in 10% Act credit, but otherwise a portfolio judgment by Council. Typically not influential in decision, mostly based on quantifiable costs and benefits.	No. Not included at either the planning/analysis stage, at program cost effectiveness or individual customer level given the difficulty in identifying/quantifying.	Generally not explicitly included by any party, so utilities and Council are consistent. PSE has used this as a "nudge" to its low income program in past

			years, but it has not been necessary recently.
Tax Credits?	No. TRC is not reduced for tax credits. Renewable resource costs are reduced for credits, creating a potential consistency issue. Efficiency credits are more difficult to calculate.	No. Consider a transfer payment (and inherently hard to accurately quantify).	Council, PacifiCorp, and PSE do not include tax credits. Avista does the calculation with and without tax credits.
Costs			
Measure Costs (net)			
Full incremental measure cost (material & labor)	Yes, full incremental cost over current practice or codes and standards.	Yes. For lost opportunity resources, the incremental cost is the difference between the base and efficient case and may not include full labor costs. For retrofit resources, incremental costs are the full material and labor costs.	All parties treat measure costs consistently. Assumptions about values may vary, depending on local market costs.
Ongoing and periodic O&M costs (plus or minus)	Yes, and to extend a measure life is less than 20 year planning horizon replacement costs are included.	Yes. See avoided cost matrix.	All utilities include O&M costs where data is available and (in PSE's case) where TRC results would be materially affected. Assumed values may vary.
Non-incentive Program Costs (planning, marketing, delivery, admin, evaluation, etc.)	Yes, generally assume administrative costs are 20% of capital cost of measures.	Yes. Calculated as percent to the measure cost	All utilities include non-incentive costs, consistent with the Council. In IRP analyses, utilities apply a percentage "adder" to measure costs, like the Council. For non-IRP program analyses specific program budgets or actual expenditures are used.
Present Value Calculation Inputs (if different than for avoided cost)	same	.	.
Discount rate (real or nominal, pre-tax or post-tax, etc.)	Yes. Real after tax cost of capital. Rates vary for different types of utilities and consumers and debt versus	Yes. IRP uses a weighted average cost of capital (currently 6.882%).	See Avoided Cost matrix.

	equity.		
Time frame (program/measure life, other term)	Over 20 years of the plan	Over 20 years of the plan.	See Avoided Cost matrix.
Results Presented			
B/C Ratio	Yes, present value benefit cost ratio for measure screening	Yes	All utilities, as well as the Council, calculate B/C ratios. PSE does not calculate a B/C ratio in its IRP portfolio analysis, because it is comparing total portfolio costs.
Levelized values	Yes, for portfolio analysis.	Yes. Levelized costs expressed in $/kWh saved.	Calculated by all parties.
Total NPV values	Yes, for parts of analysis and results presentation. Levelized and NPV are functionally equivalent.	Yes. Calculate NPV of costs and benefits.	Calculated by all parties. PSE calculates NPV values, but NPV is not generally reported for non-IRP program analyses.

Appendix 4
Additional Detail – Forecast Adjustments

Adjustments to 2015 IRP Selections in the determination of PacifiCorp's
Ten-Year Conservation Forecast

The general methodology for updating 2015 IRP energy efficiency selections for the 2016-2025 forecast period is summarized in the main body of this biennial conservation report. This process updated Unit Energy Savings (UES), cost, and/or measure life assumptions from PacifiCorp's *Demand-Side Resource Potential Assessment For 2015-2034* ("Conservation Potential Assessment", or "CPA")[47], (published in January 2015) to the most current and applicable available data. A summary of the adjustment amounts by technology and/or measure by year can be found in Table 5 in the main body of this report. The detailed explanation for the adjustments is contained within this appendix (Appendix 4, "Additional Detail – Forecast Adjustments") below. Themes that exist across multiple measures include:

1. Consistent with items 6(b) and 6(c) of Attachment A to Order 01 in Docket UE-132047, the 2015 CPA relied on RTF deemed savings[48], except in cases where the measure was not assessed by the Regional Technical Forum (RTF) or where more relevant or reliable data were available. As discussed in Appendix G of Volume 4 of the 2015 CPA Report, UES values used in the CPA were based on the latest RTF guidance at the time the analysis was performed in early 2014. However, the RTF periodically updates deemed measure assumptions as new data become available, and some of the CPA assumptions are no longer consistent with current RTF deemed savings analysis. Additionally, the development of the draft 7th Power Plan provided updated regional planning assumptions for long-term projections for non-residential solid state lighting efficacies.
2. Updates primarily focused on residential measures where UES's are the dominant metric for planning and reporting, and attempted to align with expected program delivery over the biennial period. For program offerings, including measure specifications and incentives, see "PacifiCorp's Washington Demand-side Management 2016-2017 Business Plan.", Appendix 7 of this document.
3. For measures without RTF UES, cost, and measure life values, the CPA utilized the best information and accepted industry methodology at the time of the analysis. Some of these measure assumptions were revisited through this adjustment process to align with subsequent regional planning assumptions, such as the draft 7th Power Plan and guidance from WUTC staff on the treatment of residential behavioral savings persistence.
4. Through the review process, the Company discovered some modeling inconsistencies in the CPA, which affected levelized costs and/or achievable technical potential for certain measures. In these instances, the Company corrected the inputs and updated to the latest RTF assumptions to determine whether the measures' updated levelized costs fell within the ranges selected in the IRP from 2016-2025 and whether an adjustment to the conservation forecast was warranted.

[47] This report, prepared by Applied Energy Group, is included as Appendix 2 to this report and is also available at http://www.pacificorp.com/es/dsm.html.
[48] Current and archived RTF UES workbooks are available at: http://rtf.nwcouncil.org//measures/Default.asp

Residential Light Bulbs

In July of 2014, the RTF released an updated residential lighting workbook (version 3.3) containing 300 different measure permutations based on technology, lamp type, lumen category, hours of use, and delivery channel. However, as it would be impractical to estimate potential at this level, the CPA modeled six general categories of light bulbs, as shown in Table A4-1. To perform the adjustment to the conservation forecast, each CPA bulb configuration was matched with its most representative RTF configuration approved at the August 2015 meeting.

Table A4-1
Residential Light Bulb UES Comparison

CPA				RTF (ResLighting_Bulbs_v4_0.xlsm)	
Location	**Technology**	**Lamp Type**	**UES (kWh)**	**Updated UES (kWh)**	**Measure Name**
Interior	CFL	General Purpose	23	9	Retail_CFL_General Purpose, Dimmable, and Three-Way_250 to 1049 lumens
Interior	LED	General Purpose	21	15	Retail_LED_General Purpose, Dimmable, and Three-Way_250 to 1049 lumens
Interior	CFL	Specialty	16	28	Retail_CFL_Reflectors and Outdoor_250 to 1049 lumens
Interior	LED	Specialty	13	13	Retail_LED_Globe_250 to 1049 lumens
Exterior	CFL	General Purpose	55	9	Retail_CFL_General Purpose, Dimmable, and Three-Way_250 to 1049 lumens
Exterior	LED	General Purpose	50	15	Retail_LED_General Purpose, Dimmable, and Three-Way_250 to 1049 lumens

Residential Heat Pump Water Heaters

On April 16, 2015, new federal standards took effect, requiring electric tank type water heaters above 55 gallons in size to have an Energy Factor (EF) above 2.0. As such, the potential for heat pump water heaters identified in the 2015 CPA was limited to units at or below 55 gallons.

In July of 2015, the RTF posted version 3.0 of the "Residential DHW – HPWH" workbook with 63 measure permutations by heating zone, installation location, heating equipment, and efficiency tier. To adjust its conservation forecast for this update, PacifiCorp averaged the 10 configurations shown in Table A4-2 to develop a single average value to compare to the UES used in the CPA.

Table A4-2
Residential Heat Pump Water Heater Comparison (<=55 Gallons)

CPA		RTF Copy of Res_HPWH_v3_0.xlsm		
Measure Name	**UES (kWh)**	**Measure Name**	**UES (kWh)**	**Average UES**
Heat Pump Water Heater <= 55 Gallons	1,800	Tier1_garage_HZ1_0-55gallons	1,069	1,335
		Tier1_basmnt_HZ1_0-55gallons	1,191	
		Tier1_indor2_HZ1_gas_0-55gallons	1,326	
		Tier1_indor2_HZ1_resistheat_0-55gallons	980	
		Tier1_indor2_HZ1_hp85_0-55gallons	1,174	

		Tier2_garage_HZ1_0-55gallons	1,592	
		Tier2_basmnt_HZ1_0-55gallons	1,614	
		Tier2_indor2_HZ1_gas_0-55gallons	1,690	
		Tier2_indor2_HZ1_resistheat_0-55gallons	1,230	
		Tier2_indor2_HZ1_hp85_0-55gallons	1,484	

Residential Behavior

The 2015 CPA estimated the remaining potential for residential behavioral programs based on:

- Information on market size from the Company's Home Energy Reports implementer,
- Assumed savings per home, adjusted for estimated savings already attributed to other CPA measures,
- A one-year measure life, consistent with the Company's current planning and reporting, and
- Assumed ramp-up time to acquire the remaining potential

During the development of the 2016-20125 conservation forecast, stakeholders expressed an interest in better aligning residential behavioral planning and reporting conventions across utilities. In particular, assuming a two-year measure life and only counting full impacts in odd years and incremental impacts in even years. As such, the IRP selections for residential behavior were modified by removing the potential selected by the IRP, utilizing the most current forecast from OPower and allocating savings using a two-year measure life. The modifications are as shown in Table 5 in the main report. Additional information on the two-year measure life and how it's incorporated into cost-effectiveness analysis is provided below.

Table A4-3 shows OPower's latest forecast of energy savings during the 2016-2017 biennial period for the legacy and expansion groups. The terms "legacy" and "expansion" are used to refer to the two program treatment waves, which began receiving reports in August, 2012 and September, 2014, respectively.

Table A4-3
Forecasted savings provided by OPower

	Legacy + Refill Savings (MWh at Gen)	Expansion Savings (MWh at Gen)	Total Legacy + Expansion (MWh at Gen)
2016	5,606	4,510	10,116
2017	5,028	4,402	9,430
Average Annual Impact	5,317	4,456	9,773

Tables A4-4 and A4-5 allocate the forecasted savings by year assuming a two year measure life convention. The allocation accounts for the decay between 2016 and 2017 (as reflected in the OPower forecasts in Table A4-3). The 2018 savings is calculated as 80% of the net (decayed) 2017 savings. The 20 percent degradation factor is recommended in a meta-study of residential

behavior savings persistence performed by the Cadmus Group[49]. The results are displayed separately for the legacy and expansion groups.

Table A4-4
Forecasted Legacy Savings for Cost-Effectiveness Analysis (MWh)

	2016	2017	2018	Total
2016 (year 1)	5,112,000			5,112,000
2016 (year 2)		5,112,000		5,112,000
2016 (decay)		-527,000		-527,000
2017 - (year 1) - captured in 2016 year 2 + decay				-
2017 (year 2 - reports stop - 20% decay) [1]			3,668,000	**9,697,000**
Total [2]	5,112,000	4,585,000	3,668,000	**13,365,000**
Note 1: One year life - lifetime savings -2016-2017				
Note 2: Two year life - lifetime savings - 2016-2017				

Table A4-5
Forecasted Expansion Savings for Cost-Effectiveness Analysis (MWh)

	2016	2017	2018	Total
2016 (year 1)	4,112,026			4,112,026
2016 (year 2)		4,112,026		4,112,026
2016 (decay)		-98,424		-98,424
2017 - (year 1) - captured in 2016 year 2 + decay				-
2017 (year 2 - reports stop - 20% decay) [1]			3,210,882	**8,125,628**
Total [2]	4,112,026	4,013,602	3,210,882	**11,336,510**
Note 1: One year life - lifetime savings -2016-2017				
Note 2: Two year life - lifetime savings - 2016-2017				

While program economics will utilize the two measure life, only first year savings will be provided in reports and counted against the biennial conservation target. This reporting convention will generate a reporting challenge for 2017, a period in which report costs will be incurred, but no new savings are forecasted to be reported. For 2017, it may be appropriate to re-assess the two-year economics using the lifetime savings stream associated with 2016 reported savings and program costs for both 2016 and 2017.

Clothes Washers

Clothes washer UES values were updated from those used in the CPA to 2015 values from the RTF. While performing this update, the Company discovered that non-energy benefits were not applied correctly in CPA levelized cost calculations, causing clothes washers to be omitted from selected bundles in the 2015 IRP. As such, the entire re-estimated potential was taken as an

[49] Long-Run Savings and Cost Effectiveness of Home Energy Report Programs, M. Sami Khawaja and James Stewart, Winter 2014/2015 – p. 7.

upward adjustment to the conservation forecast to reflect that these measures are cost-effective when correctly accounting for non-energy benefits.

Residential Ductless Heat Pumps

Ductless heat pump UES values were updated from those used in the CPA to 2015 values from the RTF. While performing this update, the Company discovered that Operation and Maintenance (O&M) benefits were not applied correctly in CPA levelized cost calculations, causing ductless heat pumps to be omitted from selected bundles in the 2015 IRP. As such, the entire re-estimated potential was taken as an upward adjustment to the conservation forecast to reflect that these measures are cost-effective when correctly accounting for O&M benefits.

Appliance Recycling

The CPA utilized UES values (583 kWh for refrigerators, 495 kWh for freezers) from the prior program impact evaluation which utilized a methodology consistent with the RTF methodology. In August 2015, the Company received draft evaluation results utilizing the Uniforms Methods Project methodology for appliance recycling, which is consistent with the current RTF methodology. This evaluation utilizes a set of legacy RTF values (50% yes, 50% no) in response to a program logic question about whether the "would-be acquirer finds an alternate unit" The Table A4-6 provides the revised unit energy savings per recycled appliance.

Table A4-6
Draft 2013-2014 Program Evaluation Results – 50/50

Appliance	Gross Savings (kWh)	Free Rider and SMI Impacts (kWh)	Induced Consumption (kWh)	Spillover	Total Program Net Savings (kWh)
Refrigerator	1,112	733	51	-	328
Freezer	964	564	79	-	321

The RTF is in the process of updating the unit energy savings for appliance recycling. While the work is not yet complete and is more applicable to the region as a whole, the RTF is proposing to change the values incorporated in the "would be acquirer" program logic question to 75 percent yes, 25 percent no, which would lower the unit energy savings. Table A4-7 illustrates the unit energy savings from the Company's draft impact evaluation if the "would be acquirer" values are changed from 50 percent yes, 50 percent no to 75 percent yes and 25 percent no.

Table A4-7
Draft 2013-2014 Program Evaluation Results – 75/25

Appliance	Gross Savings (kWh)	Free Rider and SMI Impacts	Induced Consumption (kWh)	Spillover	Total Program Net Savings

		(kWh)			(kWh)
Refrigerator	1,112	762	51	-	299
Freezer	964	620	79	-	265

Given the material decline in UES values relative to the 2014-2015 biennium values, the Company evaluated cost effectiveness by appliance and channel (i.e. customer or retailer pick-up) basis utilizing the 2015 Class 2 DSM decrement values as part of the adjustment process to determine whether the measure should remain in the forecast. Utilizing the UMP assumptions (highest unit energy savings), three of the four appliance/channel configurations were not cost-effective. The remaining configuration (refrigerator/retailer pick-up) was not cost effective when the unit energy savings associated with the RTF values for "would be acquirer" are utilized.

Smart Plug Power Strips

The RTF has not updated its analysis of residential advanced power strips since the time of the CPA, however, a new commercial smart plug power strip workbook was posted in June of 2014. This update reflected a UES update from 100 kWh to 118 kWh, which the Company incorporated as an adjustment to its conservation forecast. While applying this update, an input inconsistency was discovered in the CPA's calculation, which had the effect of overstating levelized costs and understating potential. Correcting these inputs and calculations, along with the update to the RTF commercial UES led to an upward adjustment in the conservation forecast.

Non-Residential Solid State Lighting

Over the past several years, the solid state lighting market has seen significant changes in cost, efficacy (in lumens/Watt), and applicability, particularly in non-residential applications. To estimate how these factors may continue to change over the IRP planning horizon, the CPA relied on projections from the Energy Information Administration from December 2012[50], which forecasted significant increases in efficacy and decreased in costs by 2020.

The Council also made projections of LED efficacy in its development of the draft 7th Power Plan supply curves in early 2015, which Council staff provided to the Company, by non-residential application and year, The ratios of 7th Plan-to-CPA efficacy assumptions, by technology and year, were used to adjust the conservation forecast for these measures. The CPA and 7th Plan efficacy assumptions are provided in Table A4-8.

Table A4-8
Non-Residential Solid State Lighting Efficacy Adjustments

Application	Source	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Linear Fluorescent	CPA	58	58	58	58	170	170	170	170	170	170
	7th Plan	89	89	89	89	89	89	89	89	89	89
High Bay	CPA	85	85	85	85	170	170	170	170	170	170
	7th Plan	139	139	139	139	139	139	139	139	139	139
Screw-in	CPA	73	73	73	73	170	170	170	170	170	170
	7th Plan	73	73	73	73	73	73	73	73	73	73

[50] http://www.eia.gov/analysis/studies/buildings/equipcosts/pdf/appendix-c.pdf

Waste Heat to Power and Regenerative Technologies

The 2013 IRP Action Plan included a Company commitment to perform "an evaluation of waste heat to power where generation is used to offset customer requirements". The evaluation, performed by CLEAResult, was completed in mid-2014 and is included as Appendix 6 to this document. The evaluation estimated the cost and available potential of the following technologies in each of the Company's six states:

- Waste Heat to Power
  - High Temperature Waste Heat Recovery
  - Organic Rankine Cycle ("ORC")
  - Steam Power Generation Optimization
- Regenerative Braking
  - Elevators
  - Internal Conveyors
- Micro Hydro

The evaluation identified available potential in Washington for ORC, steam power generation optimization, and elevator regeneration in Washington at the levels and levelized costs shown in Table A4-9. Because the levelized cost of elevator regeneration is higher than Class 2 DSM resources selected by the 2015 IRP, only the potential of ORC and Steam System Optimization were added to the conservation forecast.

Table A4-9
Potential and Cost for Waste Heat to Power and Regenerative Technology

	ORC	Steam System Optimization	Elevator Regeneration
Levelized Cost ($/ MWh)	$66.21	$11.96	$145.01
Magnitude of Opportunity (MWh)			
2016			47
2017			31
2018			47
2019		4,199	31
2020	3,338		47
2021			31
2022			47
2023			31
2024			47
2025			31

Northwest Energy Efficiency Alliance ("NEEA")

Savings available from market transformation is included in the 2015 IRP selections, and thus, the conservation forecast. In preparation for the 2016-2017 biennium target setting process, the three utilities met in August, 2015 and revisited the treatment and methodology with Commission staff and DSM advisory groups. It was determined that although there could be reporting clarifications made, particularly with how NEEA savings related to percent of goal

achievement tracked by the Department of Commerce, the methodology worked well and would be used again for the coming biennium. As a result, PacifiCorp requested NEEA prepare a 2016-2017 savings forecast for the Company's Washington service area for use in adjusting our 2016-2017 biennial target.

The forecast provided by NEEA to PacifiCorp detailing the methodology and forecast is included as Appendix 9 to this report. As NEEA forecasts savings at the customer site, the Company grossed the forecast up to the generator using PacifiCorp's sector-specific line losses, for consistency with the other numbers presented in this document. The generator-level savings are 2,176 MWh and 3,069 MWh for 2016 and 2017, respectively. As specified in the joint utility proposal, these savings are subtracted from the first two years of PacifiCorp's conservation forecast to arrive at the energy efficiency component of the Company's 2016-2017 biennial conservation target.

Appendix 5
List of Measures Selected in 2016 and 2017
PacifiCorp 2015 IRP Preferred Portfolio

The 2015 Integrated Resource Plan selected bundles up to $0.10/kWh levelized in both 2016 and 2017. Table A5-1 below contains a list of the measures selected by year, bundle and sector. A measure may appear in multiple bundles due to differences in savings and/or cost by building type, end use, or construction vintage.

Table A5-1
Measures Selected in the 2015 IRP Preferred Portfolio – 2016 and 2017

Sector	Measure Name	Cost Bundle ($/kWh)	Selected 2016	Selected 2017
Commercial	Air-Cooled Chiller - Chilled Water Reset	1. Up to $0.01	✓	✓
Commercial	Desktop Computer	1. Up to $0.01	✓	✓
Commercial	Dishwasher	1. Up to $0.01	✓	✓
Commercial	Ductless Mini Split Heat Pump	1. Up to $0.01	✓	✓
Commercial	Exterior Lighting - Photovoltaic Installation	1. Up to $0.01	✓	✓
Commercial	Fruit Storage Refrigeration Retrofit	1. Up to $0.01	✓	✓
Commercial	Fruit Storage Refrigeration Tuneup	1. Up to $0.01	✓	✓
Commercial	Fruit Storage Retrofit - CO2 Scrub	1. Up to $0.01	✓	✓
Commercial	Fruit Storage Retrofit - Membrane	1. Up to $0.01	✓	✓
Commercial	Fryer	1. Up to $0.01	✓	✓
Commercial	Geothermal Heat Pump	1. Up to $0.01	✓	✓
Commercial	HID - High Output T5 (75.5 lm/W)	1. Up to $0.01	✓	
Commercial	HID - LED (170 lm/W)	1. Up to $0.01	✓	✓
Commercial	High-Bay Fixtures - High Output T5 (75.5 lm/W)	1. Up to $0.01	✓	
Commercial	High-Bay Fixtures - LED (170 lm/W)	1. Up to $0.01	✓	✓
Commercial	Hot Food Container	1. Up to $0.01	✓	✓
Commercial	HVAC - Duct Repair and Sealing	1. Up to $0.01	✓	✓
Commercial	HVAC - Occupancy Sensors	1. Up to $0.01	✓	✓
Commercial	Icemaker	1. Up to $0.01	✓	✓
Commercial	Insulation - Ducting	1. Up to $0.01	✓	✓
Commercial	Interior Fluorescent - Delamp and Install Reflectors	1. Up to $0.01	✓	✓
Commercial	Laptop	1. Up to $0.01	✓	✓
Commercial	Linear Fluorescent - LED (170 lm/W)	1. Up to $0.01		✓
Commercial	Lodging - Guest Room Controls	1. Up to $0.01	✓	✓
Commercial	Office Equipment - Plug Load Occupancy Sensors	1. Up to $0.01	✓	✓
Commercial	Oven	1. Up to $0.01	✓	✓
Commercial	Pool Heater	1. Up to $0.01	✓	✓
Commercial	Pool Pump	1. Up to $0.01	✓	✓
Commercial	POS Terminal	1. Up to $0.01	✓	✓

Sector	Measure Name	Cost Bundle ($/kWh)	Selected 2016	Selected 2017
Commercial	Printer/Copier/Fax	1. Up to $0.01	✓	✓
Commercial	Refrigeration - Strip Curtain	1. Up to $0.01	✓	✓
Commercial	Server	1. Up to $0.01	✓	✓
Commercial	Vending Machine	1. Up to $0.01	✓	✓
Commercial	Ventilation - ECM on VAV Boxes	1. Up to $0.01	✓	✓
Commercial	Ventilation - Variable Speed Control	1. Up to $0.01	✓	✓
Commercial	Water Heater - Desuperheater	1. Up to $0.01	✓	✓
Commercial	Water Heater - Faucet Aerators/Low Flow Nozzles	1. Up to $0.01	✓	✓
Commercial	Water Heater - High Efficiency Circulation Pump	1. Up to $0.01	✓	✓
Commercial	Water Heater - Install Timer	1. Up to $0.01	✓	✓
Commercial	Water Heating	1. Up to $0.01	✓	✓
Commercial	Water-Cooled Chiller - Chilled Water Reset	1. Up to $0.01	✓	✓
Commercial	Water-Cooled Chiller - Condenser Water Temperature Reset	1. Up to $0.01	✓	✓
Industrial	Agriculture - Engine Block Heater Timers	1. Up to $0.01	✓	✓
Industrial	Air-Cooled Chiller	1. Up to $0.01	✓	✓
Industrial	Clean Room: Change Filter Strategy	1. Up to $0.01	✓	✓
Industrial	Compressed Air - Air Usage Reduction	1. Up to $0.01	✓	✓
Industrial	Fan System - Controls	1. Up to $0.01	✓	✓
Industrial	Heat Lamp/Heating Pad Controller	1. Up to $0.01	✓	✓
Industrial	Heat Lamps	1. Up to $0.01	✓	✓
Industrial	HID - LED (170 lm/W)	1. Up to $0.01	✓	✓
Industrial	High-Bay Fixtures - LED (170 lm/W)	1. Up to $0.01	✓	✓
Industrial	High-efficiency Livestock Waterers	1. Up to $0.01	✓	✓
Industrial	Interior Lighting - LED Exit Lighting	1. Up to $0.01	✓	✓
Industrial	Motors - Magnetic Adjustable Speed Drives	1. Up to $0.01	✓	✓
Industrial	Strategic Energy Management	1. Up to $0.01	✓	✓
Industrial	Wood: Replace Pneumatic Conveyor	1. Up to $0.01	✓	✓
Residential	Convert CAC to Evap AC	1. Up to $0.01	✓	✓
Residential	Ductless Mini Split Heat Pump	1. Up to $0.01	✓	✓
Residential	Laptops	1. Up to $0.01	✓	✓
Residential	Linear Fluorescent	1. Up to $0.01	✓	✓
Residential	Monitor	1. Up to $0.01	✓	✓
Residential	Personal Computers	1. Up to $0.01	✓	✓
Residential	Printer/Fax/Copier	1. Up to $0.01	✓	✓
Residential	Screw-in CFL	1. Up to $0.01	✓	
Residential	Screw-in LED	1. Up to $0.01	✓	✓
Residential	Set-top Boxes/DVR	1. Up to $0.01	✓	✓
Residential	Specialty CFL	1. Up to $0.01	✓	
Residential	Specialty LED	1. Up to $0.01	✓	✓
Residential	Water Heater - Faucet Aerators	1. Up to $0.01	✓	✓
Street Lighting	100W Fixture	1. Up to $0.01	✓	✓

Sector	Measure Name	Cost Bundle ($/kWh)	Selected 2016	Selected 2017
Street Lighting	150W Fixture	1. Up to $0.01	✓	✓
Commercial	Air Source Heat Pump	2. $0.01 to $0.02	✓	✓
Commercial	Air-Cooled Chiller - Chilled Water Reset	2. $0.01 to $0.02	✓	✓
Commercial	Air-Cooled Chiller - Variable Speed Chilled Water Loop	2. $0.01 to $0.02	✓	✓
Commercial	Data Center - Server Virtualization	2. $0.01 to $0.02	✓	✓
Commercial	Doors - High Efficiency	2. $0.01 to $0.02	✓	✓
Commercial	Ductless Mini Split Heat Pump	2. $0.01 to $0.02	✓	✓
Commercial	Electronics - Smart Power Strips	2. $0.01 to $0.02	✓	✓
Commercial	Energy Management System	2. $0.01 to $0.02	✓	✓
Commercial	ENERGY STAR Battery Chargers	2. $0.01 to $0.02	✓	✓
Commercial	Evaporative Cooling	2. $0.01 to $0.02	✓	✓
Commercial	Exterior Lighting - Photovoltaic Installation	2. $0.01 to $0.02	✓	✓
Commercial	Fryer	2. $0.01 to $0.02	✓	✓
Commercial	Geothermal Heat Pump	2. $0.01 to $0.02	✓	✓
Commercial	Hot Food Container	2. $0.01 to $0.02	✓	✓
Commercial	HVAC - Duct Repair and Sealing	2. $0.01 to $0.02	✓	✓
Commercial	HVAC - Economizer	2. $0.01 to $0.02	✓	✓
Commercial	Icemaker	2. $0.01 to $0.02	✓	✓
Commercial	Insulation - Ducting	2. $0.01 to $0.02	✓	✓
Commercial	Insulation - Radiant Barrier	2. $0.01 to $0.02	✓	✓
Commercial	Interior Fluorescent - Delamp and Install Reflectors	2. $0.01 to $0.02	✓	✓
Commercial	Interior Lighting - LED Exit Lighting	2. $0.01 to $0.02	✓	✓
Commercial	Interior Lighting - Occupancy Sensors	2. $0.01 to $0.02	✓	✓
Commercial	Linear Fluorescent - LED (170 lm/W)	2. $0.01 to $0.02	✓	✓
Commercial	Monitor	2. $0.01 to $0.02	✓	✓
Commercial	Non-HVAC Motors - Variable Speed Control	2. $0.01 to $0.02	✓	✓
Commercial	Oven	2. $0.01 to $0.02	✓	✓
Commercial	Pool Pump	2. $0.01 to $0.02	✓	✓
Commercial	Screw-in - LED (170 lm/W)	2. $0.01 to $0.02	✓	✓
Commercial	Vending Machine	2. $0.01 to $0.02	✓	✓
Commercial	Ventilation - Variable Speed Control	2. $0.01 to $0.02	✓	✓
Commercial	Water Heater - Desuperheater	2. $0.01 to $0.02	✓	✓
Commercial	Water Heater - Drainwater Heat Recovery	2. $0.01 to $0.02	✓	✓
Commercial	Water Heater - Faucet Aerators/Low Flow Nozzles	2. $0.01 to $0.02	✓	✓
Commercial	Water Heater - High Efficiency Circulation Pump	2. $0.01 to $0.02	✓	✓
Commercial	Water Heater - Install Timer	2. $0.01 to $0.02	✓	✓
Commercial	Water Heating	2. $0.01 to $0.02	✓	✓
Commercial	Water-Cooled Chiller - Chilled Water Reset	2. $0.01 to $0.02	✓	✓
Commercial	Water-Cooled Chiller - Condenser Water Temperature Reset	2. $0.01 to $0.02	✓	✓
Commercial	Water-Cooled Chiller - Variable Speed Chilled Water Loop	2. $0.01 to $0.02	✓	✓

Sector	Measure Name	Cost Bundle ($/kWh)	Selected 2016	Selected 2017
Industrial	Air-Cooled Chiller	2. $0.01 to $0.02	✓	✓
Industrial	Clean Room: Chiller Optimize	2. $0.01 to $0.02	✓	✓
Industrial	Clean Room: Clean Room HVAC	2. $0.01 to $0.02	✓	✓
Industrial	Fan Equipment Upgrade	2. $0.01 to $0.02	✓	✓
Industrial	Fan System - Maintenance	2. $0.01 to $0.02	✓	✓
Industrial	Fan System - Optimization	2. $0.01 to $0.02	✓	✓
Industrial	Interior Lighting - LED Exit Lighting	2. $0.01 to $0.02	✓	✓
Industrial	Interior Screw-in - Task Lighting	2. $0.01 to $0.02	✓	✓
Industrial	Kraft: Efficient Agitator	2. $0.01 to $0.02	✓	✓
Industrial	Linear Fluorescent LED (170 lm/W)	2. $0.01 to $0.02	✓	✓
Industrial	Metal: New Arc Furnace	2. $0.01 to $0.02	✓	✓
Industrial	Pump Equipment Upgrade	2. $0.01 to $0.02	✓	✓
Industrial	Pumping System - Controls	2. $0.01 to $0.02	✓	✓
Industrial	Strategic Energy Management	2. $0.01 to $0.02	✓	✓
Residential	Freezer	2. $0.01 to $0.02	✓	✓
Residential	Screw-in LED	2. $0.01 to $0.02	✓	✓
Residential	Water Heater - Faucet Aerators	2. $0.01 to $0.02	✓	✓
Residential	Water Heater - Low-Flow Showerheads	2. $0.01 to $0.02	✓	✓
Street Lighting	Smart Dimming Controller	2. $0.01 to $0.02	✓	✓
Commercial	Air Source Heat Pump	3. $0.02 to $0.03	✓	✓
Commercial	Air-Cooled Chiller	3. $0.02 to $0.03	✓	✓
Commercial	Air-Cooled Chiller - Chilled Water Reset	3. $0.02 to $0.03	✓	✓
Commercial	Air-Cooled Chiller - Variable Speed Chilled Water Loop	3. $0.02 to $0.03	✓	✓
Commercial	Cool Roofs	3. $0.02 to $0.03	✓	✓
Commercial	Data Center - Direct Server Cabinet Cooling	3. $0.02 to $0.03	✓	✓
Commercial	Doors - High Efficiency	3. $0.02 to $0.03	✓	✓
Commercial	Ductless Mini Split Heat Pump	3. $0.02 to $0.03	✓	✓
Commercial	Energy Management System	3. $0.02 to $0.03	✓	✓
Commercial	ENERGY STAR Water Cooler	3. $0.02 to $0.03	✓	✓
Commercial	Fryer	3. $0.02 to $0.03	✓	✓
Commercial	Geothermal Heat Pump	3. $0.02 to $0.03	✓	✓
Commercial	Hot Food Container	3. $0.02 to $0.03	✓	✓
Commercial	HVAC - Duct Repair and Sealing	3. $0.02 to $0.03	✓	✓
Commercial	Insulation - Radiant Barrier	3. $0.02 to $0.03	✓	✓
Commercial	Interior Fluorescent - Delamp and Install Reflectors	3. $0.02 to $0.03	✓	✓
Commercial	Interior Lighting - LED Exit Lighting	3. $0.02 to $0.03	✓	✓
Commercial	Interior Lighting - Occupancy Sensors	3. $0.02 to $0.03	✓	✓
Commercial	Non-HVAC Motors - Variable Speed Control	3. $0.02 to $0.03	✓	✓
Commercial	Oven	3. $0.02 to $0.03	✓	✓
Commercial	Pool Heater	3. $0.02 to $0.03	✓	✓
Commercial	Screw-in - LED (170 lm/W)	3. $0.02 to $0.03	✓	✓

Sector	Measure Name	Cost Bundle ($/kWh)	Selected 2016	Selected 2017
Commercial	Vending Machine	3. $0.02 to $0.03	✓	✓
Commercial	Ventilation - ECM on VAV Boxes	3. $0.02 to $0.03	✓	✓
Commercial	Ventilation - Variable Speed Control	3. $0.02 to $0.03	✓	✓
Commercial	Water Heater - Desuperheater	3. $0.02 to $0.03	✓	✓
Commercial	Water Heater - Drainwater Heat Recovery	3. $0.02 to $0.03	✓	✓
Commercial	Water Heater - Faucet Aerators/Low Flow Nozzles	3. $0.02 to $0.03	✓	✓
Commercial	Water Heater - Install Timer	3. $0.02 to $0.03	✓	✓
Commercial	Water Heater - Pipe Insulation	3. $0.02 to $0.03	✓	✓
Commercial	Water Heating	3. $0.02 to $0.03	✓	✓
Commercial	Water-Cooled Chiller - Chilled Water Reset	3. $0.02 to $0.03	✓	✓
Commercial	Water-Cooled Chiller - Condenser Water Temperature Reset	3. $0.02 to $0.03	✓	✓
Commercial	Water-Cooled Chiller - Variable Speed Chilled Water Loop	3. $0.02 to $0.03	✓	✓
Industrial	Air-Cooled Chiller	3. $0.02 to $0.03	✓	✓
Industrial	Elec Chip Fab: Eliminate Exhaust	3. $0.02 to $0.03	✓	✓
Industrial	Exterior Lighting - Bi-Level Fixture	3. $0.02 to $0.03	✓	✓
Industrial	Heat Lamp Setback (Microzone)	3. $0.02 to $0.03	✓	✓
Industrial	HVAC - Economizer	3. $0.02 to $0.03	✓	✓
Industrial	Linear Fluorescent LED (170 lm/W)	3. $0.02 to $0.03	✓	✓
Industrial	Motors - Synchronous Belts	3. $0.02 to $0.03	✓	✓
Industrial	Motors - Variable Frequency Drive	3. $0.02 to $0.03	✓	✓
Industrial	Paper: Efficient Pulp Screen	3. $0.02 to $0.03	✓	✓
Industrial	Strategic Energy Management	3. $0.02 to $0.03	✓	✓
Industrial	Ventilation - CO2 Controlled	3. $0.02 to $0.03	✓	✓
Irrigation	Green Motor Rewind (100 HP+)	3. $0.02 to $0.03	✓	✓
Residential	Doors - Storm and Thermal	3. $0.02 to $0.03	✓	✓
Residential	Ducting - Repair and Sealing	3. $0.02 to $0.03	✓	✓
Residential	Freezer - Decommisioning and Recycling	3. $0.02 to $0.03	✓	✓
Residential	Pool Pump - Timer	3. $0.02 to $0.03	✓	✓
Residential	Refrigerator - Decommissioning and Recycling	3. $0.02 to $0.03	✓	✓
Residential	Screw-in LED	3. $0.02 to $0.03	✓	✓
Residential	Water Heater - Pipe Insulation	3. $0.02 to $0.03	✓	✓
Street Lighting	1000W Fixture	3. $0.02 to $0.03	✓	✓
Commercial	Advanced New Construction Designs	4. $0.03 to $0.04	✓	✓
Commercial	Air Source Heat Pump	4. $0.03 to $0.04	✓	✓
Commercial	Air-Cooled Chiller	4. $0.03 to $0.04	✓	✓
Commercial	Air-Cooled Chiller - Chilled Water Reset	4. $0.03 to $0.04	✓	✓
Commercial	Air-Cooled Chiller - Variable Speed Chilled Water Loop	4. $0.03 to $0.04	✓	✓
Commercial	Air-Cooled Chiller - Variable Speed Condenser Fans	4. $0.03 to $0.04	✓	✓
Commercial	Data Center - Air Flow Optimization and Commissioning	4. $0.03 to $0.04	✓	✓

Sector	Measure Name	Cost Bundle ($/kWh)	Selected 2016	Selected 2017
Commercial	Doors - High Efficiency	4. $0.03 to $0.04	✓	✓
Commercial	Ductless Mini Split Heat Pump	4. $0.03 to $0.04	✓	✓
Commercial	Energy Management System	4. $0.03 to $0.04	✓	✓
Commercial	Exterior Lighting - Bi-Level Fixture	4. $0.03 to $0.04	✓	✓
Commercial	Exterior Lighting - Photovoltaic Installation	4. $0.03 to $0.04	✓	✓
Commercial	Fryer	4. $0.03 to $0.04	✓	✓
Commercial	Geothermal Heat Pump	4. $0.03 to $0.04	✓	✓
Commercial	Hot Food Container	4. $0.03 to $0.04	✓	✓
Commercial	HVAC - Duct Repair and Sealing	4. $0.03 to $0.04	✓	✓
Commercial	Insulation - Ducting	4. $0.03 to $0.04	✓	✓
Commercial	Insulation - Foundation	4. $0.03 to $0.04	✓	✓
Commercial	Insulation - Wall Cavity	4. $0.03 to $0.04	✓	✓
Commercial	Interior Fluorescent - Delamp and Install Reflectors	4. $0.03 to $0.04	✓	✓
Commercial	Interior Lighting - LED Exit Lighting	4. $0.03 to $0.04	✓	✓
Commercial	Interior Lighting - Occupancy Sensors	4. $0.03 to $0.04	✓	✓
Commercial	Oven	4. $0.03 to $0.04	✓	✓
Commercial	Pool Heater	4. $0.03 to $0.04	✓	✓
Commercial	Screw-in - LED (170 lm/W)	4. $0.03 to $0.04	✓	✓
Commercial	Vending Machine	4. $0.03 to $0.04	✓	✓
Commercial	Ventilation - Variable Speed Control	4. $0.03 to $0.04	✓	✓
Commercial	Water Heater - Desuperheater	4. $0.03 to $0.04	✓	✓
Commercial	Water Heater - Faucet Aerators/Low Flow Nozzles	4. $0.03 to $0.04	✓	✓
Commercial	Water Heater - Install Timer	4. $0.03 to $0.04	✓	✓
Commercial	Water Heater - Pipe Insulation	4. $0.03 to $0.04	✓	✓
Commercial	Water-Cooled Chiller	4. $0.03 to $0.04	✓	✓
Commercial	Water-Cooled Chiller - Chilled Water Reset	4. $0.03 to $0.04	✓	✓
Commercial	Water-Cooled Chiller - Condenser Water Temperature Reset	4. $0.03 to $0.04	✓	✓
Commercial	Water-Cooled Chiller - Variable Speed Chilled Water Loop	4. $0.03 to $0.04	✓	✓
Industrial	Air-Cooled Chiller - Chilled Water Reset	4. $0.03 to $0.04	✓	✓
Industrial	Commissioning	4. $0.03 to $0.04	✓	✓
Industrial	Compressed Air - Heat of Compression Dessicant Dryer	4. $0.03 to $0.04	✓	✓
Industrial	Compressed Air - Low Pressure-Drop Filters	4. $0.03 to $0.04	✓	✓
Industrial	Compressed Air - Raise Compressed Air Dryer Dewpoint	4. $0.03 to $0.04	✓	✓
Industrial	Compressed Air - System Maintenance	4. $0.03 to $0.04	✓	✓
Industrial	Exterior Lighting - Bi-Level Fixture	4. $0.03 to $0.04	✓	✓
Industrial	Interior Fluorescent - Bi-Level Fixture	4. $0.03 to $0.04	✓	✓
Industrial	Interior Fluorescent - Delamp and Install Reflectors	4. $0.03 to $0.04	✓	✓
Industrial	Interior Lighting - Timeclocks and Timers	4. $0.03 to $0.04	✓	✓
Industrial	Mech Pulp: Refiner Plate Improvement	4. $0.03 to $0.04	✓	✓
Industrial	Motors - Synchronous Belts	4. $0.03 to $0.04	✓	✓

Sector	Measure Name	Cost Bundle ($/kWh)	Selected 2016	Selected 2017
Industrial	Motors - Variable Frequency Drive	4. $0.03 to $0.04	✓	✓
Industrial	Pumping System - Maintenance	4. $0.03 to $0.04	✓	✓
Industrial	Pumping System - Optimization	4. $0.03 to $0.04	✓	✓
Industrial	Refrigeration - System Maintenance	4. $0.03 to $0.04	✓	✓
Industrial	Retrocommissioning	4. $0.03 to $0.04	✓	✓
Industrial	Strategic Energy Management	4. $0.03 to $0.04	✓	✓
Industrial	Ventilation - CO2 Controlled	4. $0.03 to $0.04	✓	✓
Industrial	Water-Cooled Chiller - Chilled Water Reset	4. $0.03 to $0.04	✓	✓
Industrial	Water-Cooled Chiller - Condenser Water Temperature Reset	4. $0.03 to $0.04	✓	✓
Irrigation	Multiple Configuration Nozzle	4. $0.03 to $0.04	✓	✓
Irrigation	Pump Equipment Upgrade	4. $0.03 to $0.04	✓	✓
Residential	Ducting - Repair and Sealing	4. $0.03 to $0.04	✓	✓
Residential	ENERGY STAR Battery Chargers	4. $0.03 to $0.04	✓	✓
Residential	Freezer - Decommisioning and Recycling	4. $0.03 to $0.04	✓	✓
Residential	Infiltration Control	4. $0.03 to $0.04	✓	✓
Residential	Water Heater - Pipe Insulation	4. $0.03 to $0.04	✓	✓
Street Lighting	250W Fixture	4. $0.03 to $0.04	✓	✓
Street Lighting	400W Fixture	4. $0.03 to $0.04	✓	✓
Street Lighting	Smart Dimming Controller	4. $0.03 to $0.04	✓	✓
Commercial	Air-Cooled Chiller	5. $0.04 to $0.05	✓	✓
Commercial	Air-Cooled Chiller - Variable Speed Chilled Water Loop	5. $0.04 to $0.05	✓	✓
Commercial	Data Center - Air Flow Optimization and Commissioning	5. $0.04 to $0.05	✓	✓
Commercial	Doors - High Efficiency	5. $0.04 to $0.05	✓	✓
Commercial	Exterior Lighting - Bi-Level Fixture	5. $0.04 to $0.05	✓	✓
Commercial	Exterior Lighting - Photovoltaic Installation	5. $0.04 to $0.05	✓	✓
Commercial	Hot Food Container	5. $0.04 to $0.05	✓	✓
Commercial	HVAC - Duct Repair and Sealing	5. $0.04 to $0.05	✓	✓
Commercial	Insulation - Ceiling	5. $0.04 to $0.05	✓	✓
Commercial	Insulation - Radiant Barrier	5. $0.04 to $0.05	✓	✓
Commercial	Insulation - Wall Cavity	5. $0.04 to $0.05	✓	✓
Commercial	Interior Fluorescent - Delamp and Install Reflectors	5. $0.04 to $0.05	✓	✓
Commercial	Interior Lighting - LED Exit Lighting	5. $0.04 to $0.05	✓	✓
Commercial	Interior Lighting - Occupancy Sensors	5. $0.04 to $0.05	✓	✓
Commercial	Oven	5. $0.04 to $0.05	✓	✓
Commercial	Pool Heater	5. $0.04 to $0.05	✓	✓
Commercial	Screw-in - LED (170 lm/W)	5. $0.04 to $0.05	✓	✓
Commercial	Vending Machine	5. $0.04 to $0.05	✓	✓
Commercial	Ventilation	5. $0.04 to $0.05	✓	✓
Commercial	Ventilation - ECM on VAV Boxes	5. $0.04 to $0.05	✓	✓

Sector	Measure Name	Cost Bundle ($/kWh)	Selected 2016	Selected 2017
Commercial	Ventilation - Variable Speed Control	5. $0.04 to $0.05	✓	✓
Commercial	Water Heater - Drainwater Heat Recovery	5. $0.04 to $0.05	✓	✓
Commercial	Water Heater - High Efficiency Circulation Pump	5. $0.04 to $0.05	✓	✓
Commercial	Water Heater - Install Timer	5. $0.04 to $0.05	✓	✓
Commercial	Water Heater - Solar System	5. $0.04 to $0.05	✓	✓
Commercial	Water-Cooled Chiller	5. $0.04 to $0.05	✓	✓
Commercial	Water-Cooled Chiller - Chilled Water Reset	5. $0.04 to $0.05	✓	✓
Commercial	Water-Cooled Chiller - Condenser Water Temperature Reset	5. $0.04 to $0.05	✓	✓
Commercial	Water-Cooled Chiller - Variable Speed Chilled Water Loop	5. $0.04 to $0.05	✓	✓
Industrial	Air-Cooled Chiller - Chilled Water Reset	5. $0.04 to $0.05	✓	✓
Industrial	Compressed Air - Compressor Replacement	5. $0.04 to $0.05	✓	✓
Industrial	Compressed Air - Receiver Capacity Addition	5. $0.04 to $0.05	✓	✓
Industrial	Compressed Air - System Controls	5. $0.04 to $0.05	✓	✓
Industrial	Compressed Air - System Optimization and Improvements	5. $0.04 to $0.05	✓	✓
Industrial	Exterior Lighting - Photovoltaic Installation	5. $0.04 to $0.05	✓	✓
Industrial	Motors - Variable Frequency Drive	5. $0.04 to $0.05	✓	✓
Industrial	Screw-in - CFL (67.3 lm/W)	5. $0.04 to $0.05	✓	✓
Industrial	Strategic Energy Management	5. $0.04 to $0.05	✓	✓
Industrial	Transformer - High Efficiency	5. $0.04 to $0.05	✓	✓
Industrial	Water-Cooled Chiller - Chilled Water Reset	5. $0.04 to $0.05	✓	✓
Irrigation	Center Pivot Base Boot Gasket	5. $0.04 to $0.05	✓	✓
Irrigation	Low Pressure Regulators	5. $0.04 to $0.05	✓	✓
Residential	Behavioral Programs	5. $0.04 to $0.05	✓	✓
Residential	Home Energy Management System	5. $0.04 to $0.05	✓	✓
Residential	Infiltration Control	5. $0.04 to $0.05	✓	✓
Residential	Second Refrigerator	5. $0.04 to $0.05	✓	✓
Residential	TVs	5. $0.04 to $0.05	✓	✓
Street Lighting	Smart Dimming Controller	5. $0.04 to $0.05	✓	✓
Commercial	Advanced New Construction Designs	6. $0.05 to $0.06	✓	✓
Commercial	Air-Cooled Chiller	6. $0.05 to $0.06	✓	✓
Commercial	Air-Cooled Chiller - Variable Speed Chilled Water Loop	6. $0.05 to $0.06	✓	✓
Commercial	Doors - High Efficiency	6. $0.05 to $0.06	✓	✓
Commercial	Energy Management System	6. $0.05 to $0.06	✓	✓
Commercial	Exterior Lighting - Photovoltaic Installation	6. $0.05 to $0.06	✓	✓
Commercial	Hot Food Container	6. $0.05 to $0.06	✓	✓
Commercial	HVAC - Duct Repair and Sealing	6. $0.05 to $0.06	✓	✓
Commercial	HVAC - Economizer	6. $0.05 to $0.06	✓	✓
Commercial	HVAC - Occupancy Sensors	6. $0.05 to $0.06	✓	✓
Commercial	HVAC - Outside or Underfloor Air Distribution	6. $0.05 to $0.06	✓	✓

Sector	Measure Name	Cost Bundle ($/kWh)	Selected 2016	Selected 2017
Commercial	Insulation - Ceiling	6. $0.05 to $0.06	✓	✓
Commercial	Insulation - Wall Cavity	6. $0.05 to $0.06	✓	✓
Commercial	Interior Lighting - LED Exit Lighting	6. $0.05 to $0.06	✓	✓
Commercial	Interior Lighting - Occupancy Sensors	6. $0.05 to $0.06	✓	✓
Commercial	Non-HVAC Motors - Variable Speed Control	6. $0.05 to $0.06	✓	✓
Commercial	Refrigeration - Anti-Sweat Heater Controls	6. $0.05 to $0.06	✓	✓
Commercial	Refrigeration - Floating Head Pressure	6. $0.05 to $0.06	✓	✓
Commercial	Refrigeration - High Efficiency Compressor	6. $0.05 to $0.06	✓	✓
Commercial	Retrocommissioning	6. $0.05 to $0.06	✓	✓
Commercial	Screw-in - LED (170 lm/W)	6. $0.05 to $0.06	✓	✓
Commercial	Vending Machine	6. $0.05 to $0.06	✓	✓
Commercial	Ventilation	6. $0.05 to $0.06	✓	✓
Commercial	Ventilation - ECM on VAV Boxes	6. $0.05 to $0.06	✓	✓
Commercial	Water Heater - Drainwater Heat Recovery	6. $0.05 to $0.06	✓	✓
Commercial	Water Heater - Faucet Aerators/Low Flow Nozzles	6. $0.05 to $0.06	✓	✓
Commercial	Water Heater - Pipe Insulation	6. $0.05 to $0.06	✓	✓
Commercial	Water-Cooled Chiller - Condenser Water Temperature Reset	6. $0.05 to $0.06	✓	✓
Commercial	Water-Cooled Chiller - Variable Speed Chilled Water Loop	6. $0.05 to $0.06	✓	✓
Industrial	Air-Cooled Chiller	6. $0.05 to $0.06	✓	✓
Industrial	Commissioning	6. $0.05 to $0.06	✓	✓
Industrial	Exterior Lighting - Photovoltaic Installation	6. $0.05 to $0.06	✓	✓
Industrial	Insulation - Wall Cavity	6. $0.05 to $0.06	✓	✓
Industrial	Interior Lighting - Occupancy Sensors	6. $0.05 to $0.06	✓	✓
Industrial	Kraft: Effluent Treatment System	6. $0.05 to $0.06	✓	✓
Industrial	Motors - Variable Frequency Drive	6. $0.05 to $0.06	✓	✓
Industrial	Refrigeration - Floating Head Pressure	6. $0.05 to $0.06	✓	✓
Industrial	Refrigeration - System Optimization	6. $0.05 to $0.06	✓	✓
Industrial	Retrocommissioning	6. $0.05 to $0.06	✓	✓
Industrial	Transformer - High Efficiency	6. $0.05 to $0.06	✓	✓
Industrial	Water-Cooled Chiller	6. $0.05 to $0.06	✓	✓
Irrigation	Green Motor Rewind (<100 HP)	6. $0.05 to $0.06	✓	✓
Irrigation	Low Pressure Regulators	6. $0.05 to $0.06	✓	✓
Residential	Behavioral Programs	6. $0.05 to $0.06	✓	✓
Residential	Ducting - Repair and Sealing	6. $0.05 to $0.06	✓	✓
Street Lighting	Smart Dimming Controller	6. $0.05 to $0.06	✓	✓
Commercial	Air-Cooled Chiller	7. $0.06 to $0.07	✓	✓
Commercial	Air-Cooled Chiller - Chiller Heat Recovery	7. $0.06 to $0.07	✓	✓
Commercial	Air-Cooled Chiller - Variable Speed Chilled Water Loop	7. $0.06 to $0.07	✓	✓
Commercial	Doors - High Efficiency	7. $0.06 to $0.07	✓	✓
Commercial	Energy Management System	7. $0.06 to $0.07	✓	✓

Sector	Measure Name	Cost Bundle ($/kWh)	Selected 2016	Selected 2017
Commercial	ENERGY STAR Battery Chargers	7. $0.06 to $0.07	✓	✓
Commercial	Exterior Lighting - Photovoltaic Installation	7. $0.06 to $0.07	✓	✓
Commercial	Grocery - Open Display Case - Night Covers	7. $0.06 to $0.07	✓	✓
Commercial	Insulation - Ducting	7. $0.06 to $0.07	✓	✓
Commercial	Insulation - Foundation	7. $0.06 to $0.07	✓	✓
Commercial	Insulation - Wall Cavity	7. $0.06 to $0.07	✓	✓
Commercial	Interior Lighting - Daylighting Controls	7. $0.06 to $0.07	✓	✓
Commercial	Interior Lighting - LED Exit Lighting	7. $0.06 to $0.07	✓	✓
Commercial	Interior Lighting - Occupancy Sensors	7. $0.06 to $0.07	✓	✓
Commercial	Retrocommissioning	7. $0.06 to $0.07	✓	✓
Commercial	Screw-in - LED (170 lm/W)	7. $0.06 to $0.07	✓	✓
Commercial	Vending Machine	7. $0.06 to $0.07	✓	✓
Commercial	Ventilation - CO2 Controlled	7. $0.06 to $0.07	✓	✓
Commercial	Ventilation - ECM on VAV Boxes	7. $0.06 to $0.07	✓	✓
Commercial	Ventilation - Variable Speed Control	7. $0.06 to $0.07	✓	✓
Commercial	Water Heater - High Efficiency Circulation Pump	7. $0.06 to $0.07	✓	✓
Commercial	Water Heater - Pipe Insulation	7. $0.06 to $0.07	✓	✓
Commercial	Water-Cooled Chiller - Chiller Heat Recovery	7. $0.06 to $0.07	✓	✓
Industrial	Commissioning	7. $0.06 to $0.07	✓	✓
Industrial	Compressed Air - Outside Air Intake	7. $0.06 to $0.07	✓	✓
Industrial	Elec Chip Fab: Exhaust Injector	7. $0.06 to $0.07	✓	✓
Industrial	Exterior Lighting - Daylighting Controls	7. $0.06 to $0.07	✓	✓
Industrial	Exterior Lighting - Photovoltaic Installation	7. $0.06 to $0.07	✓	✓
Industrial	HVAC - Duct Repair and Sealing	7. $0.06 to $0.07	✓	✓
Industrial	HVAC - Economizer	7. $0.06 to $0.07	✓	✓
Industrial	Insulation - Wall Cavity	7. $0.06 to $0.07	✓	✓
Industrial	Process - Conductivity Controls	7. $0.06 to $0.07	✓	✓
Industrial	Refrigeration - System Controls	7. $0.06 to $0.07	✓	✓
Industrial	Retrocommissioning	7. $0.06 to $0.07	✓	✓
Industrial	Water-Cooled Chiller	7. $0.06 to $0.07	✓	✓
Industrial	Water-Cooled Chiller - Variable Speed Chilled Water Loop	7. $0.06 to $0.07	✓	✓
Residential	Behavioral Programs	7. $0.06 to $0.07	✓	✓
Residential	Ducting - Repair and Sealing	7. $0.06 to $0.07	✓	✓
Residential	TVs	7. $0.06 to $0.07	✓	✓
Residential	Water Heater <= 55 Gal	7. $0.06 to $0.07	✓	✓
Street Lighting	Smart Dimming Controller	7. $0.06 to $0.07	✓	✓
Commercial	Advanced New Construction Designs	8. $0.07 to $0.08	✓	✓
Commercial	Air Source Heat Pump	8. $0.07 to $0.08	✓	✓
Commercial	Air-Cooled Chiller	8. $0.07 to $0.08	✓	✓
Commercial	Doors - High Efficiency	8. $0.07 to $0.08	✓	✓
Commercial	Energy Management System	8. $0.07 to $0.08	✓	✓

Sector	Measure Name	Cost Bundle ($/kWh)	Selected 2016	Selected 2017
Commercial	Exterior Lighting - Photovoltaic Installation	8. $0.07 to $0.08	✓	✓
Commercial	Geothermal Heat Pump	8. $0.07 to $0.08	✓	✓
Commercial	Grocery - Open Display Case - Night Covers	8. $0.07 to $0.08	✓	✓
Commercial	Hot Food Container	8. $0.07 to $0.08	✓	✓
Commercial	HVAC - Economizer	8. $0.07 to $0.08	✓	✓
Commercial	Insulation - Ceiling	8. $0.07 to $0.08	✓	✓
Commercial	Insulation - Radiant Barrier	8. $0.07 to $0.08	✓	✓
Commercial	Insulation - Wall Cavity	8. $0.07 to $0.08	✓	✓
Commercial	Interior Lighting - Daylighting Controls	8. $0.07 to $0.08	✓	✓
Commercial	Interior Lighting - Occupancy Sensors	8. $0.07 to $0.08	✓	✓
Commercial	PTAC	8. $0.07 to $0.08	✓	✓
Commercial	Ventilation	8. $0.07 to $0.08	✓	✓
Commercial	Ventilation - CO2 Controlled	8. $0.07 to $0.08	✓	✓
Commercial	Ventilation - ECM on VAV Boxes	8. $0.07 to $0.08	✓	✓
Commercial	Ventilation - Variable Speed Control	8. $0.07 to $0.08	✓	✓
Commercial	Water Heater - Install Timer	8. $0.07 to $0.08	✓	✓
Commercial	Water Heater - Solar System	8. $0.07 to $0.08	✓	✓
Industrial	Air-Cooled Chiller - Variable Speed Chilled Water Loop	8. $0.07 to $0.08	✓	✓
Industrial	Commissioning	8. $0.07 to $0.08	✓	✓
Industrial	Elec Chip Fab: Reduce Gas Pressure	8. $0.07 to $0.08	✓	✓
Industrial	Elec Chip Fab: Solidstate Chiller	8. $0.07 to $0.08	✓	✓
Industrial	Exterior Lighting - Daylighting Controls	8. $0.07 to $0.08	✓	✓
Industrial	HVAC - Economizer	8. $0.07 to $0.08	✓	✓
Industrial	Insulation - Ducting	8. $0.07 to $0.08	✓	✓
Industrial	Retrocommissioning	8. $0.07 to $0.08	✓	✓
Industrial	Water-Cooled Chiller - Variable Speed Chilled Water Loop	8. $0.07 to $0.08	✓	✓
Residential	Home Energy Management System	8. $0.07 to $0.08	✓	✓
Residential	Pool Heater	8. $0.07 to $0.08	✓	✓
Residential	Water Heater <= 55 Gal	8. $0.07 to $0.08	✓	✓
Street Lighting	Smart Dimming Controller	8. $0.07 to $0.08	✓	✓
Commercial	Air Source Heat Pump	9. $0.08 to $0.09	✓	✓
Commercial	Air-Cooled Chiller - Variable Speed Chilled Water Loop	9. $0.08 to $0.09	✓	✓
Commercial	Data Center - Direct Server Cabinet Cooling	9. $0.08 to $0.09	✓	✓
Commercial	Doors - High Efficiency	9. $0.08 to $0.09	✓	✓
Commercial	Energy Management System	9. $0.08 to $0.09	✓	✓
Commercial	Exterior Lighting - Bi-Level Fixture	9. $0.08 to $0.09	✓	✓
Commercial	Exterior Lighting - Photovoltaic Installation	9. $0.08 to $0.09	✓	✓
Commercial	HVAC - Outside or Underfloor Air Distribution	9. $0.08 to $0.09	✓	✓
Commercial	Insulation - Ceiling	9. $0.08 to $0.09	✓	✓
Commercial	Insulation - Ducting	9. $0.08 to $0.09	✓	✓

Sector	Measure Name	Cost Bundle ($/kWh)	Selected 2016	Selected 2017
Commercial	Insulation - Radiant Barrier	9. $0.08 to $0.09	✓	✓
Commercial	Insulation - Wall Cavity	9. $0.08 to $0.09	✓	✓
Commercial	Interior Lighting - Daylighting Controls	9. $0.08 to $0.09	✓	✓
Commercial	Interior Lighting - LED Exit Lighting	9. $0.08 to $0.09	✓	✓
Commercial	Refrigeration - Strip Curtain	9. $0.08 to $0.09	✓	✓
Commercial	Strategic Energy Management	9. $0.08 to $0.09	✓	✓
Commercial	Ventilation	9. $0.08 to $0.09	✓	✓
Commercial	Water Heater - Pipe Insulation	9. $0.08 to $0.09	✓	✓
Industrial	Commissioning	9. $0.08 to $0.09	✓	✓
Industrial	Exterior Lighting - Daylighting Controls	9. $0.08 to $0.09	✓	✓
Industrial	Interior Lighting - Daylighting Controls	9. $0.08 to $0.09	✓	✓
Industrial	Motors - Magnetic Adjustable Speed Drives	9. $0.08 to $0.09	✓	✓
Industrial	Process - Controls on Fume Hoods	9. $0.08 to $0.09	✓	✓
Industrial	Retrocommissioning	9. $0.08 to $0.09	✓	✓
Residential	Air-Source Heat Pump	9. $0.08 to $0.09	✓	✓
Residential	Central Heat Pump - Maintenance	9. $0.08 to $0.09	✓	✓
Residential	Refrigerator	9. $0.08 to $0.09	✓	✓
Residential	Water Heater - Desuperheater	9. $0.08 to $0.09	✓	✓
Residential	Water Heater <= 55 Gal	9. $0.08 to $0.09	✓	✓
Commercial	Advanced New Construction Designs	10. $0.09 to $0.10	✓	✓
Commercial	Air Source Heat Pump	10. $0.09 to $0.10	✓	✓
Commercial	Air-Cooled Chiller - Chiller Heat Recovery	10. $0.09 to $0.10	✓	✓
Commercial	Air-Cooled Chiller - Variable Speed Chilled Water Loop	10. $0.09 to $0.10	✓	✓
Commercial	Doors - High Efficiency	10. $0.09 to $0.10	✓	✓
Commercial	Energy Management System	10. $0.09 to $0.10	✓	✓
Commercial	Exterior Lighting - Bi-Level Fixture	10. $0.09 to $0.10	✓	✓
Commercial	Geothermal Heat Pump	10. $0.09 to $0.10	✓	✓
Commercial	HVAC - Economizer	10. $0.09 to $0.10	✓	✓
Commercial	Insulation - Ceiling	10. $0.09 to $0.10	✓	✓
Commercial	Insulation - Foundation	10. $0.09 to $0.10	✓	✓
Commercial	Insulation - Radiant Barrier	10. $0.09 to $0.10	✓	✓
Commercial	Insulation - Wall Cavity	10. $0.09 to $0.10	✓	✓
Commercial	Interior Lighting - Daylighting Controls	10. $0.09 to $0.10	✓	✓
Commercial	Interior Lighting - LED Exit Lighting	10. $0.09 to $0.10	✓	✓
Commercial	Interior Screw-in - Task Lighting	10. $0.09 to $0.10	✓	✓
Commercial	Refrigeration - Anti-Sweat Heater Controls	10. $0.09 to $0.10	✓	✓
Commercial	RTU	10. $0.09 to $0.10	✓	✓
Commercial	Ventilation	10. $0.09 to $0.10	✓	✓
Commercial	Ventilation - ECM on VAV Boxes	10. $0.09 to $0.10	✓	✓
Commercial	Ventilation - Variable Speed Control	10. $0.09 to $0.10	✓	✓
Commercial	Water Heater - Drainwater Heat Recovery	10. $0.09 to $0.10	✓	✓

Sector	Measure Name	Cost Bundle ($/kWh)	Selected 2016	Selected 2017
Commercial	Water Heater - High Efficiency Circulation Pump	10. $0.09 to $0.10	✓	✓
Commercial	Water-Cooled Chiller - Chiller Heat Recovery	10. $0.09 to $0.10	✓	✓
Commercial	Water-Cooled Chiller - Variable Speed Chilled Water Loop	10. $0.09 to $0.10	✓	✓
Industrial	Air-Cooled Chiller - Variable Speed Condenser Fans	10. $0.09 to $0.10	✓	✓
Industrial	Commissioning	10. $0.09 to $0.10	✓	✓
Industrial	Exterior Lighting - Daylighting Controls	10. $0.09 to $0.10	✓	✓
Industrial	Interior Lighting - Daylighting Controls	10. $0.09 to $0.10	✓	✓
Industrial	Retrocommissioning	10. $0.09 to $0.10	✓	✓
Industrial	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	10. $0.09 to $0.10	✓	✓
Irrigation	Nozzle Replacement - Flow-Control Type	10. $0.09 to $0.10	✓	✓
Residential	Dishwasher	10. $0.09 to $0.10	✓	✓
Residential	Evaporative Cooling	10. $0.09 to $0.10	✓	✓
Residential	Insulation - Floor	10. $0.09 to $0.10	✓	✓

Appendix 6
CLEAResult Waste Heat to Power and Regenerative Technologies Analysis

(Appendix 6 is voluminous and therefore provided on compact disc)

Appendix 7
PacifiCorp's Washington Demand-side Management Business Plan for 2016-2017

(Appendix 7 is voluminous and therefore provided on compact disc)

Appendix 8
PacifiCorp's Evaluation, Measurement, and Verification Framework

(Appendix 8 is voluminous and therefore provided on compact disc)

Appendix 9
Northwest Energy Efficiency Alliance 2016-2017 PacifiCorp Forecast and Forecast Methodology

Memorandum

Aug. 13, 2015

TO: Don Jones, DSM Planning and Development Manager, Pacific Power; Eli Morris, Program Manager, PacifiCorp

FROM: Christina Steinhoff, Planning Analyst

CC: Stephanie Rider, Senior Manager, NEEA Planning; Susan Hermenet, Director of Planning, Evaluation and Technology

SUBJECT: 2016-2017 Biennial Savings Forecast Final

Avista Washington, Pacific Power Washington and Puget Sound Energy have a joint approach to claim savings from NEEA initiatives. As part of the utilities' biennial savings updates, NEEA provides a two-year electric energy savings forecast.[51] The utilities subtract the savings estimates from the first two years of their ten-year electric conservation potential to determine their Biennial Conservation Target.

Below are NEEA's values for the 2016-2017 Biennial Conservation Target. Appendix A documents how NEEA developed the values and the attached Excel spreadsheet contains the baseline and technical assumptions.

Please contact Christina Steinhoff at 503.688.5427 with any questions about this report.

2016-2017 Biennial Savings Forecast

NEEA forecasts Pacific Power's share of annual electric energy savings associated with its initiatives for 2016-2017 is 0.55 aMW (Table 1). The energy savings forecast is above the Northwest Power and Conservation Council's (Council) draft 7th Power Plan baseline and exclude an estimate of savings the Energy Trust of Oregon, Bonneville Power Administration, and local utilities claim through their programs. NEEA allocates the savings using funder shares.

[51] Under the joint agreement, these utilities agreed that NEEA would develop a Total Regional Savings estimate using baseline and technical assumptions from the most recent Power Plan. NEEA would remove estimated savings counted by the utilities, the Bonneville Power Administration and the Energy Trust of Oregon. NEEA would allocate the estimated savings to these utilities based on their NEEA funder share percentage.

Preliminary Biennial Remaining Savings Estimate

Sector	Initiative	2016		2017		Biennial Target
		Regional Savings	Remaining Savings	Regional Savings	Remaining Savings	Remaining Savings
Residential	Ductless Heat Pumps	0.13	0.04	0.16	0.07	0.11
Residential	Heat Pump Water Heaters	0.02	0.01	0.03	0.01	0.03
Residential	Residential Lighting	0.23	0.11	0.20	0.11	0.22
Residential	Residential New Construction[1]	0.01	-	0.03	0.02	0.02
Multiple Sectors	Standards[2]	-	-	-	-	-
Commercial	Building Operator Certification Expansion	0.03	0.02	0.03	0.02	0.03
Commercial	Reduced Wattage Lamp Replacement	0.04	0.03	0.07	0.06	0.10
Commercial	Commissioning	0.02	0.02	0.02	0.02	0.04
Commercial	Commercial Codes	0.00	0.00	0.01	0.01	0.01
Industrial	Drive Power Motor Rewinds	0.00	0.00	0.00	0.00	0.00
Total		**0.47**	**0.23**	**0.54**	**0.32**	**0.55**

[1]Includes a savings forecast for the next Washington and Oregon code.

[2]2016 and 2017 savings from NEEA's standards work are either in the 7th Power Plan load forecast or in the measure baseline. (See Appendix B)

NEEA does not report savings forecasts for initiatives that are pre Market Development Phase[2]. These initiatives include the following:

RETA Operator Certification
Super-Efficient Clothes Dryers
Commercial Real Estate and Existing Building Renewal
Luminaire Level Lighting Controls
Retail Products Portfolio

Appendix A: Methodology to Set Biennial Targets

Allocation Methodology

NEEA allocates the regional savings using funder shares. The shares vary based on the funding cycle. Savings from previous investments receive the previous funder share. Savings from current investments receive the current funder share. Table 2 shows the funder shares.

Pacific's Funder Share for the Washington 2016-2017 Savings Forecast

Funder Share	
PacifiCorp-Pacific Power-WA	
Current	2.55%
2010-2014	3.01%
Previous (pre 2010 investments)	2.56%

Baseline and Technical Assumptions

Because the Council will not have a final 7th Power Plan until the first quarter of 2016, this report uses the 7th Power Plan baseline and technical assumptions available as of August 12, 2015. NEEA met with Council staff in June 2015 to align its measures. NEEA will use these assumptions to report actual savings against the targets.

Appendix B: Standards included in the 7th Power Plan

Compliance Date of Standards included in the 7th Power Plan Load Forecast or Measure Baseline

Sector	Product Regulated	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
All	**Battery Charger Systems**					✓						
	External Power Supplies							✓	✓			
	General Service Fluorescent Lamps			✓		✓				✓		
	General Service Incandescent Lamps			✓	✓	✓						✓
	Incandescent Reflector Lamps								✓			
	Metal Halide Lamp Fixtures								✓			
Residential	Boilers			✓								
	Central Air Conditioners and Heat Pumps						✓					
	Clothes Dryers						✓					
	Clothes Washers						✓			✓		
	Dehumidifiers			✓								
	Dishwashers				✓						✓	
	Furnace Fans										✓	
	Microwave Ovens							✓				
	Pool Heaters				✓							
	Refrigerators/Freezers					✓						
	Room Air Conditioners					✓						
	Water Heaters						✓					
Commercial	**Automatic Ice Makers**	✓								✓		
	Boilers			✓								
	Clothes Washers				✓							
	Packaged AC and Heat Pumps (65-760 kBtu/hr)	✓									✓	
	Packaged AC and Heat Pumps (<65 kBtu/hr)									✓		
	Packaged Terminal AC and Heat Pumps	✓								✓		
	Refrigerated Beverage Vending Machines			✓								
	Refrigeration Equipment	✓		✓					✓			
	Single Package Vertical AC and Heat Pumps	✓								✓		
	Walk-in Coolers and Freezers					✓			✓			
	Water and Evaporatively Cooled CAC and HP				✓	✓						
	Water Heaters										✓	
	Water Source Heat Pumps		✓							✓	✓	
Commercial/ Industrial	Distribution Transformers							✓				
	Pumps									✓		
	Small Electric Motors						✓					
	Electric Motors	✓						✓				

*Note: NEEA staff members actively participated in the rule making process of the **bolded** standards listed.*

Appendix 10
Cascade Energy, Inc. Study
Production Efficiency

(Appendix 10 is voluminous and therefore provided on compact disc)

Appendix 11
Common Wealth, Inc. Study
Distribution Efficiency

(Appendix 11 is voluminous and therefore provided on compact disc)

Appendix 12
Navigant Consulting, Inc. Study
High-Efficiency Cogeneration

(Appendix 12 is voluminous and therefore provided on compact disc)