PACIFIC POWER
A DIVISION OF PACIFICORP

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January 31, 2012

VIA ELECTRONIC FILING
AND OVERNIGHT DELIVERY

Washington Utilities and Transportation Commission
P.O. Box 47250
1300 S. Evergreen Park Drive SW
Olympia, WA 98504-7250

Attention: David W. Danner
Executive Director and Secretary

Re: Docket UE-111880 - PacifiCorp's Report on its Ten-year Achievable Conservation Potential and Biennial Conservation Target for 2012 and 2013

Pursuant to Ordering Paragraph 8(f), Order 02, Docket UE-100170, PacifiCorp, d.b.a. Pacific Power & Light Company (PacifiCorp or Company) submits its Report on its Ten-year Achievable Conservation Potential and Biennial Conservation Target for 2012 and 2013. As outlined in the Order, PacifiCorp is required to submit its Biennial Conservation Plan including revised program details and program tariffs, together with identification of its 2012-2021 achievable conservation potential, by January 31, 2012.

The enclosed report is submitted in compliance with this Order. Please note that appendices 1, 2, 7, 8, 10, 11 and 12 are voluminous and therefore provided on the enclosed CD.

If you have any questions regarding this report, please contact me at (503) 813-6043.

Sincerely,

Andrea Kelly

Andrea L. Kelly
Vice President, Regulation

Enclosures

PacifiCorp's Ten-Year Conservation Potential and 2012 - 2013 Biennial Conservation Target for its Washington Service Area

January 31, 2012

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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.

Washington Administrative Code (WAC 480-109-010(1)) as modified in 2006, 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. In approving PacifiCorp's 2010-2011 biennial conservation target in Docket UE-100170, the Commission directed the Company to file a revised biennial conservation plan for 2012-2013 together with identification of its 2012-2021 achievable conservation potential by September 15, 2011.[1] The Company filed its revised plan for 2012-2013 and its 2021 achievable conservation potential as directed.

PacifiCorp was further directed to provide its revised ten-year conservation potential that included DEI and production efficiency potential in non-hydro generation facilities by January 1, 2012, and to file its revised ten-year conservation plan and final 2012-2013 biennial conservation target by January 31, 2012.[2] As directed by the Commission, this filing must include the items specified by WAC 480-109-010(3). It must also include revised program details and program tariffs inclusive of information pertaining to distribution efficiency initiatives ("DEI") and production efficiency potential in non-hydro generation facilities.

In determining its ten-year conservation potential, WAC 480-109 directs utilities such as PacifiCorp to only consider conservation resources that are cost-effective, reliable, and feasible. The potential must be derived from and be reasonably consistent with one of the two following sources:[3]

1. 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.
2. The utility's proportionate share, developed as a percentage of its retail sales, of the Northwest Power and Conservation Council's ("Council") current power plan targets for the state of Washington.

If the utility elects to use its most recent IRP in developing its potential, the utility must use methodologies that are consistent with those used by the Council in its most recent regional power plan. The utility may, with full documentation on the rationale for any modification, alter the Council's methodologies to better fit the attributes and characteristics of its service territory. With respect to establishing a biennial conservation target, WAC 480-109-010(2) states that: a) the target must identify all achievable conservation opportunities, b) the target must be no lower

[1] Docket UE-100170, Order 2 Section 8(f)
[2] Docket UE-100170, Order 2 Section 8(f)
[3] WAC 480-109-010(1)(b)

than a pro rata share of the utility's cumulative achievable ten-year conservation potential and c) the target may be a range as opposed to an exact target.

In compliance with these requirements and the Commission's direction the Company provides or has provided the following information and filings:

September 15, 2011 - PacifiCorp submitted its 2012-2021 achievable conservation potential forecast and draft 2012-2013 biennial conservation plan, excluding the impacts of DEI and production efficiency measures in non-hydro generation facilities.

December 29, 2011 – PacifiCorp provided its revised 2012-2021 achievable conservation potential forecast, inclusive of the impacts of DEI and production efficiency measures in non-hydro generation facilities

January 31, 2012 – PacifiCorp provides (in this filing) its final 2012-2021 achievable conservation potential and 2012-2013 biennial conservation plan, inclusive of the impacts of DEI and production efficiency measures in non-hydro generation facilities.

Overview of 2012-2013 Biennial Conservation Plan

As allowed by WAC 480-109-010 (1)(b)(i), the source of the demand-side energy efficiency projection is the Company's 2011 Integrated Resource Plan, which was filed with the Commission in Docket UE-100514, a copy of which is provided as Appendix 1 to this report.

The Company's 2011 IRP was informed by the energy efficiency potential identified in PacifiCorp's Assessment of Long-Term System-Wide Potential for Demand-Side and Other Supplemental Resources ("Conservation Potential Assessment")[4] and more accurately represents the Company's 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.

The conservation potentials for DEI and production efficiency potential were based on subsequent studies conducted by Commonwealth Associates, Inc. ("Commonwealth study") and Cascade Energy, Inc. ("Cascade study"), respectively. The Commonwealth and Cascade studies are provided as Appendices 10 and 11 to this report.

Collectively these three studies represent an independent and reliable assessment of the magnitude, timing, and costs of conservation potential available specific to PacifiCorp prior to adjustments and/or other considerations that impacted the Company's final consolidated conservation forecast and biennial target.[5] These adjustments and other considerations are explained in greater detail later in this report – see "Conservation Potential and Conservation Targets".

The consolidated ten-year conservation potential determined by PacifiCorp and documented in this report is presented as a range of **45.6 to 45.9 average megawatts** ("aMW").[6] Consistent with the rules under WAC-480-109, PacifiCorp's ten-year conservation potential represents the Company's 2011 IRP results adjusted to align for any differences between the process used by the Company in developing the 2011 IRP conservation results and that used by the Council in developing the regional power plan, further adjusted for the results of the distribution and production efficiency studies and related considerations.

Areas reviewed for process differences included planning methodologies, modeling methodologies and practices and measure sets. In the case of DEI and production efficiency, considerations such as the ability to reliably measure DEI savings, system performance, 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

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

[5] Aligning Company methodologies with those of the Council and Regional Technical Forum, accounting for West Side (cost) Allocation Methodologies for generating plant investments, plant ownership, plant maintenance schedules, economics, etc.

[6] The ten-year forecast for production efficiency represents 22 percent of the overall production efficiency forecast in recognition for the cost share of the project work expected to be borne by Washington State under the Company's West Control Area (cost) Allocation Methodology.

potential for the period from 2012 – 2021 for all sources e.g. energy efficiency, DEI efficiency and production efficiency. The forecast for production efficiency has been further adjusted from the December 29, 2011 consolidated conservation forecast to reflect the Company's West Side (cost) Allocation Methodology. This adjustment is explained in more detail later in this report (see "Conservation Potential and Conservation Targets").

Table 1
Summary of 10-Year Conservation Potential & Target (aMW)

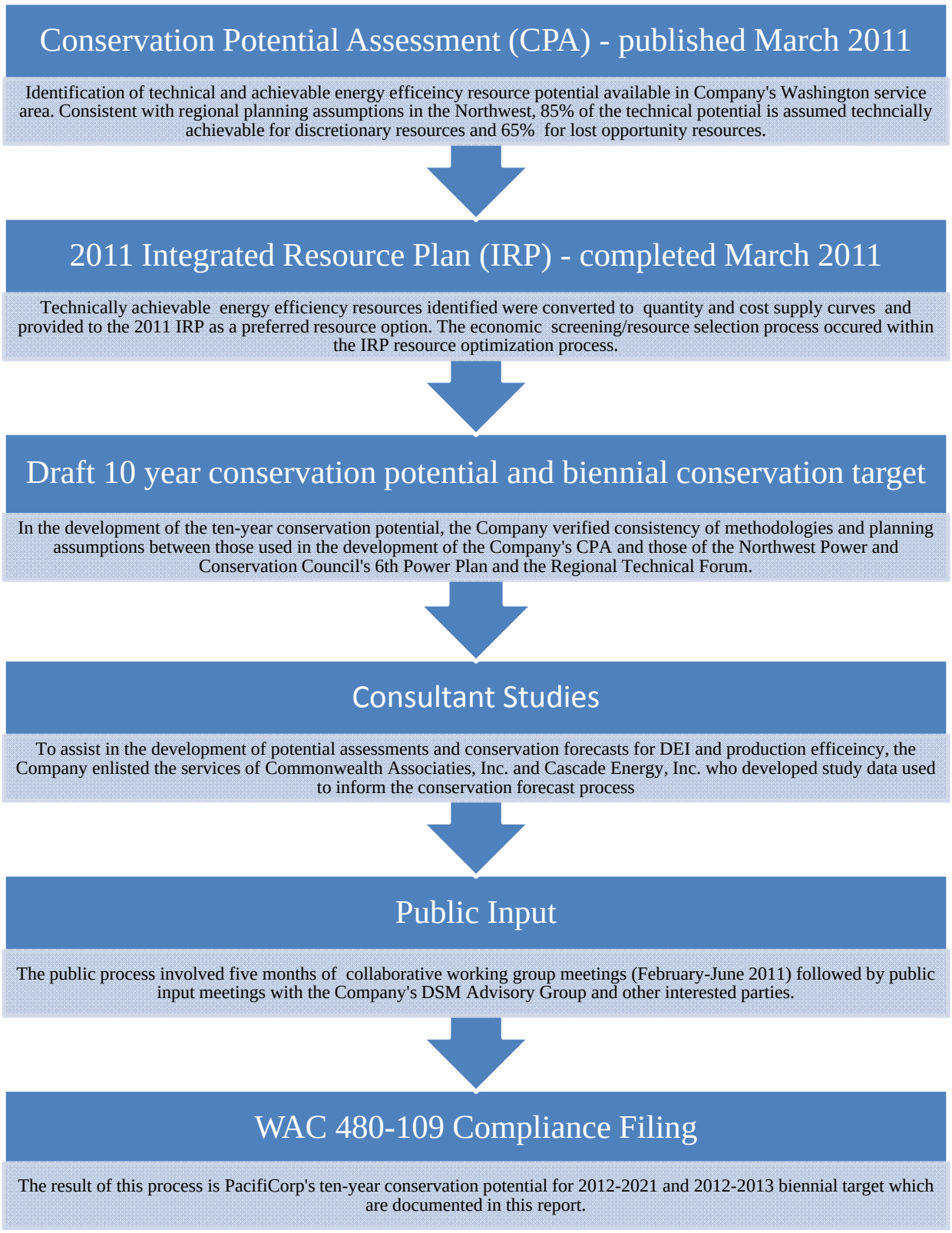
	2012		2013		2014	2015	2016	2017	2018	2019	2020	2021	10-year		2-year	
Energy Efficiency	4.0	4.0	4.7	4.7	4.4	4.6	4.4	4.5	4.4	4.5	4.6	5.1	45.1	45.1	8.7	8.7
Distribution Efficiency	0.000	0.111	0.000	0.235	0.140	0.100	0.060	0.055	0.020	0.000	0.000	0.000	0.375	0.721	0.000	0.346
Production Efficiency	0.003	0.003	0.006	0.006	0.011	0.053	0.000	0.000	0.000	0.000	0.000	0.000	0.073	0.073	0.009	0.009
Total	4.0	4.1	4.7	5.0	4.5	4.7	4.5	4.5	4.4	4.5	4.6	5.1	**45.6**	**45.9**	**8.7**	**9.0**

PacifiCorp's 2012-2013 biennial conservation target, shown in Table 1 above, is **8.7 to 9.0 aMW**[7] and represents the sum of the first two years in the consolidated ten-year conservation forecast. As allowed under WAC 480-109-010(2) the Company is proposing a target range as opposed to an exact target in consideration of the uncertainties regarding the ability to reliably measure and validate savings associated with DEI investments. The issue is further explained later in this report.

The ten-year forecast (and share of biennial target) for production efficiency represents 22 percent of the overall production efficiency forecast in recognition for the cost share of the project work expected to be borne by Washington State under the Company's West Control Area (cost) Allocation Methodology.
Figure 1 below presents an overview of the process that was followed in determining PacifiCorp's ten-year conservation forecast and the 2012 and 2013 biennial conservation target.

[7] 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 include line losses between the installed equipment or customer site and the generation source.

Figure 1
Overview of I-937 Conservation Forecast Process



Source Documents

As noted on page 8, the Company relied on three primary data sources and PacifiCorp's 2011 IRP and related assumptions in developing its consolidated ten-year conservation potential: (1) PacifiCorp's March 31, 2011 Conservation Potential Assessment, (2) the Commonwealth study on DEI opportunities, December 26, 2011, and (3) the Cascade study of opportunities at the Company's non-hydro generation facilities, December 15, 2011. The relevant information used in preparing the Company's ten-year plan is outlined below.

2011 Integrated Resource Plan

Assumptions used for the 2011 IRP are documented throughout the IRP report. References for key assumptions are provided below:

- Load forecasts, existing/new resources, and forecasted capacity and energy deficits are provided in Chapter 5
- Resource option assumptions are provided in Chapter 6
- Financial and resource tax incentive assumptions are cited on page 156
- Scenario design assumptions are cited on pages 163-169
- Carbon dioxide compliance modeling and cost assumptions are cited on pages 159-160
- Alternative load growth assumptions for scenario analysis are cited on page 166
- Wholesale electricity and natural gas price forecast assumptions are cited on pages 170-177

Conservation Potential Assessment (energy efficiency)

The Company's Conservation Potential Assessment, consisting of two volumes, documents the assumptions used to derive conservation potential estimates and associated costs. Appendices C-1 through C-4 in Volume II provides detailed supplementary information for conservation resources including assumed measure costs and savings, end-use saturations, electric fuel shares, current market shares, and calculated 2030 measure potential by state and urban or rural area. Appendix C-2 also provides a short description of each unique measure analyzed in the study. In addition, building simulations were used to determine measure savings and end-use load shapes. Appendix E in Volume II provides a comparison between the Council's 6th Plan work and 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. 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 regional power plan.

Commonwealth Study (DEI)

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 minimum Voltage Optimization ("VO") thresholds and estimates the potential for SI and VO efficiency energy savings. Energy savings will be measured for PacifiCorp's distribution system projects based on the Simplified VO Measurement and Verification ("M&V") Protocol approved on May 4, 2010, by the Northwest Power and Conservation Council Regional Technical Forum committee.

Cascade Study (production efficiency)

The purpose of the Production Energy Efficiency Study was to identify energy efficiency opportunities at the seven non-hydro generation facilities that provide electricity to customers in the State of Washington. Included in the study are the audit results of a representative sample of coal-fired, natural gas and wind generating units that were used in helping the Company assess conservation opportunities at all seven generation facilities. The Cascade study also included a preliminary analysis of the cost-effectiveness of the efficiency projects identified.

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. Goals 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 DEI and production efficiency,
- Savings acquisitions from regional efforts such as Northwest Energy Efficiency Alliance ("NEEA") activities,
- Quantifiable savings from energy code and standards changes not already accounted for in the ten-year potential, and
- Quantifiable savings from naturally occurring conservation[8] not already captured in one of the above types of resources.

Since conservation potential includes or can be impacted by savings from these sources, to the extent they can be reasonably measured and quantified by acceptable methods, savings will be reported toward achieving the biennial conservation target.

[8] 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. (Assessment of Long-Term, System-wide Potential for Demand-Side and Other Supplemental Resources, Final Report, Volume I, March 31, 2011, page 5.) The Company will report the savings achieved by the Northwest Energy Efficiency Alliance, which include quantifiable savings from market transformation and improved energy codes and standards.

Baseline Assumption

The Company intends to exercise frozen baselines and other planning assumptions consistent with the general consensus of parties to the Washington Conservation Work Group meetings held between February 2011, and June 2011.

> "To the extent practicable, there should be consistency between the use of prescriptive unit energy savings estimates in the establishment of the biennial target and the reliance on those same savings estimates in the utility's demonstration that it met the biennial target. For example, if a utility uses an RTF-deemed savings value in establishing the target, the utility will not be held responsible if the RTF-deemed savings value changes going forward. For reported savings, whether prescriptive or custom, for changes to savings estimates within the biennium, the utility should not be held responsible for what it cannot control."[9]

Budget and Savings by Program

The Company's Washington Demand-side Management Business Plan for the 2012-2013 biennium 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 8.7 to 9.1 aMW biennial target for 2012 and 2013. The Business Plan also provides cost-effectiveness results in support of Company's direction and program strategies. The Company may add programs or make changes to existing programs as filed revisions to the plan during the 2012-2013 biennium under the adaptive management program delivery structure, which includes consultation with PacifiCorp's DSM Advisory Group. A variance between budget and actual is likely given participation levels in the programs during the biennium period.

[9] Washington Conservation Working Group consensus document, as issued on June 30, 2011.

Conservation Potential and Conservation Targets

Ten-Year Conservation Potential

This section will describe how the individual conservation potentials for energy efficiency, DEI and production efficiency 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 economic screening/selection of resources through the 2011 IRP process ;
2. Changes to the 2011 IRP conservation resource selections due to adjustments informed by the Council's regional power plan, RTF updates, and involvement from PacifiCorp's DSM Advisory Group and other interested parties as documented in this report; and
3. Company program evaluation information.

Tables 2 and 3 below respectively show the annual and cumulative ten-year conservation potential for energy efficiency resources in aMW, before and after the adjustments informed by components 2 and 3 above.

Table 2
2012 – 2021 Annual Conservation Potential (aMW)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	10-year	2-year
2011 IRP	4.3	4.7	4.6	4.7	4.5	4.6	4.6	4.7	4.8	5.2	46.7	9.0
Total of adjustments	-0.3	0.0	-0.3	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.1	-1.5	-0.4
2011 IRP with adjustments	4.0	4.7	4.4	4.6	4.4	4.5	4.4	4.5	4.6	5.1	45.1	8.7

Table 3
2012-2021 Cumulative Conservation Potential (aMW)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	10-year	2-year
2011 IRP	4.3	9.0	13.7	18.3	22.8	27.4	32.0	36.6	41.4	46.7	46.7	9.0
Total of adjustments	-0.3	-0.4	-0.6	-0.7	-0.8	-0.9	-1.1	-1.2	-1.4	-1.5	-1.5	-0.4
2011 IRP with adjustments	4.0	8.7	13.0	17.6	22.0	26.5	30.9	35.4	40.0	45.1	45.1	8.7

Energy Efficiency Potential Identified in the 2011 IRP

Table 4 provides the annual (first row) and cumulative (second row) ten-year conservation potential identified in the 2011 IRP preferred portfolio in units of capacity/megawatts ("MW").

Table 4
2011 IRP Table 8.16 – Preferred Portfolio, Detail Level, Washington[10]

	Capacity, MW									
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
DSM, Class 2 Washington	8	8	8	8	8	8	8	8	8	9
DSM, Class 2 Washington	8	16	24	32	40	48	56	64	72	81

Table 5 provides the ten-year annual conservation potential in the 2011 IRP in units of energy/megawatt hours ("MWH")/year and aMW[11]/year while Table 6 provides cumulative energy values.

Table 5
2011 IRP – Preferred Portfolio, Washington (annual energy)

	Annual Energy									
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
MWH/yr	37,745	41,437	40,626	40,835	39,487	39,964	39,898	40,849	41,952	45,878
aMW	4.3	4.7	4.6	4.7	4.5	4.6	4.6	4.7	4.8	5.2

Table 6
2011 IRP – Preferred Portfolio, Washington (cumulative energy)

	2012-2021 Cumulative Energy									
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
MWH/yr	37,745	79,182	119,808	160,643	200,130	240,094	279,992	320,841	362,793	408,671
aMW	4.3	9.0	13.7	18.3	22.8	27.4	32.0	36.6	41.4	46.7

Pursuant to WAC 480-109-010(1)(a), the Company's projection of its cumulative ten-year conservation potential need only consider conservation resources that are cost-effective, reliable and feasible. The energy efficiency resources identified in the Company's 2011 Conservation Potential Assessment (technical and technical achievable potentials) and the 2011 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 480-109-010(3)(c).

[10] Refer to the 2011 Integrated Resource Plan, Volume I, page 230, and Table 8.16.
[11] 1 average MW (aMW) = 8,760 MWH/yr

Technologies

Integrated Resource Planning

PacifiCorp relies on two modeling systems to develop its preferred portfolio of resources, including energy conservation: a deterministic capacity expansion optimization tool called *System Optimizer*, and a stochastic chronological production cost system called *Planning and Risk*. The vendor for both models is Ventyx Energy, LLC. System Optimizer is a desktop application, while Planning and Risk is a client-server system that uses the Ventyx *ProSym* simulation engine and Microsoft SQL Server as the database server. Both models simulate all of the Company's generators, contracts, and DSM programs, as well as the transmission system and load areas, which are condensed into 36 zones or "bubbles". These models also simulate spot markets to optimize sales and purchases of energy for hourly system balancing.

System Optimizer uses mathematical programming methods to produce a resource plan that minimizes the combined discounted system dispatch and resource investment costs subject to energy balance, capacity reserve margin, generation, transmission, reliability, and emissions constraints. The model tests combinations of resource options over a 20-year period to derive the optimal resource portfolio; both the size and timing of resources are factored in the optimization solution. For simulating unit dispatch, the model uses a time-of-day least-cost dispatch algorithm based on categorization of hours and days into representative time blocks (on-peak, super-peak, off-peak, peak-hour, week-day, week-end, etc.). The dispatch considers the characteristics of both existing and planned resources. These characteristics include heat rate, fuel prices, location, capacity, emission rates/prices, variable O&M cost, and energy pattern (in the case of DSM, hydro, and wind resources). The dispatch also includes optimal flows between regions, considering transmission capacity and line losses. The model calculates and applies capital recovery factors to address end effects associated with capital-intensive and long-service-life resources.

The Planning and Risk system, which simulates both unit dispatch and commitment on an hourly basis, uses a stochastic model[12] along with Monte Carlo sampling of variable values to capture volatility risk associated with prices, plant availability, and loads. The Planning and Risk system is configured to conduct 100 production cost simulations with the sampled variable values, providing a wide range of portfolio cost outcomes for risk analysis. (See pages 182-200 of the 2011 IRP for background on the Monte Carlo simulation process.)

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 five-step supply curve that provides capacity value and energy (based on predetermined hourly load shapes for each supply step) at a given marginal levelized

[12] A detailed description of the stochastic model is provided as Appendix G of the 2004 IRP. The 2004 IRP is available for download at PacifiCorp's IRP Web site: http://www.pacificorp.com/es/irp.html.

cost. The supply curve is specified as 1,560[13] distinct resource options, reflecting quantities available by load area, year, and cost.

The conservation potential assessment analysis included a review of 341 unique measures across the residential, commercial industrial and irrigation sectors. Of those 341, there were 133 in the commercial sector, 126 in the residential sector, 67 in the industrial sector, 3 in the irrigation sector and 12 in the street lighting sector. The number of unique measures in the commercial and residential sector was nearly double that used in the 2007 study. Considering all permutations of these measures across all customer sectors, customer segments, and states, customized data was compiled and analyzed for nearly 18,000 measures. For a complete list of measures, see Assessment of Long-Term System-Wide Potential for Demand-Side and Other Supplemental Resources, Volume II, Appendix C.[14]

For conservation resource selection using System Optimizer, PacifiCorp used a load forecast that excluded reductions attributable to conservation (the "pre-DSM" load forecast). 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 MIDAS market fundamentals analysis system, (3) forecasting services, and (4) studies conducted by engineering and other consulting firms. Chapter 6 of the 2011 IRP (pages 110-151) summarizes the data resources used to develop the resource options entered into the IRP models. Chapter 7 of the 2011 IRP (specifically the "General Assumptions and Price Inputs" section, pages 155-158) cites applicable sources for key input assumptions used in the IRP modeling.

Conservation

For development of the 2011 conservation supply curves, a number of data collection approaches were used by the DSM potentials development project team (PacifiCorp and contractor staff).[15] PacifiCorp provided load forecasts, economic assumptions (discount rates and conservation credits), historical energy-efficiency activities, current customer counts and forecasts, and the 2006 Residential Energy Decisions Surveys for the residential and the 2007 Commercial Energy Decisions Surveys for the commercial sector. The contractor team, Cadmus Group, Inc., and Nexant, Inc., updated costs and savings assumptions included in the 2007 potential study and generated an updated potential assessment referred to as the 2011 "Conservation Potential Assessment."

[13] 1,440 for 5 states (IRP – p. 143) and 120 for Oregon (IRP p. 148)
[14] The Company's Conservation Potential Assessment is provided as Appendix 2 to this report.
[15] The DSM potential study data was relied upon to develop 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.

The contractor team also relied on several entities for data, including the Council, the Regional Technical Forum, the Northwest Energy Efficiency Alliance ("NEEA"), the California Energy Commission (2005 Database of Energy Efficiency Resources, or "DEER"), and the Energy Information Administration. 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 publicly available survey data. The contractor team was also tasked with ensuring Washington resources were aligned and consistent with the Regional Technical Forum ("Regional Forum" or "RTF") and 6th Power plan whenever possible. A comparison is provided in Volume II, Appendix E of the Company's 2011 Conservation Potential Assessment.

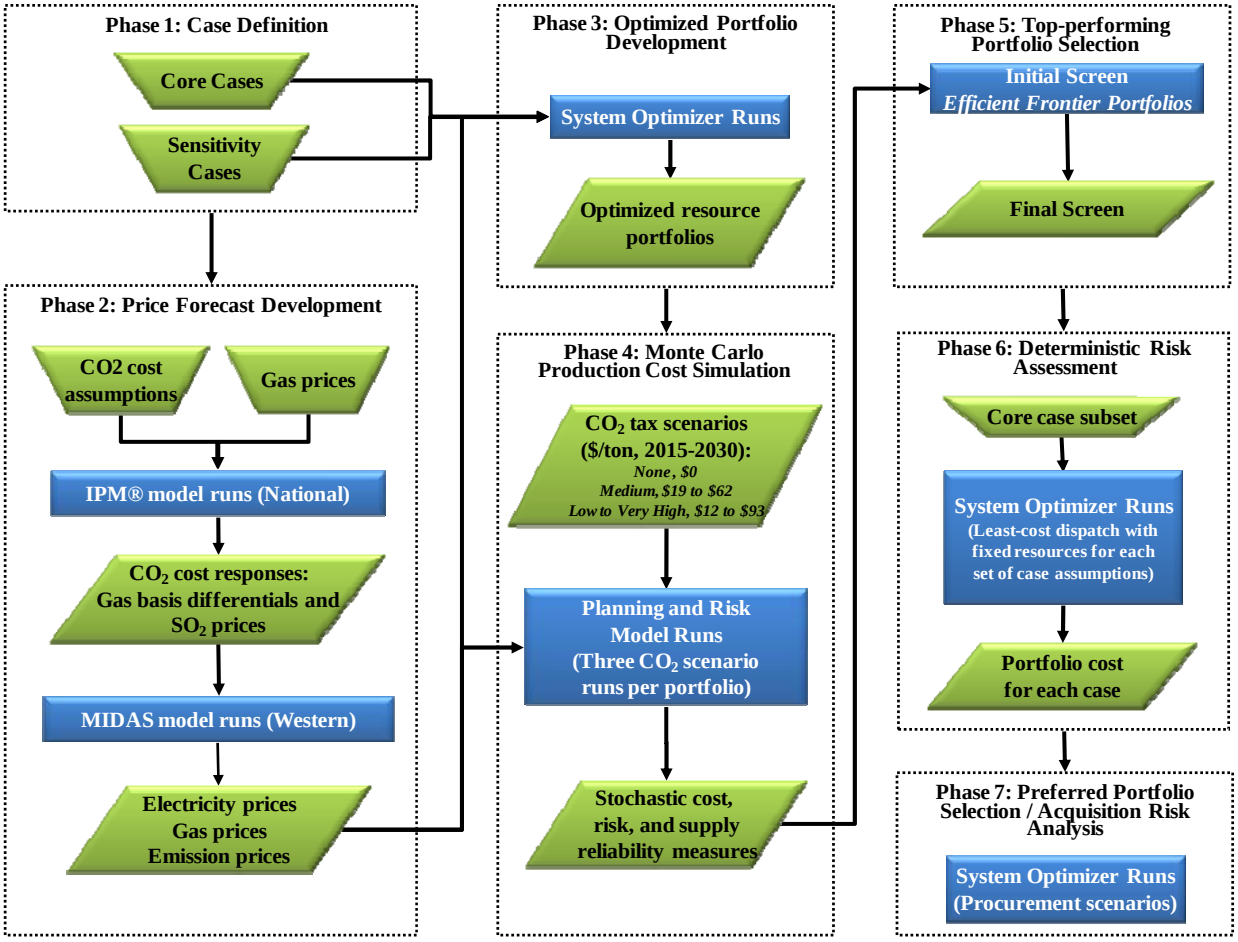
The Company's 2011 Conservation Potential Assessment is both included as Appendix 2 to this report and is available for download at http://www.pacificorp.com/es/dsm.html.

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 System Optimizer, and stochastic production cost simulation is conducted with the Planning and Risk system. The following diagram, labeled as Figure 2, summarizes at a high level the process flow associated with development of PacifiCorp's IRP preferred portfolio.

Figure 2
PacifiCorp IRP Development Process Flow



For the 2011 IRP, PacifiCorp developed 67 portfolios 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. Thirty-five of the 67 portfolios were subsequently simulated using the Planning and Risk system. For each of the 35 portfolios, PacifiCorp conducted Monte Carlo simulations using different CO_2 cost assumptions to capture risk associated with an uncertain CO_2 regulatory cost liability.

To select its 2011 IRP preferred resource portfolio, PacifiCorp used a two-phase screening process to select the top-performing portfolio. For the initial screening, PacifiCorp determined the portfolios that had the best combinations of low expected and "tail" costs (i.e., the extent of worst cost outcomes). The second screening evaluated the top portfolios on the basis of primary performance evaluation measures such as risk-adjusted cost, 10-year customer rate impact, carbon dioxide emissions, supply reliability, and a deterministic scenario risk assessment. A set of secondary measures was also considered, which included production cost variability, and resource diversity. Finally, the Company evaluated the top-performing portfolio on the basis of resource-specific procurement risks, and adjusted resources accordingly to derive the preferred

portfolio judged to be the least-cost set of resources after accounting for risk, uncertainty, state energy regulations, and the long-run public interest.

Conservation

This general methodology for the development of the Conservation Potential Assessment is best described as a combination "top-down/bottom-up" approach. The top-down methodology component begins with the most current load forecast, decomposes it into its constituent customer sector, customer segment, and end-use components. The bottom-up component considers the potential technical impacts of various demand-side and supplemental resource technologies, measures, and practices on each end use, which are then estimated based on engineering calculations, taking into account fuel shares, current market saturations, technical feasibility, and costs. These unique impacts are aggregated to produce estimates of resource potential at the end-use, customer sector, and service area levels. In many ways, the approach is analogous to generating two alternative load forecasts at the end-use level (one with and one without DSM), and calculating resource potential as the difference between the two forecasts. Further details are provided in Chapter 3 of Assessment of Long-Term System-Wide Potential for Demand-Side and Other Supplemental Resources, Volume I (March 31, 2011).[16]

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 System Optimizer and the Planning and Risk system as discussed above. The prime contractor[17] for the Conservation Potential Assessment study assisted in converting the potential study conservation data into resource options suitable for entry into System Optimizer. A complete description of the derivation and modeling attributes of the conservation resource options are provided in Chapter 6 of the 2011 IRP (See pages 135-149) included as Appendix 1 of this document.

The conservation resources entered into System Optimizer 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 65 percent for lost opportunities which are consistent with regional planning assumptions in the Council's regional power plan.[18] The System Optimizer 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.

<u>Adjustments to the 2011 IRP Conservation Potentials and Target – Customer or Demand-side</u>

In reviewing the Council's regional power plan and the RTF as part of the analysis identifying PacifiCorp's ten-year conservation potential and biennial target, differences were identified and

[16] The Company's conservation potential assessment is provided as Appendix 2 to this report.
[17] The Cadmus Group, Inc.
[18] For information on achievable assumptions, refer to the 2011 IRP, Volume I, page 142, and the 6th Power Plan, Chapter 4 and Appendix E.

analyzed, resulting in adjustments to the Company's projected ten-year conservation potential for energy efficiency resource opportunities. Table 7 below shows the measures and Company initiative differences identified which resulted in adjustments to the 2011 IRP results and Company's ten-year conservation potential.

Table 7
Measure Differences Identified for an Adjustment

Sector	Measure
Residential	Appliance Recycling
	Compact Florescent Lamps
	Light Emitting Diodes
	Heap Pump Water Heaters
	Refrigerators

The differences identified for adjustment to the ten-year conservation potential of energy efficiency resources identified in the 2011 IRP and shown in Table 7 fall into two categories: 1) differences in assumptions of Unit Energy Savings ("UES") between what was used in the development of the Company's Conservation Potential Assessment and those of the RTF or other emerging market data, and 2) conservation potential that was not captured in the Conservation Potential Assessment and therefore wasn't available to the 2011 IRP for selection.

Unlike the 2008 IRP (used in the development of the Company's 2010-2019 ten-year conservation potential) the 2011 IRP recognized and applied the Council's "market price adder" and 10 percent Northwest Regional Credit in the selection of conservation resources in Washington, making modeling adjustments for these assumptions unnecessary in the development of the 2012-2021 ten-year conservation forecast.

Table 8 on page 19 in this report provides the annual MWh for each measure adjustment by year over the ten-year conservation forecast for energy efficiency.

Table 8
2012 - 2021 Annual Conservation Potential -
Summary of Adjustments

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	10-year	2-year
2011 IRP												
mWh	37,745	41,437	40,626	40,835	39,487	39,964	39,898	40,849	41,952	45,878	408,671	79,182
aMW	4.3	4.7	4.6	4.7	4.5	4.6	4.6	4.7	4.8	5.2	46.7	9.0
Adjustments (mWh)												
Appliance recycling	(1,611)	(1,611)	(1,611)	-	-	-	-	-	-	-	(4,832)	(3,221)
CFLs	(1,139)	1,952	(208)	(225)	(246)	(244)	(250)	(259)	(282)	(244)	(1,145)	813
LED	(236)	(462)	(443)	(424)	(498)	(599)	(664)	(709)	(776)	(512)	(5,322)	(698)
HPWH	(21)	(36)	(48)	(57)	(75)	(84)	(368)	(331)	(320)	(368)	(1,707)	(56)
Refrigerators	(14)	(22)	(26)	(30)	(35)	(36)	(38)	(40)	(44)	(57)	(342)	(36)
Total Adjustments	(3,021)	(177)	(2,334)	(736)	(854)	(963)	(1,321)	(1,339)	(1,421)	(1,181)	(13,347)	(3,198)
	(0.3)	(0.0)	(0.3)	(0.1)	(0.1)	(0.1)	(0.2)	(0.2)	(0.2)	(0.1)		
Net Adj mWh	34,724	41,260	38,292	40,099	38,633	39,001	38,577	39,510	40,531	44,697	395,324	75,984
Net Adj aMW	4.0	4.7	4.4	4.6	4.4	4.5	4.4	4.5	4.6	5.1	45.1	8.7

More detail on the energy efficiency adjustments is provided below and in Appendix 4 of this report.

Appliance Recycling

The 2011 Conservation Potential Assessment[19] utilized draft data from the recently completed Company program evaluations for the 2006-2008 periods. The RTF has savings estimates for the same measure which includes the consumption of a replacement refrigerator or freezer when estimating the available savings. The following adjustments were made to the annual conservation potential for appliances in preparation of the September 15, 2011 filing.

- Refrigerators savings adjusted from 1,482 kWh/unit to 844 kWh/unit, which is the gross value that aligns with the net savings number provided on the RTF web site.
- Freezer savings were adjusted from 1,419 kWh/unit to 815 kWh/unit, which is the gross number that aligns with the net number on the RTF web site.

In response to concerns raised by the DSM Advisory group upon review of the Company's September 15, 2011 filing, the Company reexamined its analysis of the savings associated with these measures.[20] Based on this reexamination the Company modified its calculations utilizing territory specific data and the RTF's methodology to recalculate the utility estimated savings for

[19] The Cadmus Group, Inc. study published March 31, 2011.

[20] The Company had additional discussions with representatives from the Regional Forum. These discussions along with an in depth review of Regional Forum meeting minutes in which the current RTF numbers were approved. This provided additional insight into the complexities and nuances of the current RTF appliance recycling savings estimates. In addition, the Company has completed a 2009-2010 Washington specific impact evaluation for these measures. The evaluation provided updated information on utility estimated savings, in situ adjustment, partial use factor, program induced replacements and naturally occurring removal (also known as net-to-gross).

recycled refrigerators and freezers. The Company has made additional adjustments to these measures, adjustments that impact both the Company's ten-year conservation forecast and 2012-2013 biennium target. The adjustments and methodology supporting them was shared with the Company's Washington Advisory Group via an email communication on December 29, 2011. The approach is similar to that used by Avista in the calculation of appliance recycling potential in their ten-year conservation forecast. The basics of these additional adjustments are as follows:

- Refrigerator savings were adjusted from 844 kWh/unit currently in the September 15, 2011 filing to 724 kWh/unit, which is the calculated territory specific unit energy savings using the RTF methodology.
- Freezer savings were adjusted from 815 kWh/unit currently in the September 15, 2011 filing to 542 kWh/unit, which is the calculated territory specific unit energy savings using the RTF methodology.

The calculations and further information are provided at the end of Appendix 4.

Compact Florescent Lamps replacing Energy Independence and Security Act covered incandescent lamps.

For lamps affected by Energy Independence and Security Act ("EISA"), which mandated standards for efficacy (lumens per watt of input power) for specific incandescent lamps wattages, adjustments were made for the efficient replacement, e.g. general purpose or "twister" compact florescent lamps ("CFL") in preparation for the conservation forecast provided on September 15, 2011. The 2011 Conservation Potential Assessment estimated savings utilizing a room-by-room socket approach consistent with the regional planning efforts, utilized regional assumptions for lighting burn hours per day and did not explicitly account for the interaction between more efficient lighting (which generates less waste heat) and the heating ventilating and air conditioning ("HVAC") system. In addition in the 2011 Conservation Potential Assessment, twister CFLs were only included as an efficient replacement for the 2011-2012 period. Adjustments were made to the plan to account for better information regarding hours, HVAC interaction and resource availability beyond 2012.

The HVAC interaction between twister and "specialty" CFLs located within conditioned space and heating and cooling equipment performance was calculated using RTF methodology and PacifiCorp specific heating and cooling equipment saturations. This approach and assumptions informed our initial adjustments (September 15, 2011) to the CFL lighting potential in the Company's conservation forecast.

In late September, the Company explored the use of this calculator for other territories that might require a climate zone adjustment in addition to equipment saturation adjustments. This analysis included several telephone conferences with representatives from the Regional Forum and it was generally concluded that the original calculator was dated (some calculations were performed about 20 years ago) and documentation for many of the underlying assumptions was not available, making the RTF calculator a legacy tool that would benefit from an update. In the

interim, a representative from the Region Forum suggested the Company consider using a calculator developed for the residential lighting measures in the Council's 6th Power Plan, citing more current calculations and improved documentation of assumptions and sources. Given the longevity of the conservation forecast, the Company elected to utilize the more current calculator and performed the same equipment saturation adjustments in addition to climate zone, duct leakage and insulation levels. Adjustments and their applicability to retrofit applications were double checked with the Regional Forum during the process to ensure the methodologies remained consistent with those used by the Council in the development of the 6th Power Plan. The end result is a downward savings adjustment of 13.4 percent applied to twister bulbs. It represents a weighted average based on interior and exterior applications. A 14.6 percent adjustment was applied to specialty bulbs as they are assumed to all be installed in interior fixtures. This adjustment supersedes the 8% downward adjustment utilized in the September analysis. No other adjustments were made to this measure for the purpose of developing the conservation forecast.

CFLs replacing incandescent lamps not covered by EISA

For CFLs assumed to replace lamps not covered by EISA mandated standards for efficacy or lumens per watt of input power, also known as "specialty" lighting, adjustments were made for burn hours and HVAC interaction in preparation for the September 15, 2011 filing. The same revisions to the HVAC interactive adjustment as noted above for general purpose lighting described in the section immediately above entitled "*Compact Florescent Lamps replacing Energy Independence and Security Act covered incandescent lamps "was also applied to specialty lighting.*

Light Emitting Diodes

Light emitting diode ("LED") lighting, also known as solid state lighting, is evolving rapidly and promises higher efficiency, longer life and another replacement (in addition to CFLs) for incandescent lamps. In the 2011 Conservation Potential Assessment, the baseline for this equipment is assumed to be EISA compliant baseline wattages. The Conservation Potential Assessment assumed the regional average of 2.3 burn hours per day and did not include an adjustment for interactive effects. Adjustments for this measure made in preparation for the September 15, 2011 filing were similar to those for the specialty CFLs, and included:

- HVAC interaction for LEDs located within conditioned space was calculated using the RTF methodology described above. This downward savings adjustment is the same as that applied to CFLs.

A revised calculation of LED potential based on the updated HVAC interactive calculations described above and used for CFLs and Specialty bulbs, was again applied to LEDs for the purpose of this filing and revised ten-year conservation forecast for LED lighting.

Heat Pump Water Heaters

Heat pump water heaters rely upon a refrigeration cycle instead of electric resistance heating elements to transfer heat from the air to water. Regional savings estimates for this measure continue to be refined as the number of installations increase. The 2011 Conservation Potential Assessment utilized data from the Council's draft 6th plan combined with estimates from the 2007 Conservation Potential Assessment[21]. This adjustment revises savings based on the most current RTF data.

Refrigerators

The 2011 Conservation Potential Assessment utilized savings estimates based on Energy Star data which is consistent with the Council's 6th Power Plan; however, updated information from the RTF was relied upon to calculate an adjustment to the conservation potential reflected in this report.

Distribution Efficiency Initiative

Distribution Efficiency was included in the regional 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 2011 IRP preferred portfolio directly.

Energy savings from distribution efficiency can come from both system improvements and reduced voltage. 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 results in energy savings from reduced line loss (less energy expended delivering the power to its destination).

When the characteristics described above exist on a system the system voltage can be operated at a lower value than when the characteristics are not present. The second component of distribution efficiency is that energy which is saved when voltage is reduced to a lower value. A system that is built to deliver power efficiently, but is operated at a relatively high voltage, may be able to conserve energy by reducing the voltage, even though there may be no system improvements necessary. When this occurs, energy consumption will be reduced via lower transformer no-load loss (less energy expended energizing service transformers, even when the transformer is not delivering power to the customer), and may be derived from reduced energy consumption from many end-use appliances. The energy consumption of some devices (like thermostatically controlled electric heat) does not change with reduced voltage, and the consumption of other devices (like some solid-state devices and, under some circumstances, motors) increases with reduced voltage. For these reasons, the selection of appropriate circuits to implement distribution efficiency improvements is complex. Also, engineering analysis of the specific electrical characteristics of a given distribution circuit may reveal that some improvements are not cost effective.

[21] Quantec study published July 11, 2007, predecessor to The Cadmus Group, Inc. 2011 Conservation Potential Assessment study.

To arrive at the energy savings forecast values, the Company progressed methodically through the analysis of our consultant's study[22] results, review of other industry findings, consideration of the relevant parameters of its Washington distribution circuits and evaluation of the challenges and risks associated with executing a program of this nature.

The consultant study found that thirteen of the nineteen Tier 1 circuits had potentially viable "Stage 1" (low investment) solutions capable of conserving 0.40 aMW. Potentially viable "Stage 2" (medium investment) solutions were found for ten of those thirteen circuits; these solutions were predicted to conserve 0.306 aMW (4.2 percent less than their respective Stage 1 solutions). One other circuit, 5Y351 in Sunnyside, was found to have a potentially viable Stage 2 solution (0.041 aMW), although it did not have a Stage 1 solution.

The determination of cost effectiveness was based on a benefit to cost ratio greater than one, a life cycle levelized cost less than the approved IRP decrement value of $105.91 / MWh, and an assumed 20-year life of energy savings. Refer to the consultant's report for more details on the parameters used in the Company's financial analysis.

The Company has chosen to advance only Stage 1 solutions for the current biennium, because of the following considerations:

1. Stage 1 investments are a necessary "building block" for the Stage 2 and Stage 3 solutions, so Stages 2 and 3 can be built later if they are deemed cost effective, reliable and feasible;
2. The estimated Stage 2 average cost per circuit is 104 percent higher than the Stage 1 average cost per circuit (see Appendix 7 in the consultant study, specifically Table A7-2);
3. The estimated Stage 3 average cost per circuit is 287 percent higher than the Stage 1 average cost per circuit;
4. A Stage 1 approach allows a lower risk proof of concept while still permitting future year investment to acquire higher cost energy savings where practical;
5. The study utilized voltage optimization ("VO") factors deemed appropriate for mostly residential circuits, even though the circuits in Tier 1 exhibit energy usage that varies from 44 percent to 88 percent residential. When the Company considered each circuit's penetration of nonresidential load (which is expected to yield less energy savings than residential load), the economics for the investments worsened. For the thirteen viable Stage 1 circuits, the slightly lower VO factors reduced the expected energy savings 21.1 percent, reduced the benefit cost ratios 21.5 percent and raised the cost of the saved energy 26.1 percent. The Company is therefore concerned that the achievable energy savings identified by the consultant may be optimistic and more costly than reported;
6. Because the Company's existing voltage practices yield a relatively low average voltage, the available voltage reduction is small. For the thirteen Stage 1 circuits, the consultant calculated the existing average system voltage at 122.29 volts, and identified improvements expected to lower that value 0.95 percent to 121.13 volts. The Company is concerned that it may not be feasible to accurately measure the change in average voltage with utility equipment (instrument transformer design standards allow for a ± 0.6 percent

[22] Commonwealth Associates, Inc. study attached as Appendix 10 to this report.

error tolerance). Accurate average voltage values are critical data in the determination of energy savings, so this issue introduces additional project risk; and

7. A stage by stage approach was recommended by the consultant (see page 20 of the Commonwealth study, Appendix 10 to this report, in the section titled "7-Year Capital Plan").

To determine the savings forecast for the 2012-2021 forecast period, the Company first observed that the Tier 1 circuits were chosen as circuits likely to be good candidates for reduced voltage. The other circuits in Washington, taken as a whole, are likely to exhibit less favorable results. Specifically, the Tier 2 circuits are likely to be less residential and more geographically spread out than Tier 1 circuits. These attributes make voltage reduction efforts less cost effective.

Second, the Company reviewed those Tier 2 circuits that are regulated by the same device as a Tier 1 circuit, and estimated the effort required to implement any necessary improvements on those unstudied circuits. These are termed "adjacent" circuits.

Using the results of these efforts, a prioritizing algorithm was developed and applied to all remaining unstudied circuits in Washington with the goal of identifying those circuits most likely to offer cost effective energy savings. The prioritization accounted for the existing voltage settings, the energy usage (both total and residential), and the geographic layout of the circuits.

The study results were leveraged in the Company's endeavor to estimate the energy savings potential for the most viable and marginally viable circuits remaining to be studied. Those values were then used to estimate the energy savings for Tier 1 with adjacent circuit improvements considered. The Tier 1 estimate was 0.39 aMW, slightly lower than the consultant's estimate of 0.40 aMW due to the adjacent circuit considerations.

The available cost effective energy savings from the best and marginal Tier 2 circuits was also estimated. The relative savings were estimated by way of the algorithm mentioned above, including a reduction for the nonresidential portion of each circuit. Then the results were normalized to the savings contribution of the most energy-saving Tier 1 circuit. The normalization was necessary due to limitations in the algorithm (the algorithm was developed on Tier 1 circuits dissimilar to many Tier 2 circuits). The circuits adjacent to the best and marginal Tier 2 circuits were also included in this analysis. The Tier 2 estimate was 0.33 aMW. The total available energy savings for the state was then estimated at 0.39 aMW (Tier 1 circuits) + 0.33 aMW (Tier 2 circuits) for a total ten-year conservation forecast for DEI of 0.72 aMW.

To allocate the predicted energy savings across the ten-year forecast, the consultant's recommended capital plan was used as a starting point. Adjustments were made to allow for detailed study of adjacent circuits where necessary, and circuits were ranked by energy savings estimates. Peculiar to this portion of the Company's conservation plan, knowledge gained from the first year of implementation is expected to influence heavily the Company's project list in subsequent years. For this reason, the Company expects to be able to implement the most energy saving projects in 2013, although the actual list of projects is not yet defined.

The Company chose four circuits to implement in 2012. They were determined to be the best candidates because no adjacent circuit studies were required prior to their implementation, and

they portend to save the most energy of all Stage 1 circuits regulated by a single device. The consultant's report predicted 0.15 aMW in savings from these four circuits, but the Company expects only 0.11 aMW due to the nonresidential component of the circuits' loads (19 percent, 28 percent, 30 percent, and 48 percent of the circuits' annual energy is from nonresidential customers, respectively).

With the expectation that additional detailed study during 2012 will reveal solutions with even greater opportunity than the first four pilot circuits, the Company placed 0.24 aMW in its 2013 target. Subsequent years in the ten-year forecast account for the remaining energy savings perceived to be available in the Company's service territory, Table 9 below provides the ten-year conservation forecast for DEI on an annual basis arrived at through the process just described.

Table 9
2012 – 2021 Annual DEI Conservation Potential

	2012		2013		2014	2015	2016	2017	2018	2019	2020	2021	10-year		2-year	
mWh	0	972	0	2,059	1,226	876	526	482	175	0	0	0	3,285	6,316	0	3,031
aMW	0.000	0.111	0.000	0.235	0.140	0.100	0.060	0.055	0.020	0.000	0.000	0.000	0.375	0.721	0.000	0.346

Production Efficiency (in non-hydro generation facilities)

Production Efficiency in non-hydro generation facilities was not included in the regional power plan or the Company's Conservation Potential Assessment; however, this initiative, along with DEI, fall under the definition of "Conservation" in WAC 480-109-007, and therefore must be considered in 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)
- 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 being similar to industrial facilities. 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.

As indicated earlier, detailed studies were conducted in three locations: Jim Bridger unit 1, Chehalis and Goodnoe Hills. Each site selected represented units or plants not involved in the study, but utilized to serve the Company's Washington customers. The findings at each of the selected sites were then extrapolated to the sister units/plants – Jim Bridger unit 1 represented the remaining three units at Jim Bridger, Chehalis represented Hermiston and Goodnoe Hills represented the remaining wind projects. Through this process the Company was able to estimate potential savings opportunities across all seven facilities. The production efficiency forecast was then adjusted based on the Company's West Control Area (cost) Allocation Methodology. Washington's share or cost allocation for plant upgrades in the west is based on the state's energy and capacity requirements in relation to those of PacifiCorp's Oregon and California service areas[23]. For the purpose of this filing, the conservation forecast identified from the seven facilities has been adjusted to 22 percent of the total potential estimated to exist in recognition of the share to the project costs expected to be borne by Washington.

Two of the generating plants utilized by the Company to serve its Washington are jointly owned – Jim Bridger and Hermiston. Given the ownership structure of these plants and the need to obtain agreements from the joint owners prior to plant investments, potential savings associated with these units were not included in the conservation forecast at this time. In preparation for the next biennium (2014-2015) and conservation forecast (2014-2023), the Company will work with parties to clarify the requirements of jointly owned plants and work with plant owners to determine how and under what conditions improvements can be included, pursued, and funded e.g. investment metrics and capital prioritization.

The Goodnoe Hills study showed no measureable improvements available. As each of the wind projects is contemporary in the date of installation with Goodnoe Hills, it is not anticipated that they will offer energy efficiency improvements however the Company will conduct a review at each of the remaining wind projects in the 2012/2013 biennium to confirm this assumption.

Table 10 below provides the adjusted ten-year conservation forecast for production efficiency on an annual basis arrived at through the process just described.

[23] The Company's current West Control Area Allocation percentages by generation facility are 21.560 percent for Jim Bridger and 22.47 percent for the remaining six generation facilities. The percentages are subject to change annually based on Washington's share of PacifiCorp's loads in the west (Washington, Oregon and California).

Table 10
2012 – 2021 Annual Production Efficiency Conservation Potential

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	10-year	2-year
mWh	105	246	449	2,124	0	0	0	0	0	0	2,924	351
aMW	0.012	0.028	0.051	0.242	0	0	0	0	0	0	0.334	0.040
Adjusted to reflect West Control Area (cost) Allocation Methodology - rounded to 22 percent												
mWh	23	54	99	467	0	0	0	0	0	0	**643**	**77**
aMW	0.003	0.006	0.011	0.053	0.000	0.000	0.000	0.000	0.000	0.000	**0.073**	**0.009**

The ten-year forecast potential for production efficiency, adjusted for Washington's allocation under the West Control Area Allocation Methodology, is .073 aMW, and the 2012-2013 biennial target is 0.009 aMW.

Biennial (2012 - 2013) Conservation Target

Conservation Target

PacifiCorp's biennial conservation target for 2012 and 2013 is **8.7 to 9.0** aMW.[24]

How the Target was developed from the Ten-Year Potential

The ten-year conservation potential includes an estimate of the potential for each year. The values were derived from annual resources selections within the Company's 2011 IRP informed by the 2011 Conservation Potential Assessment and other resource specific potential studies.[25]

To account for the practical limits associated with acquiring all available energy efficiency resources in any given year, the technical potential by measure type for conservation was adjusted to reflect the technically achievable acquisitions over a 20-year planning horizon. Consistent with regional planning assumptions in the Northwest, 85 percent of the technical potential for discretionary (retrofit) resources was assumed to be technically achievable over the 20-year planning period. For lost-opportunity (new construction or equipment failures) the technically achievable potential is 65 percent of the technical potential over the 20-year planning period; this assumption is also consistent with planning assumptions in the Northwest. During the planning period the aggregate (both discretionary and lost-opportunity) technically achievable potential is assumed to be 82 percent of the technical potential.

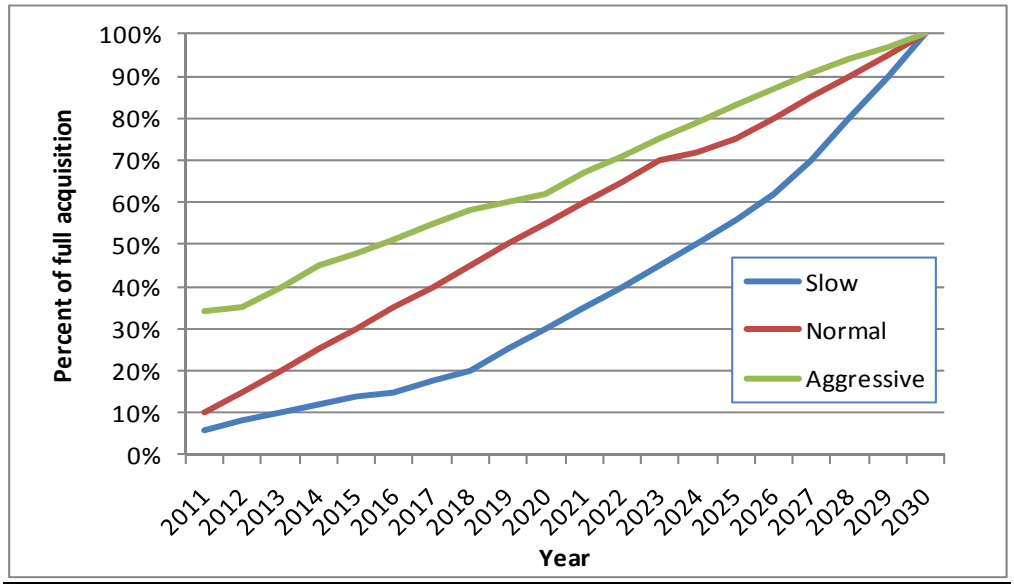
Next, the 2011 IRP utilized the application of ramp rates to more accurately align resource opportunity with market readiness and adoption. The technical achievable potential for each energy efficiency measure by state was assigned a ramp rate reflective of the relative state of technology and maturity of state programs. New technologies and states with newer programs were assumed to take more time to ramp up than states and technologies with more extensive track records. Three ramp rates were developed, "Slow", "Normal", and "Aggressive". See Figure 3 for a representative graph of the three rate rates.

For Washington, the 2011 IRP assumed an "Aggressive" ramp rate. The Company's 2012-2013 biennial target (excluding DEI and Production Efficiency potential in non-hydro generation facilities) represents nearly 20 percent of PacifiCorp's ten-year conservation potential forecast for the planning years 2012 - 2021.

[24] 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 include line losses between the installed equipment or customer site and the generation source.

[25] Commonwealth Associates Inc. DEI study and Cascade Energy Inc. production efficiency in non-hydro generation facilities study.

Figure 3
Market Acquisition Rate (Ramp Rates)



The Company's ten-year DEI conservation forecast and biennial target was developed as described earlier in this section of the report and is proposed as a range; 0 aMW to .346 aMW rather than a fixed point estimate**.** The range is in recognition of uncertainties regarding the ability of the Company to measure and verify savings associated with planned DEI project investments. This biennium will serve as a pilot period to determine whether the Company will be able to reliably measure and verify DEI savings given the Company's existing voltage optimization practices and lower voltage settings. For information on how the Company intends to measure DEI results refer to "Utility Evaluation, Measurement and Verification (EM&V) Activities" section, provided later in this report.

The production efficiency 2012-2013 biennium target, like the production efficiency ten-year forecast, was limited to projects within the Company's wholly owned Chehalis plant. As noted above, the Company will conduct reviews at the remaining facilities prior to the next biennium and refine the forecast for production efficiency accordingly, provided the outstanding joint ownership issues can be resolved.

The Company's production efficiency target timeline is based on two major factors:

1. Confidence in the economics and energy savings forecast of an energy improvement measure; and
2. Whether or not the project can be done with the plant online. Some projects will require a plant outage which is subject to an overhaul schedule. The next scheduled outage for Chehalis is 2015.

The projects that are not scheduled in the current biennium are deferred based on one of the two points above. All projects identified in the study are planned to be completed by the end of the 2014-2015 biennium.

Project planned for the current biennium are as follows:

- 2012
  - Electric Heat Trace Runtime
  - Electric Heater Thermostat
  - Compressed Air Dryer Controls
- 2013
  - Lighting Upgrade

Also, during the current biennium the Company will prepare for projects planned during the upcoming outage. Projects that had low confidence level in the conclusions will receive more detailed investigation during this time.

As noted in the discussion on the development of the production efficiency forecast, the biennial target is adjusted to reflect 22 percent of the total two-year production efficiency forecast in recognition of Washington's share of the West Control Area (cost) Allocation Methodology.

Range for the Target

PacifiCorp's consolidated 2012-2013 biennial conservation target is **8.7 to 9.0** aMW[26], which represents the sum of the first two years in the ten-year conservation potential. As allowed under WAC 480-109-010(2) the Company is proposing a target range as opposed to an exact target in consideration of the uncertainties regarding the ability to reliably measure and validate savings associated with DEI investments.

Business Plan Summary Data

Table 11 provides individual program summary data for the Company's proposed programs for the 2012-2013 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.

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

Table 11
Program Summaries

Program	Biennial Budget	Year offered	Biennial Target (aMW)	Percent Sector (savings)	Percent Portfolio (savings)
Low Income Weatherization (114)	$ 1,648,000	1980s	0.07	2.71%	6.7%
Refrigerator Recycling (107)	$ 600,000	2005	0.35	14.25%	3.9%
Home Energy Savings (118)	$ 3,401,040	2006	2.06	83.04%	22.8%
Total Residential Sector	**$ 5,649,040**		**2.48**		**27.4%**
Energy FinAnswer (125)	$ 978,000	2000	0.37	22.83%	4.1%
FinAnswer Express (115)	$ 2,120,241	2004	1.26	77.17%	13.9%
Sub-total of commercial	**$ 3,098,241**		1.63		18.0%
Energy FinAnswer (125)	$ 4,996,000	2000	2.11	81.58%	23.4%
FinAnswer Express (115)	$ 815,229	2004	0.48	18.42%	5.3%
Sub-total of industrial	**$ 5,811,229**		2.59		28.6%
Total Business Sector	**$ 8,909,470**		**4.22**		**46.6%**
Energy Education in Schools (113)	**$ 872,000**	2000	-	N/A	
Northwest Energy Efficiency Alliance	$ 2,369,456	1997	2.00	Mixed	**22.1%**
Distribution efficiency note 1	$ 569,000	2,012	0.346	100%	**3.8%**
Production efficiency note 2	$ 640,800	2,012	0.009	100%	**0.1%**
Total - conservation programs	**$ 19,009,766**		**9.05**		**100%**
Customer outreach/communication	$ 500,000	2012	-	N/A	
Program Evaluations	$ 1,035,000	N/A	-	N/A	
Potential study update and analysis	$ 95,000	N/A	-	N/A	
Measure data documentation	$ 250,000	N/A	-	N/A	
Res. admin. of prior programs	$ 3,000	N/A	-	N/A	
Totals (2012 & 2013) notes 1,2	**$ 20,892,766**		**9.05**		**100%**

Notes:

1) The biennial target for distribution efficiency is presented within this report as a savings range rather than a fixed point estimate. The cumulative figures presented in this table (for distribution efficiency and in total) represent the upper end of the Company's biennial target; 8.7 to 9.0 aMW.
2) The biennial target for production efficiency is presented in Table 11 as 22 percent of estimated conservation opportunities available from the seven non-hydro generating facilities serving PacifiCorp's Washington customers. The adjustment is in recognition of the Company's West Control Area Allocation Methodology which is used to allocate recovery of plant investments.

Stakeholder Engagement

To demonstrate the Company's compliance with Order 2 (section 9 of the ordering section) in Docket UE-100170, "Required Public Involvement in the Preparation for the 2012-2013 Biennium", PacifiCorp provides the following summary of preparatory work and public involvement in the preparation of the Company's 2012-2013 Biennial Conservation Plan.

The Company was an active participant in the Commission Staff's Washington Collaborative Working Group ("Collaborative") meetings and related sub-committee meetings held from February 2011 through June 2011. The stated goal of the Collaborative was to reach consensus on matters relating to appropriate acquisition of conservation in the context of Initiative 937. Specifically, the parties worked towards increasing clarity, certainty and, to the degree appropriate, consistency amongst utilities with respect to the requirements of Initiative 937. The process generated several key documents and areas of consensus that, along with a report on the process, the Company understands will be provided to the Commission in a Staff report later this year.

In the midst of the Collaborative meetings, the Company held a DSM Advisory Group meeting on March 18, 2011, at which time, among other program discussions, the Company provided an update on the ongoing DEI study work and reviewed PacifiCorp specific Initiative 937 milestones.

On July 1, 2011, immediately following the last Collaborative meeting (June 29, 2011), the Company sent out an email to the DSM Advisory Group officially kicking off the 2012-2013 Biennium development public involvement process. In that communication, the Company proposed a process, a series of meetings and suggested agenda topics for DSM Advisory Group review and comment.

In total, the Company met with the Advisory Group eight times, five times during the month of August 2011 (Aug. 4, 12, 19, 26 and 31) once in November 2011 (Nov. 3) and two times in December 2011 (Dec. 8 and 15). 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, and arrive at the structure for the forecast and target e.g. a range of savings. Below is a brief summary of each meeting's agenda by date.

August 4, 2011

- A discussion on the Energy Education in Schools program, stakeholder concerns and possible options for 2012-2013
- An overview of proposed changes to the Home Energy Savings Program
- Initiative 937 milestones and work schedule
- An update on the evaluation, measurement, and verification (EM&V) framework outline describing how the Company intends to conduct EM&V activities
- Overview of the potential assessment, IRP results, and possible adjustments

August 12, 2011

- Continued review of the measures and savings assumptions used in the development of the Company's potential assessment
- Comparison of potential assessment assumptions to regional assumptions
- Additional detail on proposed adjustments, their magnitude and direction
- Identification of additional opportunities
- Initial discussion on Conservation and Business Plan documents and requirements

August 19, 2011

- Continued discussion on possible solutions to the Energy Education in Schools program EM&V concerns
- Review of the draft EM&V framework document
- Initial look at the 2011 IRP results and adjustments, basis of the 2012-2021 conservation forecast and biennial target
- A content and framework discussion for the Conservation Plan
- Overview of the related Business Plan contents and programs
- An overview discussion on NEEA and the role of NEEA savings towards achievement of the biennial target

August 26, 2011

- Reviewed final CFL adjustments, other adjustments, impact on conservation forecast and biennial target (less DEI and production efficiency)
- Status update on the Company's Conservation Plan filing documents
- Discussed filing process, ability for post September 15th amendments, and other procedural matters leading up to the revised conservation forecast and Conservation Plan to be filed by January 31, 2012
- Another round of comments and review on the Company's EM&V framework
- Discussion on the Energy Education in Schools program for the 2011/2012 school year

August 31, 2011

- Final pre-filing walk-though of the EM&V framework document
- Company's proposed plan for the Energy Education in School Programs for the 2011-2012 school year and 2012-2013 Biennial Conservation Plan
- Proposed changes and savings assumptions to the Home Energy Savings program

November 3, 2011

- DEI/conservation voltage regulation basics
- Method used to quantify DEI projects
- DEI evaluation challenges
- Initial DEI conservation forecast 2012-2013
- Draft DEI implementation timeline

December 8, 2011

Distribution Efficiency Initiative

- Update of DEI potential results, economic screening of projects

- Methodology used to identify 2012 circuits to be studied
- Review of challenges in measurement and verification
- Revised ten-year forecast and biennial target, range concept/pilot plan discussed
- Revised project implementation timeline

Production Efficiency
- Reviewed I-937 conservation definition in the context of production efficiency
- Provided data on Company plants serving Company's Washington customers
- Reviewed method used to identify cost-effective production efficiency projects
- Outline of typical plant efficiency conservation measures
- Plant by plant findings and potentials
- Challenges regarding joint ownership and multi-state cost-recovery
- Estimate of production efficiency ten-year potential before adjustments

<u>December 15, 2011</u>
- Refined ten-year conservation potential and 2012-2013 target for production efficiency to opportunities at plants wholly owned by PacifiCorp
- Provided revised conservation potential forecast for production efficiency
- Plan to address joint ownership/cost recovery challenges before next biennium
- Reviewed proposed cost-recovery mechanisms/considerations

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

Pursuant to Order 02 in Docket UE-10070 (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 overarching objectives of the communications and outreach plan are to 1) promote customer conservation through energy efficiency education and 2) to increase customer awareness of and participation in the company's conservation programs. To achieve these objectives, the Company will deploy a cohesive, consistent and integrated communications plan that will include traditional customer communication tools including media advertisements (television, radio and print), public outreach and public affairs communications with online and interactive portals, community involvement and social networking. PacifiCorp will share these strategies in greater detail with the DSM Advisory Group for review and comment prior to deployment. A copy of the Outreach and Communications plan has been provided in the DSM Business Plan, Appendix 7 to this report. In addition, a placeholder for the plan expenditures has been included as a line item in the DSM Business Plan budget (Appendix 7, Table 1).

Adaptive Management and Implementation Strategies

Changes to conservation programs within the biennium are contemplated in Order 02 in Docket UE-100170, in which PacifiCorp's 2010-2011 biennial conservation targets were approved. Sections 5 and 7(a) of the ordering section of Order 02 provide for the following:

> (5) "Program details about specific measures, incentives, and eligibility requirements must be filed as tariff attachments or as revisions to the Company'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."[27]
>
> (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 Attachment A of the Revised Report."[28]

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 115, FinAnswer Express. The Commission approved process to modify these programs is defined in Schedules 115 and 118 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 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 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

[27] Note that paragraph citations refer to sections within Order 02 and not within this report.

[28] The Revised Report refers to PacifiCorp's 2010-2011 biennial conservation plan, which was filed with the Commission in UE-100170 on July 7, 2010.

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.

FinAnswer Express (Schedule 115)

Details for this program are contained in the program tariff provided as a part of the DSM 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-061710) describe 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

The incentive tables are included in the program brochures which can be found at the links below.

For retrofits at existing facilities:

http://www.pacificpower.net/content/dam/pacific_power/doc/Business/Save_Energy_Money/WA_FinAnswer_Express_Retrofits_Brochure_and_Incentive_Tables.Pdf

For new construction and major renovation projects:

http://www.pacificpower.net/content/dam/pacific_power/doc/Business/Save_Energy_Money/WA_FinAnswer_Express_NCMR_Brochure_and_Incentive_Tables.pdf

Program definitions are available at the following Website:

http://www.pacificpower.net/content/dam/pacific_power/doc/Business/Save_Energy_Money/FinAnswer_Express_29.pdf

Information about custom incentives is available at the following Website:

http://www.pacificpower.net/content/dam/pacific_power/doc/Business/Save_Energy_Money/WA_FinExpress_Custom_Incentives_10302009.pdf

The current program definitions, custom incentive information and incentive tables are also included following the program tariff provided in Appendix 7 to this report.

The Company intends to follow these provisions when exercising changes to existing programs or introductions of new programs within the 2012-2013 biennial period unless the Commission directs otherwise when ruling on this Conservation Plan.

The DSM business plan provided as Appendix 7 to this reports contains additional details on possible changes to existing programs that have been identified at this time.

Utility Evaluation, Measurement and Verification Activities

An evaluation, measurement and verification ("EM&V") framework document has been prepared in response to the Commission's Order 02 in UE-100170; refer to section 3(a)(i) of the ordering section of Order No 2. 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.

PacifiCorp and its DSM Advisory Group held four separate meetings to review the proposed outline and documentation. Those in attendance participated in discussions that allowed viewpoints to be shared and worked collaboratively towards the completed EM&V Framework.

Summarized below is the outcome of each meeting and milestone dates relevant to the development of the EM&V Framework:

August 4, 2011 - Outline of proposed framework was reviewed with the advisory group. Comments from the advisory group on the outline include the following:

- Capture the Data Management section showing different data bases used in tracking programs and customer information
- Include a section showing that PacifiCorp will develop and maintain a document outlining the methods and assumptions used for estimating energy savings
- Create functional chart showing the responsibilities and flow of the EM&V activities within PacifiCorp's DSM Group
- Elaborate further on the application of EM&V results, including the decision criteria and how results are used

August 16, 2011 - First draft of the EM&V Framework, including Appendix 1, was distributed to the DSM Advisory Group.

August 19, 2011 – First draft of the EM&V Framework was reviewed with the DSM Advisory Group. A high level review took place with some recommendations being made. The Company was requested to simplify the Functional Chart for ease of flow. It was determined that the DSM Advisory Group would submit comments back on draft EM&V Framework by close of day, August 25, 2011.

August 25, 2011 – Received notice that parties needed more time for review and that comments would be submitted by close of day August 26, 2011.

August 26, 2011 – A conference call was held with the DSM Advisory Group to review the modified Functional Chart and held discussion on other topics such as identifying what EM&V activities were included in the 4-6 percent budget and whether EM&V activity costs should be captured at portfolio or project specific level. It was concluded that a final meeting would be held for EM&V review of the framework on August 31, 2011.

August 31, 2011 – PacifiCorp consolidated all comments received from the DSM Advisory Group showing the changes in the draft version of the EM&V Framework. Each page of this document was reviewed by those participating on the conference call. Recommendations and comments were made by all parties involved. It was agreed that a draft of the final comments would be shared with the advisory group prior to filing with the Commission on September 15, 2011, for a final reference.

September 8, 2011 – Final draft with comments from August 31, 2011, conference call were shared with the DSM Advisory Group.

EM&V protocols for energy efficiency and production efficiency at non-hydro generating facility results will be based on the practices outlined in the Company's EM&V Framework document.

EM&V of the savings gained from DEI projects follow the Simplified VO M&V Protocol approved by the RTF in 2010. Although the reported values will align with the protocol, the Company is concerned about the capability of accurately measuring relatively small changes in voltage, which is why the Company has proposed a range for DEI savings for the 2012-2013 biennium. During these first two pilot years, the Company will endeavor to determine whether software modeling might be a sufficient method for determining energy savings (does it produce similar results as those achieved through the use of the Simplified VO M&V Protocol). If such a method can be proven effective and is supported by the Commission and other interested parties, the economics of future projects will be reevaluated to adjust for lower metering costs which may screen in additional projects as economic.

PacifiCorp's EM&V framework document and the RTF's Simplified VO M&V Protocol for DEI projects are provided as Appendices 8 and 12, respectively, to this report.

Cost Recovery Mechanism

PacifiCorp recovers costs associated with its demand-side management programs through the System Benefits Charge, which is administered through Schedule 191. The System Benefits Charge was originally approved by the Commission in Docket UE-001457. The SBC was last adjusted in October 2009 when it was increased from an annual collection rate of $4.5 million to the current collection rate of $8.8 million. The current SBC collection rate was approved in Docket UE-091516 with an effective date of October 30, 2009. As of December 2011, the SBC collection rate represents approximately 3.1 percent of Washington retail electric revenues.

In 2011, $8.8 million was collected through the SBC. For the 2012-2013 biennial period, PacifiCorp intends to recover through the System Benefits Charge costs associated with approved conservation programs, planning and program administrative costs, and costs associated with compliance with WAC 480-109-010, including those associated with its rules and conditions consistent with the Commission's Order 02 in Docket UE-100170.[29] Projected costs for the 2012-2013 biennial are provided in Table 11 of this report as well are in the DSM Business Plan, Appendix 7 (Table 1) to this report. Proposed cost recovery plans for DEI and production efficiency costs were reviewed with PacifiCorp's DSM Advisory Group in the preparation of this report, the product of those discussions is presented in Table 12, below.

[29] Refer to section 11(b) of the Commission's Order 02 in UE-100170.

Table 12
Proposed Cost Recovery Treatment –
DEI and Production Efficiency

	Distribution Efficiency Initiatives	Production Efficiency Initiatives
1. Study Costs: All study costs and all DSM-specific analysis, reporting, tracking or evaluation costs	Costs should be charged directly to the DSM deferred account and recovered contemporaneously through the DSM tariff rider in Washington.	Costs should be charged directly to the DSM deferred account and recovered contemporaneously through the DSM tariff rider in Washington.
2. Capital Costs: Capital costs for distribution or production efficiency measures that satisfy the cost effectiveness test of the states where the assets are included in rate base	Capitalized to plant accounts consistent with similar assets. Distribution capital will be situs assigned to Washington	Capitalized to plant accounts consistent with similar assets. Production capital will be allocated among the states consistent with the currently approved inter-jurisdictional allocation methodologies.*
3. Capital Costs – Recovery of and recovery on the efficiency measure capital costs from the date the assets are placed in-service until the effective date of rates established in a general rate case that allows recovery of these assets.	Capitalized to plant accounts consistent with similar assets. Distribution capital will be situs assigned to Washington and included in Washington general rate cases.	Capitalized to plant accounts consistent with similar assets. Production capital will be allocated among the states consistent with the currently approved inter-jurisdictional allocation methodologies and included in general rate cases.*
4. One-time O&M costs: One time O&M costs associated with engineering, analyzing, moving, documenting, optimizing or configuring the company distribution or production assets or processes.	These one-time costs will be charged to a deferred account and recovered through the GRC in Washington.	These one-time costs will be charged to a deferred account and recovered through the GRC in Washington.
5. On-going field or power plant O&M costs: The on-going O&M costs associated with any assets installed for distribution or production efficiency.	Recovery of distribution costs will be situs Washington and will be included in Washington general rate cases.	Recovery of generation O&M costs will be allocated to PacifiCorp's states based on the approved allocation methodologies.*

*PacifiCorp reserves the right to request recovery from Washington through a general rate case, costs that are not recovered from other jurisdictions. The company recognizes that parties have the right to oppose the company's recover of these costs.

Plan Compliance Information and Other Key Issues

Table 13 identifies a listing of compliance requirements from Order No. 2 received in Docket UE-10070 and from WAC 480-109 and how the Company has addressed each requirement in the preparation of this report.

Table 13[30]
2012-2013 Plan Development Compliance Requirements

Docket UE-100170 Order 02 (2)	
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 regional power plan along with a description of the Company's aligning methodology. It also contains key 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 consistency of the methodologies used in the development of both resource plans and development of the Company's ten-year conservation forecast.
Docket UE-100170 Order 02 (3) (a) (i)	
The Company will consult with the DSM Advisory Group on the development of a written framework for evaluation, measurement, and verification (EM&V) as implemented by PacifiCorp which guides its approach to evaluation, measurement, and verification of energy savings. This framework must be reflected in the Biennial Conservation Plan for the next biennium, 2012-2013	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-100170 Order 02 (3) (a) (ii)	
The Company will consult with the DSM Advisory Group on development of conservation potential assessments under RCW	The preparatory work for the 2011 Conservation Potential Assessment used in the development of the 2011 IRP was

[30] Paragraph references in Table 10 for Docket UE-100170 items refer to the ordering section of Order 02.

19.285.040(1)(a) and WAC 480-109-010(1).	completed prior to the issuance of Order 02 in Docket UE-100170. The DSM advisory group was consulted in adjustments to the 2011 IRP selections as outlined in "Conservation Potential and Conservation Targets" section of this report. In addition, the DSM advisory group was consulted in the development of the Company's 2012-2021 conservation forecast as detailed in the "Stakeholder Engagement," EM&V as detailed in the "Utility Evaluation, Measurement, and Verification Activities" section, and cost recovery as detailed in the "Cost Recovery Mechanism" section of this report.
Docket UE-100170 Order 02 (3) (c)	
The Advisory Group should meet quarterly at a minimum.	A list of 2011 Advisory Group meetings, including Washington Collaborative Working Group meetings, is provided in this Conservation Plan in the section entitled "Stakeholder Engagement".

Docket UE-100170 Order 02 (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 2012-2013 Business Plan."
Docket UE-100170 Order 02 (6) (b) & (c)	
PacifiCorp must use RTF deemed savings or other reliable and relevant source data that has verified savings levels and be presented to the Advisory Group for comment.	Data sources are outlined beginning on page 53 of Volume I of the "Assessment of Long-Term System-Wide Potential for Demand-Side and Other Supplemental Resources" which is provided as Appendix 2 to this report. Volume II, Appendix E of that report provides a comparison of savings values. An electronic version of spreadsheet was provided to the DSM Advisory Group on August 16, 2011. 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 of this report as well as in Appendix 4 to this report. In addition, supporting

	documentation for the proposed Home Energy Savings program changes included savings data sources and was provided to the Advisory Group for comment.
Docket UE-100170 Order 02 (6) (f)	
PacifiCorp must spend between four and six percent of its conservation budget on EM&V.	1) See Appendix 7, "PacifiCorp's Washington Demand-side Management 2012-2013 Business Plan." The Business Plan provides an estimate of the evaluation expense and total expenditures for the next biennial period. The evaluation expenditures, $1,035,000 represent 5.0 % of the preliminary budget of $20,892,766 and 5.6% of the preliminary budget if NEEA costs are removed (NEEA conducts their own evaluation efforts and reports savings to the Company). These EM&V costs exclude DEI costs associated with the RTF Simplified VO M&V Protocol which are captured in DEI's capital/metering investment budget.

Docket UE-100170 Order 02 (7) (a)	
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 2012-2013 Business Plan." All Washington retail customer classes are eligible for energy efficiency programs. Residential customers have four programs available, including a weatherization offer for income qualified customers. The comprehensive program for residential customers includes offers for both retrofit and new construction. Business customers have access to two comprehensive programs which provide both prescriptive (pre-calculated $/units) incentives and site specific calculated incentives. Both programs provide offers for new construction and retrofit projects. In addition, NEEA delivers regional initiatives for multiple customer classes.
Docket UE-100170 Order 02 (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	A copy of the Company's Outreach and Communications plan has been provided in the DSM Business Plan, Appendix 7 to this report. In addition, a placeholder for the plan expenditures has been included as a line item in

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.	the DSM Business Plan budget (Appendix 7, Table 1).
Docket UE-100170 Order 02 (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 2012-2013 Business Plan." All the Company's programs are evaluated for cost-effectiveness on a prospective or filed basis, retrospectively each year in March 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-100170 Order 02 (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 2012-2013 Business Plan." As described in the Business Plan, the only conservation effort without EM&V is the Energy Education in schools. Forecasted expenditures for this effort during the biennial period are $872,000 which represents 4.2% of the preliminary budget of $20,892,766.

Docket UE-100170 Order 02 (8) (a) - (h)	
Required reports and filings.	The Company has met the compliance report requirements in Docket UE-100170 Order 02 (8) (a) – (e) relevant to the 2010-2011 biennium period. The submission of this report satisfies the remaining compliance requirements in Docket UE-100170 Order 02 (8) (f), to submit a revised ten-year conservation potential that includes DEI and production efficiency potential in non-hydro generation facilities and revised ten-year conservation plan.
Docket UE-100170 Order 02 (9) (a) & (b)	
Required Public Involvement in Preparation for the 2012-2013 Biennium.	See "Stakeholder Engagement" section of this report for an outline of the public process the Company facilitated in the development of its proposed 2012-2021 ten year conservation potential forecast and 2012-2013 biennial targets.
Docket UE-100170 Order 02 (10) (a) - (c)	
Cost effectiveness Test is the Total Resource Cost Test.	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 10 percent conservation benefit and a risk adder consistent with the Council's approach. Cost effectiveness assessments for the programs in the 2012-2013 business plan as well as three portfolio cost effectiveness assessments are provided in Appendix 7. In addition, program and measure specific cost effectiveness calculations were provided with the changes proposed to the Home Energy Savings and FinAnswer Express program. Quantifiable non - energy benefits were included in these calculations. Program and portfolio level cost effectiveness was provided in the 2010 annual report and also included quantifiable non-energy benefits. The 2010 potential study update included the effects of non-energy benefits as a reduction to energy efficiency measure costs.
WAC 480-109-010 (1)(a) and (2)(a)	
(1)(a) Consider only conservation resources that are cost-effective, reliable and feasible. (2)(a) The biennial conservation target must identify all achievable conservation opportunities.	See Appendix 1, "2011 Integrated Resource Plan," Appendix 2, "Assessment of Long-Term, System-Wide Potential for Demand-Side and Other Supplemental Resources," Appendix 10, "Commonwealth Associates, Inc. Study," and Appendix 11, "Cascade Energy, Inc. Study," These appendices provide evidence the Company has identified and appropriately screened for 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 2011 IRP processes as well as Commonwealth and Cascade studies used to arrive at the Company's ten-year conservation forecast provided in this report.

WAC-480-109-010 (1)(b)(i) and (ii)	
Projection must be derived from and reasonably consistent with one of two sources: IRP or current power plan targets.	The Company elected to use the 2011 IRP and its related assumptions and costs (for DEI and Production Efficiency) to establish the 10-year conservation forecast and two year targets for the 2012 and 2013 biennial period as cited in the "Overview of 2012-2013 Biennial Conservation Plan" section of this report. This decision is consistent with the Company's use of the IRP for the last biennial period, the general discussion during the Washington Conservation Work Group and the following disclaimer on the 6th Plan Conservation Target Calculator. "Individual utility conservation goals are best established through utility integrated resource planning processes which can better account for local conditions and legal requirements." [31] The conservation potentials for DEI and production efficiency potentials were based on potential assessments conducted by Commonwealth (DEI) and Cascade (production efficiency) studies. These studies are provided in this report as Appendices 10 and 11, respectively. Collectively the two studies represent an independent and reliable assessment of the magnitude, timing, and costs of conservation potential available specific to PacifiCorp. 2011 IRP avoided costs and analysis methodologies were used to conduct the economic screening of DEI and production efficiency resources in development of the conservation forecast.

[31] 6th Plan Target Calculator available at:
http://www.nwcouncil.org/energy/powerplan/6/supplycurves/I937/default.htm

WAC-480-109-010 (2)(a) and (b)	
(2)(a) The biennial conservation target must identify all achievable conservation opportunities. (2)(b) The biennial conservation target must be no lower than a pro rata share of the utility's ten-year cumulative achievable conservation potential. Each utility must fully document how it prorated its ten-year cumulative conservation potential to determine the minimum level for its biennial conservation target.	See response to WAC 480-109-010 (1)(a) and (2)(a) above in this table. The ten year conservation projection for energy efficiency resources was generated as a component of the preferred portfolio generated the 2011 IRP. The preferred portfolio includes selection of economic conservation resources by year. The two year target (prior to adjustments) aligns with the 2012 and 2013 IRP preferred portfolio conservation selections. Conservation resources available by year were developed for input into the IRP models as described in the "Biennial (2012-2013) Conservation Target" section of this report. Further adjustments by year were applied as described under "Adjustments" in the "Conservation Potential and Conservation Targets" section of this report. The final two year target is based on the IRP preferred portfolio selections. For DEI and production efficiency their ten-year conservation projections is informed by the Commonwealth and Cascade studies. These forecasts were then adjusted and acquisition timing staged in response to additional study requirements and/or other challenges yet to be resolved such as joint ownership of generating facilities and allocated cost recovery issues. These adjustments are further explained in the "Conservation Potential and Conservation Targets" section of this report.

List of Appendices

1) 2011 Integrated Resource Plan - PacifiCorp's 2011 Integrated Resource Plan filed on March 31, 2011 (Docket No. UE-100514). The 2011 IRP is available at http://www.pacificorp.com/es/irp.html

2) Assessment of Long-Term, System-Wide Potential for Demand-Side and Other Supplemental Resources – Prepared for PacifiCorp on March 31, 2011. 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 2011 IRP selections)

5) List of Measures selected for 2012 and 2013 in the Preferred Portfolio during PacifiCorp's 2011 IRP Process

6) Demographic Information on PacifiCorp's Washington Service Area

7) PacifiCorp's Washington Demand-side Management 2012-2013 Business Plan

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

9) Northwest Energy Efficiency Alliance 2012-2013 forecast for PacifiCorp's Washington service territory, forecast and forecast methodology

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

11) Cascade Energy Inc. Study of production efficiency opportunities in Washington

12) RTF Simplified VO M&V Protocol

Appendix 1
PacifiCorp's 2011 Integrated Resource Plan

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

Appendix 2
Assessment of Long-Term, System-Wide Potential for Demand-Side and Other Supplemental Resources

(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)

Appendix 3 contains an outline of the methodology used and provided by the Northwest Power and Conservation Council in the development of the 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 the Table A3-1 below is Tom Eckman's (of the Northwest Power and Conservation Council) outline of major elements for the Northwest Power and Conservation Council's Methodology for Determining Achievable Conservation Potential.[32] 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 2011 Integrated Resource Plan methodology.

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

Northwest Power and Conservation Council		**PacifiCorp 2011 IRP**
1) Resource Definitions	i) Technical Potential	
	ii) Economic Potential	
	iii) Achievable Potential	PacifiCorp uses these same categories.
	(1) Non-lost opportunity resources ("schedulable")	In PacifiCorp's conservation potential assessment, these resources are referred to as "retrofit."
	(2) Lost opportunity resources	PacifiCorp uses same definitions, distinguishing between new construction and "normal replacement" as lost opportunity resources.
2) Technical Resource Potential Assessment	a) Review wide array of energy efficiency technologies and practices across all sectors and major end uses	PacifiCorp examined 341 "unique" measures in its conservation potential assessment, nearly double the number from the 2007 study and inclusive of all measures included in the Council's 6th Plan. Distribution efficiency improvement (DEI) is in the 6th Plan, but

[32] Provided by Tom Eckman to utilities in attendance at a meeting hosted by the Commission in Olympia on September 3, 2009. Refer to http://www.nwcouncil.org/energy/powerplan/6/supplycurves/I937/default.htm.

Northwest Power and Conservation Council		PacifiCorp 2011 IRP
		wasn't assessed in the Company's conservation potential assessment. A separate study was done to assess the conservation potential for DEI (a study is underway for Production Efficiency).
	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 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 codes & standards in effect 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 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 embedded in the eQUEST energy simulation model.
	(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 2011 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 is the criterion for economic screening in the 2011 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 15% 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 2011 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 does not assume an expected CO2 price stream, but evaluated portfolios with value ranges (2015-2030, in 2015 dollars) of $0, $12 to $93, $19 to 39, and $25 to $68, including real escalation. Preferred portfolio development assumed $19/ton with 3% annual real escalation plus inflation.
	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 uses 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 uses 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 2011 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 consumer surveys to determine achievable potentials based on market response. For the Integrated Resource Plan, the Company used the Council's assumption of maximum 85% achievable potential assumption for retro fit or non-lost opportunity and 65% for lost opportunities; an effective achievable of 82%.
	(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	Ramp rates were developed for each measure and state reflecting the relative state of

Northwest Power and Conservation Council		PacifiCorp 2011 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)	technology and state program. New technologies and states with newer programs, e.g. Wyoming assumed to take more time to 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.	Yes. In lieu of Aurora PacifiCorp uses a combination of our System Optimizer and Midas models which also rely 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 2011 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 IRP for Washington resources only.	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. IRP uses a weighted average cost of capital (currently 7.17%).	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	**Avoided Cost for a Measure =**	.	.

(generalized)			
Energy (if calculated separately)	.	The approach to establishing the DSM avoided cost values is described in the IRP 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, 3.9% 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. See avoided cost matrix.	See Avoided Cost matrix.
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. Although they were not included in the development of our 2008 IRP and calculation of our 2010-11 WA I-937 biennial targets quantifiable non-energy benefits (available in third-party databases) were incorporated in our 2010 potential study update that was used to inform the 2011 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 equity.	Yes. IRP uses a weighted average cost of capital (currently 7.17%).	See Avoided Cost matrix.
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 2011 IRP Selections in the determination of PacifiCorp's
Ten-Year Conservation Forecast

There were a total of five measure adjustments made to the PacifiCorp's 2011 IRP DSM resource plan selections in the process of arriving at the Company's ten-year conservation forecast. Adjustments were made to five measures for the September 15, 20100 filing. Based on updated information and stakeholder comments, additional adjustments were made to measures 1, 2 and 3 below in preparation for the January 31, 2012 filing. The five measures adjusted were:

1. Appliance Recycling
2. Compact Fluorescent Lighting
3. Light Emitting Diode Lighting
4. Heat Pump Water Heaters
5. Energy Star Refrigerators

Below is additional information on each of the five measures adjusted and the impact of those adjustments.

Appliance Recycling

The 2011 Conservation Potential Assessment utilized draft data from the recently completed Company program evaluations for the 2006-2008 periods. The RTF has savings estimates for the same measure which includes the consumption of a replacement refrigerator or freezer when estimating the available savings. The following adjustments were made to annual conservation potential.

- Refrigerators savings adjusted from 1,482 kWh/unit to 844 kWh/unit which is the gross value that aligns with the net savings number provided on the RTF web site.

- Freezer savings were adjusted from 1,419 kWh/unit to 815 kWh/unit which is the gross number that aligns with the net number on the RTF web site.

These adjustments apply to the recycled units only which aligns with the RTF data. No adjustments to the potential were made to reflect energy savings delivered from the kits that are provided to customers when the units are picked up. Table A4-1 shows the adjustment made as a result of these considerations.

Additional appliance recycling adjustments for the January 31, 2012 filing:

In response to a stakeholder comment on the September 15, 2011 filing, the Company had additional discussions with Tom Eckman at the RTF. These discussions along with an in depth review of RTF minutes of the meeting in which the current RTF numbers were approved. This

provided additional insight into the complexities and nuances of the current RTF appliance recycling numbers.

Since the September filing the Company has completed a 2009-2010 Washington specific impact evaluation for this measure. The evaluation provided updated information on: unit energy consumption, in situ adjustment, partial use factor, program induced replacements and naturally occurring removal (also known as net-to-gross).

The Company is proposing to utilize territory specific data and the RTF methodology to calculate an updated unit energy savings for recycled refrigerators and freezers to update the adjustments for the conservation forecast and targets for the next biennial period. This approach has been discussed with Tom Eckman and is similar to the approach utilized by Avista.

- Refrigerator savings were adjusted from 844 kWh/unit currently in the September 15, 2011 filing to 724 kWh/unit, which is the calculated territory specific unit energy savings using the RTF methodology.
- Freezer savings were adjusted from 815 kWh/unit currently in the September 15, 2011 filing to 542 kWh/unit, which is the calculated territory specific unit energy savings using the RTF methodology.

The calculations and further information are provided in the Cadmus Group, Inc. memo titled *See ya later, refrigerator® Savings Analysis* dated December 28, 2011 and included at the end of this Appendix. The tables below show the original adjustment, the impact of the revised adjustment and the added December adjustment for the appliance recycling measure(s).

Table A4-1 - Appliances

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	10-year	2-year
Adjustment												
Appliance re	(1,179)	(1,179)	(1,179)	-	-	-	-	-	-	-	(3,537)	(2,358)
aMW	(0.13)	(0.13)	(0.13)								(0.40)	(0.27)

Revised Table A4-1 - Appliances

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	10-year	2-year
Adjustment												
Appliance re	(1,611)	(1,611)	(1,611)	-	-	-	-	-	-	-	(4,833)	(3,222)
aMW	(0.18)	(0.18)	(0.18)								(0.55)	(0.37)

Table A4-1a - Appliances (added Dec adjustment)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	10-year	2-year
Adjustment												
Appliance re	(432)	(432)	(432)	-	-	-	-	-	-	-	(1,296)	(864)
aMW	(0.05)	(0.05)	(0.05)								(0.15)	(0.10)

Compact Florescent Lamps ("CFL") - Replacing Energy Independence and Security Act ("EISA") **covered** incandescent lamps

For lamps affected by EISA mandated standards by wattage for efficacy or lumens per watt of input power for incandescent lamps three adjustments were made for the efficient replacement, general purpose or "twister" compact florescent lamps.

The 2010 potential study estimated savings utilizing a room-by-room socket approach consistent with the regional planning efforts. These calculations utilized regional assumptions for lighting burn hours per day, an average of 2.3 hours/day. Baseline wattages for incandescent bulbs the CFLs were assumed to replace were adjusted to EISA compliant baseline wattages over the three year EISA implementation schedule, 2012 through 2014. The study did not explicitly account for the interaction between more efficient lighting (which generates less waste heat) and the heating ventilating and air conditioning (HVAC) system. Based on the best information available during preparation of the 2010 potential study, twister CFLs were only included as an efficient replacement for 2011 and 2012 periods. While the overall and local impacts of EISA continue to develop as implementation draws near (January, 2012), some updated information is available. This updated information including consultation with the RTF chair (and a primary author of the power plan), informed several adjustments:

- Interior burn hours were adjusted to the latest regional data of 1.7 hours/day for all interior twister CFLs. Exterior burn hours were adjusted to the latest regional data of 3.9 hours/day for all exterior twister CFLs. The weighted average of these hours is 1.9/hours/day which is directly comparable to the 2.3 hours weighted average incorporated in the study. Reducing the hour's results in a downward adjustment in energy savings and available potential.

- HVAC interaction for twister CFLs located within conditioned space was calculated using RTF methodology and PacifiCorp specific heating and cooling equipment saturations. Tables A4-2 & A4-3 provide the RTF assumptions and calculation. Tables A4-4 & A4-5 provide the assumptions updated for territory specific cooling equipment saturations and resulted in a downward savings adjustment of approximately 8%.

- Finally, a limited quantity of twisters were added as a 2013 resource to reflect the opportunity that may be available as consumers evaluate efficient lighting options during the second year of EISA implementation. This results in an upward adjustment.

Compact Florescent Lamps (CFL) replacing incandescent lamps **not covered** by EISA

For CFLs assumed to replace lamps not covered by EISA mandated standards for efficacy or lumens per watt of input power, also known as "specialty" lighting adjustments were made for lighting burn hours and HVAC interaction as described above. All adjustments, burn hours, interactive effects and adding twisters in 2013 are reflected in the adjustment provided in Table A4-6 below.

Additional CFL adjustments for the January 31, 2012 filing:

The HVAC interaction between twister and "specialty" CFLs located within conditioned space and heating and cooling equipment performance utilized for the September 15, 2011 filing was calculated using RTF methodology and PacifiCorp specific heating and cooling equipment saturations. The RTF calculator was contained in a tab on the current lighting measure workbook.

In late September, the Company explored the use of this calculator for other territories that might require a climate zone adjustment in addition to equipment saturation adjustments. During this analysis which included several telephone conferences with Tom Eckman and Adam Hadley of the RTF, it was generally concluded that the original calculator was dated (some calculations were performed about 20 years ago) and documentation for many of the underlying assumptions was not available and this was one of many legacy tools that would benefit from an update. In the interim, Tom suggested the Company consider using a calculator developed for the residential lighting measures in the 6th Power Plan. Calculations were more current (last two to three years) and documentation is better.

The Company elected to utilize the more current calculator and performed the same equipment saturation adjustments in addition to climate zone, duct leakage and insulation levels. Adjustments and their applicability to retrofit applications were double checked with Tom Eckman during the process. This information replaces the information found in A4-2 through A4-5 in the original filing. The end result is a downward savings adjustment of 13.4% applied to twister bulbs. It is a weighted average based on interior and exterior applications. A 14.6% adjustment was applied to specialty bulbs as they are assumed to all be installed in interior fixtures. This adjustment supersedes the 8% downward adjustment utilized in the September analysis. No other adjustments were made to this measure.

Information provided in Tables A4-2, A4-3, A4-4 and A4-5 in the September 15, 2011 filing have been superseded by information provided in the memo from Cadmus Group, Inc. titled *CFL HVAC Waste Heat Factor Methodology – Updated*, dated December 27, 2011 and included at the end of this Appendix.

The tables below show the original adjustment, the impact of the revised adjustment and the added December adjustment for the CFL measure(s).

Table A4-6 - CFL

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	10-year	2-year
Adjustment												
CFLs	(469)	2,112	(178)	(193)	(211)	(209)	(214)	(222)	(241)	(209)	(34)	1,642
aMW	(0.05)	0.24	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.02)	(0.00)	0.19

Revised Table A4-6 - CFL

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	10-year	2-year
Adjustment												
CFLs	(1,139)	1,952	(208)	(225)	(246)	(244)	(250)	(259)	(282)	(244)	(1,145)	813
aMW	(0.13)	0.22	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.13)	0.09

Table A4-6a - CFL (added December adjustment)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	10-year	2-year
Adjustment												
CFLs	(670)	(160)	(30)	(32)	(35)	(35)	(36)	(37)	(41)	(35)	(1,111)	(829)
aMW	(0.08)	(0.02)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.13)	(0.09)

Light Emitting Diodes ("LED")

Light emitting diode lighting, also known as solid state lighting is evolving rapidly and promises high efficiency and long life and an alternative (in addition to CFLs) for incandescent lamps. In the 2010 potential study, the baseline for this equipment is assumed to be EISA compliant baseline wattages. The study assumed the regional average of 2.3 hours/day and did not include interactive effects. This resource is included for the entire planning period. Adjustments for this measure are similar to those for the specialty CFLs, and include:

- Updated information for interior and exterior burn hours were adjusted to align with the regional average as described in the CFL section.
- HVAC interaction for LEDs located within conditioned space was calculated using the RTF methodology described above. This downward savings adjustment is the same as that is applied to CFLs.

Additional LED adjustments for the January 31, 2012 filing:

The HVAC interaction between lighting located within conditioned space and heating and cooling equipment performance utilized for the September 15, 2011 filing was described above for CFLS and was also applied to LED equipment in the original analysis.

The updated calculation described above is also being applied to LEDs. No other adjustments were made to this measure.

The tables below show the original adjustment, the impact of the revised adjustment and the added December adjustment for the LED measure.

		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	10-year	2-year
Adjustment													
LED	mWh	(171)	(334)	(320)	(307)	(361)	(433)	(480)	(513)	(561)	(371)	(3,852)	(505)
	aMW	(0.02)	(0.04)	(0.04)	(0.03)	(0.04)	(0.05)	(0.05)	(0.06)	(0.06)	(0.04)	(0.44)	(0.06)

Table A4 - 7-LED												
	2012	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**10-year**	**2-year**
Adjustment												
LED	(171)	(334)	(320)	(307)	(361)	(433)	(480)	(513)	(561)	(371)	(3,852)	(505)
aMW	(0.02)	(0.04)	(0.04)	(0.03)	(0.04)	(0.05)	(0.05)	(0.06)	(0.06)	(0.04)	(0.44)	(0.06)

Revised Table A4 - 7-LED												
	2012	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**10-year**	**2-year**
Adjustment												
LED	(236)	(462)	(443)	(424)	(498)	(599)	(664)	(709)	(776)	(512)	(5,323)	(698)
aMW	(0.03)	(0.05)	(0.05)	(0.05)	(0.06)	(0.07)	(0.08)	(0.08)	(0.09)	(0.06)	(0.61)	(0.08)

Table A4 - 7a-LED (added December adjustments)												
	2012	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**10-year**	**2-year**
Adjustment												
LED	(65)	(128)	(123)	(117)	(137)	(166)	(184)	(196)	(215)	(141)	(1,471)	(193)
aMW	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.17)	(0.02)

Heat Pump Water Heaters ("HPWH")

Heat pump water heaters rely upon a refrigeration cycle instead of electric resistance heating elements to transfer heat from the air to water. Regional savings estimates for this measure continue to be refined as the installations increase. While this equipment does deliver savings, it requires air flow and is audible. Both of these attributes affect the likely locations where the equipment will be installed, which are generally characterized as a) inside conditioned space or b) outside of conditioned space (such as garages). The 2010 potential study utilized data from the draft 6th plan combined with estimates from the 2007 potential study. The estimated savings per unit was 1,540 kWh/unit. At the August 2, 2011, RTF meeting, updated savings estimates for this measure were provided for review and approval at the August 30, 2011 meeting. The proposed RTF savings are specific to conditioned and non-conditioned spaces as well as tank sizes. To better align with the most current regional data, the Company made the following adjustment:

- Incorporated the RTF proposed savings by tank size into a weighted average formula. The distribution of tank sizes was based on the Home Energy Savings program administrator experience in the Washington market and assumes 50 gallon tanks are 88% of the installations and the remaining 12% are 80 gallon tanks. Based on airflow requirements and added noise, it is assumed that all installations are in the garage (unconditioned space). Savings calculated using these assumptions is 1,323 kWh/unit.

Table A4-8 shows the adjustment for heat pump water heaters as a result of these considerations.

Table A4-8
HPWH Adjustment

		2012	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**10-year**	**2-year**
Adjustment													
HPWH	mWh	(21)	(36)	(48)	(57)	(75)	(84)	(368)	(331)	(320)	(368)	(1,707)	(56)
	aMW	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.04)	(0.04)	(0.04)	(0.04)	(0.19)	(0.01)

Energy Star Refrigerators

The 2010 potential study utilized savings estimates for refrigerators based on Energy Star data, which was consistent with the 6th power plan. Unit savings were assumed to be 124 kWh/unit. Over the last year, Energy Star appliance equipment saturations have continued to increase. In July 2011, the RTF posted updated savings estimates for refrigerators including those available from a higher Consortium for Energy Efficiency (CEE) Tier 2 standard. This is the new standard being incorporated into the Home Energy Savings program. The unit savings for refrigerators is being adjusted from 124 kWh/unit down to 65 kWh/unit. The impact of this adjustment is reflected in Table A4-9 below.

Table A4-9
Energy Star Refrigerator Adjustment

		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	10-year	2-year
Adjustment													
Refrigerators	mWh	(14)	(22)	(26)	(30)	(35)	(36)	(38)	(40)	(44)	(57)	(342)	(36)
	aMW	(0.002)	(0.002)	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)	(0.005)	(0.005)	(0.006)	(0.039)	(0.004)

Table A4-10 is a summary of all five adjustments and the Company's resulting ten-year conservation forecast.

Table A4-10
Total Adjustments – All Measures

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	10-year	2-year
2011 IRP												
mWh	37,745	41,437	40,626	40,835	39,487	39,964	39,898	40,849	41,952	45,878	408,671	79,182
aMW	4.3	4.7	4.6	4.7	4.5	4.6	4.6	4.7	4.8	5.2	46.7	9.0
Adjustments (mWh)												
Appliance recycling	(1,611)	(1,611)	(1,611)	-	-	-	-	-	-	-	(4,832)	(3,221)
CFLs	(1,139)	1,952	(208)	(225)	(246)	(244)	(250)	(259)	(282)	(244)	(1,145)	813
LED	(236)	(462)	(443)	(424)	(498)	(599)	(664)	(709)	(776)	(512)	(5,322)	(698)
HPWH	(21)	(36)	(48)	(57)	(75)	(84)	(368)	(331)	(320)	(368)	(1,707)	(56)
Refrigerators	(14)	(22)	(26)	(30)	(35)	(36)	(38)	(40)	(44)	(57)	(342)	(36)
Total Adjustments	(3,021)	(177)	(2,334)	(736)	(854)	(963)	(1,321)	(1,339)	(1,421)	(1,181)	(13,347)	(3,198)
	(0.3)	(0.0)	(0.3)	(0.1)	(0.1)	(0.1)	(0.2)	(0.2)	(0.2)	(0.1)		
Net Adj mWh	34,724	41,260	38,292	40,099	38,633	39,001	38,577	39,510	40,531	44,697	395,324	75,984
Net Adj aMW	4.0	4.7	4.4	4.6	4.4	4.5	4.4	4.5	4.6	5.1	45.1	8.7

THE CADMUS GROUP, INC.

Date: December 28, 2011

To: Don Jones, PacifiCorp

From: The Cadmus Group

Re: See ya later, refrigerator® Savings Analysis

Cadmus' analysis estimates kWh savings for recycled refrigerators using the following unit consumption values:[1]

$$\textbf{Gross kWh Savings} = \textbf{Unit Energy Consumption} \times \textbf{PartUse}$$
$$= 1{,}239.7\ kWh \times 93.0\% = 1{,}152.6\ kWh^{2,3}$$

$$\textbf{Replacement kWh} = \textbf{Rated kWh} \times \textbf{PartUse} = 500\ kWh \times 93.0\% = 464.9\ kWh^{4}$$

$$\textbf{Net kWh Savings}$$
$$= \textbf{Gross kWh savings} \times (1 - \textbf{Freeridership} + \textbf{Spillover})$$
$$- \textbf{Percent Induced Replacement} \times \textbf{Replacement kWh}$$
$$= 1{,}152.6\ kWh \times (1 - 36.9\% + 0.9\%) - 3.0\% \times 464.9\ kWh$$
$$= 724.0\ kWh^{5}$$

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[1] The values listed in these equations and discussed throughout the memo are for recycled refrigerators only. The values for recycled freezers are listed in Table 2. The memo focuses on refrigerators for the sake of simplicity, as the calculations for both measures are the same, although the values used for some assumptions differ.

[2] Historically, unit energy consumption (UEC) associated with recycled appliances has been estimated using either manufacturer's claimed consumption degraded over time, DOE metering studies, or *in-situ* metering results. Using the first method, the RTF estimated UEC for refrigerators at 1,446.2 kWh. Cadmus prefers using *in-situ* metering results, and used this type of data for the SYLR evaluation to estimate a program-specific UEC of 1,239.7 kWh. Cadmus estimated this value using a statistical model using over 400 metered refrigerators in various programs. The model estimates average usage of removed units based on their age, size, configuration, and location in the house. Using the characteristics of the removed refrigerators in the SYLR program tracked by the program administrator, the Cadmus model produced the UEC value of 1,239.7 kWh.

[3] Part use refers to the portion of the year the refrigerator is used. The Regional Technical Forum (RTF) assumes this value to be 91.36%, and in this evaluation Cadmus has estimated this value to be 93.0% based on participant survey data.

[4] Rated kWh is the assumed consumption of an average new refrigerator. The RTF assumes this value to be 500 kWh, and Cadmus follows this assumption.

[5] Freeridership, spillover, and percent induced replacement were all estimated based on participant and nonparticipant survey data collected for the Washington SYLR program evaluation.

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As shown, the net-to-gross (NTG) adjustment consists of three components:

- Freeridership, which is defined as the naturally occurring removal of appliances (those that would have been removed from the grid in the program's absence);
- Spillover, which accounts for additional energy-saving actions taken as a result of participating in the program; and
- Induced replacement, which accounts for the proportion of new refrigerators purchased as a result of participating in the program.

Comparison to RTF

The analysis outlined above differs from the approach taken by the RTF in two ways:

1. Some assumptions differ between the two methods, and
2. Adjustments are applied in a different order.

The RTF method applies the following equation:

$$\begin{aligned} Savings = (&Unit\ Energy\ Consumption - \%\ Replacement * Replacement\ kWh) \\ &* In\ Situ\ Correction * PartUse \\ &* (1 - Naturally\ Occurring\ Removal^{6}) * Conservatism\ Factor \end{aligned}$$

Compared to Cadmus' equation for Net Savings defined in this memo and used to evaluate the Washington SYLR program, the RTF equation includes two additional adjustments (*In Situ* Correction and Conservatism Factor) that are not necessary in Cadmus' analysis:

- The *In Situ* Correction is not necessary for Cadmus' calculation because UECs are calculated using *in situ* data.
- The Conservatism Factor is not necessary for Cadmus' calculation because UECs are calculated using current participation data.

Cadmus' replacement adjustment differs from that used by the RTF in that Cadmus adjusts only for replacement units purchased as a result of participating in the SYLR program, while the RTF adjustment includes all replacement units. Cadmus collected survey data to estimate the percentage of participants who replaced their unit as a result of participating in the SYLR program. The survey questions used to estimate this percentage were:

[6] Naturally occurring removal, in the RTF analysis, is comparable to Freeridership in the Cadmus analysis. RTF used freeridership data from prior evaluations as a proxy value for this adjustment.

H10. Did you get a new **[INSERT APPLIANCE TYPE]** to replace the one you recycled?

1. Yes
2. No
-98. DON'T KNOW
-99. REFUSED

H12. **[ASK IF H10=1]** Would you have purchased the new **[INSERT APPLIANCE TYPE]** without the $30 incentive you received for recycling the old one?

1. Yes
2. No
-98. DON'T KNOW
-99. REFUSED

H13. **[IF H10=1 AND H12=2]** Just to confirm: you would *not* have replaced your old **[INSERT APPLIANCE TYPE]** without the Pacific Power incentive for recycling, is that correct?

1. Correct
2. Incorrect
-98. DON'T KNOW
-99. REFUSED

The RTF equation applies the adjustment for Unit Replacement *prior* to applying the adjustment for Naturally Occurring Removal (which is comparable to freeridership in the Cadmus analysis). Cadmus prefers to adjust for freeridership prior to adjusting for replacement, to avoid under-representing the impact of replacement units.

Table 1 outlines all key assumptions for each method for recycled refrigerators.

Table 1. RTF and SYLR Assumptions for Recycled Refrigerator Savings Calculations

Method	Unit Energy Consumption (kWh)	Percent Replacement	Replacement kWh	*In Situ* Correction	Part-Use	Naturally Occurring Removal or Freeridership	Spillover	Conservatism Factor	Resulting kWh
RTF	1,446.2	50.0%	500.0	81.3%	91.4%	42.9%	0.0%	95.0%	481.7
SYLR	1,239.7	3.0%	464.9	100.0%	93.0%	36.9%	0.9%	100.0%	724.0

In summary, the calculation approaches followed by Cadmus and by the RTF are not drastically different mathematically. The key difference is in the definitions of the adjustments:

- Cadmus views the gross adjustments to include only the part-use adjustment. As such, Cadmus estimates *gross savings at 1,152.6 kWh*. Adjustments for replacement and naturally occurring removal from the grid (also referred to as freeridership) are included in Cadmus' net-to-gross adjustment. As such, Cadmus estimates *net savings at 724.0 kWh*.
- The RTF considers all these adjustments to be "baseline" adjustments. As such, the RTF does not distinguish between gross and net savings, *but estimates one savings value of 482 kWh*. The RTF applies this method not only to the savings estimates for the appliance recycling measure, but also to savings estimates for other measures.

Summary of SYLR Gross and Net Per-Unit Savings

Cadmus used the same method to estimate savings for recycled refrigerators and recycled freezers. Table 2 and Table 3 outlines all key inputs into the calculation of per-unit gross and net savings for refrigerators and freezers.

Table 2. SYLR Unit Energy Consumption and Per-Unit Gross Savings

Measure	Evaluated Unit Energy Consumption (kWh)	Part-Use Adjustment	Evaluated Gross Per-Unit Savings (kWh)
Refrigerator	1,239.7	93.0%	1,152.6
Freezer	1,055.7	88.6%	934.9

Table 3. SYLR Net-to-Gross Adjustments and Per-Unit Net Savings

Measure	Evaluated Gross Per-Unit Savings (kWh)	Freeridership	Spillover	Percent Induced Replacement	Replacement kWh	Net Per-Unit Savings (kWh)
Refrigerator	1,152.6	36.9%	0.9%	3.0%	464.9	724.0
Freezer	934.9	41.6%	0.9%	2.9%	442.8	542.4

THE CADMUS GROUP, INC.

Date: December 27, 2011

To: Don Jones, PacifiCorp

From: The Cadmus Group

Re: CFL HVAC Waste Heat Factor Methodology - Updated

The waste heat factor (WHF) is an adjustment representing the interactive effects of lighting measures on heating and cooling equipment operation. By installing more efficient lighting, less waste heat is produced and thus heating equipment needs to operate more and cooling equipment needs to operate less. In August, Cadmus estimated a WHF for CFLs installed in PacifiCorp's Washington service territory. This calculation was completed using the Regional Technical Forum (RTF) Existing Lighting space interaction calculator (RESCFLLighting_v2_0). Cadmus adjusted the heating and cooling systems market shares using PacifiCorp-specific data, but all other assumptions in the calculator were used as is.

In order to understand how to best apply this calculator to other states within PacifiCorp service territory, Cadmus and PacifiCorp discussed the underlying assumptions within the calculator with Tom Eckman and Adam Hadley of the RTF. From those meetings, we learned the space conditioning interaction calculator had been updated by the Northwest Power and Conservation Council for the development of the 6th Regional Power Plan.[1] Mr. Eckman recommended the use of the 6th Plan calculator, as the newer calculator is based on expansive simulation data, as opposed to the RTF calculator, which relied primarily on professional judgment and other engineering assumptions. This memo explains the updated methodology used to estimate WHF for Washington using the 6th Plan calculator.

Cadmus calculated the WHF using ASHRAE data on heating and cooling degree days (HDD and CDD, respectively) in PacifiCorp's service territory. In addition, Cadmus used the 2006 Energy Decisions Survey (EDS) data[2] to determine the saturation of heating and cooling equipment types in each state. The saturations for Washington are provided in the table below. Homes that either use another fuel or do not have the end use are not included. In addition, evaporative coolers are excluded from the space cool market share.

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[1] http://www.nwcouncil.org/energy/powerplan/6/supplycurves/res/EStarLighting_NewFY09v1_0.xls

[2] http://www.pacificorp.com/content/dam/pacificorp/doc/Energy_Sources/Demand_Side_Management/DSM_Volumel_2011_Study.pdf

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	Electric Central	Electric Zonal	Heat Pump	Total
Space Heat Market Share	17%	13%	14%	43%
Space Cool Market Share	53%	23%	14%	90%

To determine the portion of the year that heating or cooling equipment operates, and, therefore, when lighting would affect heating or cooling energy, Cadmus used the interaction workbook developed for ENERGY STAR lighting savings in the 6th Regional Power Plan. This calculator estimates the heating and cooling interaction based on building simulation models for a variety of HVAC equipment and cities around the Pacific Northwest region. This calculator provides "case options" around home size, insulation levels, and other parameters modeled in the simulations. Cadmus chose a 2200 square foot home as most closely representative to PacifiCorp's Washington territory (1920 square feet was the average home size found through the EDS). In addition, no additional insulation, efficiency improvements, or commissioning is assumed.

Cadmus estimated the savings for Yakima, as representative for the Washington territory, by using a weighted average of HDD and CDD from the cities across the region to most closely match that for Yakima. This calculator determined the heating and cooling interactions for zonal heating and heat pumps (7.7 HSPF assumed for heat pumps). To estimate the interaction for electric forced air furnaces, a heating system efficiency of 75% of zonal heating (to account for duct losses) was included. The cooling interaction from heat pumps was used for all electric cooling systems. These interactions are provided in the table below:

HVAC System	% Space Heat Interaction	% Space Cool Interaction
Zonal	56%	NA
Electric Furnace	42%	NA
Heat Pump	39%	5.6%

These interactions are then weighted by the market share of the electric heating and cooling systems.

The heating interaction was calculated as follows:

$$Heating\ Interaction = -\sum(\%SpHtInteraction * Market\ Share)_i = -20\%$$

Where the summation is over the three electric heating types.

In addition,

$$Cooling\ Interaction = \%SpCoolInteraction * Electric\ Cooling\ MarketShare = 5.0\%$$

$$Total\ electric\ WHF = 1 + Heating\ Interaction + Cooling\ Interaction$$
$$= 1 - 20\% + 5.0\% = 85.4\%$$

The combined -14.6% adjustment was applied to electricity savings for all interior lighting measures to account for a net increase in electric heating and cooling load due to more efficient lighting. Weighting for the distribution interior/exterior distribution found in participant surveys conducted for the program evaluation, Cadmus found the final WHF to be 86.6% (as shown below).

$Interior\ Total\ Electric\ WHF =$
$1 + (Heating\ Interaction + Cooling\ Interaction) * \%\ Interior\ Lighting = 1 + (-20\% + 5.0\%) * 91.9\% = 86.6\%$

Appendix 5
List of Measures Selected 2012 and 2013
PacifiCorp 2011 IRP Preferred Portfolio

The 2011 Integrated Resource Plan selected all of the measures in Bundles 1, 2 in 2012 and all the measures in Bundles 1, 2 and 3 for 2013. The tables below contain a list of the measures selected by year, bundle and sector. Table A5-1 provides the information for 2012 and Table A5-2 provides the information for 2013.

Table A5-1
Bundle 1 and 2 - 2012 Measures

State	Year	Sector	Measure Name	Cost Bundle
WA	2012	Commercial	Lighting Package, High Efficiency	1. Up to $0.07
WA	2012	Commercial	CA - Fruit Storage-Fruit Storage Refrigeration Tune-up	1. Up to $0.07
WA	2012	Commercial	Lighting Package, Premium Efficiency	1. Up to $0.07
WA	2012	Commercial	Hotel Key Card Room Energy Control System	1. Up to $0.07
WA	2012	Commercial	CA - Fruit Storage-Efficient Lighting Upgrade Package	1. Up to $0.07
WA	2012	Commercial	CA - Fruit Storage-HighBay Lighting Upgrade Package	1. Up to $0.07
WA	2012	Commercial	Compressor VSD Retrofit	1. Up to $0.07
WA	2012	Commercial	Leak Proof Duct Fittings	1. Up to $0.07
WA	2012	Commercial	Case Replacement Low Temp	1. Up to $0.07
WA	2012	Commercial	Refrigeration Commissioning or Re-commissioning	1. Up to $0.07
WA	2012	Commercial	Walk-In Electronically Commutated Motor	1. Up to $0.07
WA	2012	Commercial	Case Electronically Commutated Motor	1. Up to $0.07
WA	2012	Commercial	Insulation - Floor (non-slab)	1. Up to $0.07
WA	2012	Commercial	Glass Door ES Refrigerators/Freezers	1. Up to $0.07
WA	2012	Commercial	Floating Condenser Head Pressure Controls	1. Up to $0.07
WA	2012	Commercial	Smart Strips	1. Up to $0.07
WA	2012	Commercial	Re-Commissioning	1. Up to $0.07
WA	2012	Commercial	Night Covers for Display Cases	1. Up to $0.07
WA	2012	Commercial	CA - Fruit Storage-CA Retrofit - CO2 Scrub	1. Up to $0.07
WA	2012	Commercial	Covered Parking Lighting	1. Up to $0.07
WA	2012	Commercial	Low-Flow Showerheads	1. Up to $0.07
WA	2012	Commercial	Direct Digital Control System-Optimization	1. Up to $0.07
WA	2012	Commercial	Exit Sign - LED	1. Up to $0.07
WA	2012	Commercial	ENERGY STAR - Water Cooler	1. Up to $0.07
WA	2012	Commercial	Standalone to Multiplex Compressor	1. Up to $0.07
WA	2012	Commercial	CA - Fruit Storage-CA Retrofit - Membrane	1. Up to $0.07
WA	2012	Commercial	Anti-Sweat (Humidistat) Controls	1. Up to $0.07
WA	2012	Commercial	Solid Door ES Refrigerators/Freezers	1. Up to $0.07
WA	2012	Commercial	Evaporative Cooler replaces DX Package - Advanced Efficiency	1. Up to $0.07
WA	2012	Commercial	Evaporative Cooler replaces DX Package 65 to 135 kBTU/hr - Advanced Efficiency	1. Up to $0.07
WA	2012	Commercial	Occupancy Sensor Control, Fluorescent	1. Up to $0.07
WA	2012	Commercial	Motor - CEE Premium-Efficiency Plus	1. Up to $0.07
WA	2012	Commercial	Network PC Power Management	1. Up to $0.07
WA	2012	Commercial	Demand Control Defrost - Hot Gas	1. Up to $0.07

State	Year	Sector	Measure Name	Cost Bundle
WA	2012	Commercial	CA - Fruit Storage-Lighting Controls	1. Up to $0.07
WA	2012	Commercial	Time Clock	1. Up to $0.07
WA	2012	Commercial	Chillers >300 tons (centrifugal) with VSD - Advanced Efficiency	1. Up to $0.07
WA	2012	Commercial	DX Package 65 to 135 kBTU/hr - Premium Efficiency	1. Up to $0.07
WA	2012	Commercial	Water Heater Temperature Setback	1. Up to $0.07
WA	2012	Commercial	Ice Maker	1. Up to $0.07
WA	2012	Commercial	Dishwashing - Commercial - High Temp	1. Up to $0.07
WA	2012	Commercial	Programmable Thermostat	1. Up to $0.07
WA	2012	Commercial	Daylighting Controls, Outdoors (Photocell)	1. Up to $0.07
WA	2012	Commercial	Insulation - Wall	1. Up to $0.07
WA	2012	Commercial	Chillers >300 tons (centrifugal) - Premium Efficiency	1. Up to $0.07
WA	2012	Commercial	Cold Cathode Lighting	1. Up to $0.07
WA	2012	Commercial	Lighting Package, Premium High Bay	1. Up to $0.07
WA	2012	Commercial	Low-Flow Pre-Rinse Spray Valves	1. Up to $0.07
WA	2012	Commercial	Strip Curtains for Walk-Ins	1. Up to $0.07
WA	2012	Commercial	ENERGY STAR - Printers	1. Up to $0.07
WA	2012	Commercial	Insulation - Ceiling	1. Up to $0.07
WA	2012	Commercial	Cooling Tower-Two-Speed Fan Motor	1. Up to $0.07
WA	2012	Commercial	Clothes Washer Commercial	1. Up to $0.07
WA	2012	Commercial	ENERGY STAR - Fax	1. Up to $0.07
WA	2012	Commercial	ENERGY STAR - Scanners	1. Up to $0.07
WA	2012	Commercial	Heat Pump Water Heater - Advanced-Efficiency	1. Up to $0.07
WA	2012	Commercial	Low-Flow Faucet Aerators	1. Up to $0.07
WA	2012	Commercial	Infiltration Reduction	1. Up to $0.07
WA	2012	Commercial	Power Supply Transformer/Converter	1. Up to $0.07
WA	2012	Commercial	Electric Water Heater - High Efficiency	1. Up to $0.07
WA	2012	Commercial	Cold Cathode Lighting	1. Up to $0.07
WA	2012	Commercial	Clothes Washer Residential	1. Up to $0.07
WA	2012	Commercial	Heat Pump Water Heater - Advanced-Efficiency	1. Up to $0.07
WA	2012	Commercial	Griddle	1. Up to $0.07
WA	2012	Commercial	Hot Water (SHW) Pipe Insulation	1. Up to $0.07
WA	2012	Commercial	Insulation - Duct	1. Up to $0.07
WA	2012	Commercial	Combination Oven	1. Up to $0.07
WA	2012	Commercial	Dishwashing - Commercial - Low Temp	1. Up to $0.07
WA	2012	Commercial	Hot Food Holding Cabinet	1. Up to $0.07
WA	2012	Commercial	ENERGY STAR - Battery Charging System	1. Up to $0.07
WA	2012	Commercial	Chillers >300 tons (centrifugal) - High Efficiency	1. Up to $0.07
WA	2012	Commercial	Lighting Package, High Efficiency	2. $0.07 to $0.09
WA	2012	Commercial	Lighting Package, Premium High Bay	2. $0.07 to $0.09
WA	2012	Commercial	Insulation - Ceiling	2. $0.07 to $0.09
WA	2012	Commercial	Direct Digital Control System-Optimization	2. $0.07 to $0.09
WA	2012	Commercial	Hotel Key Card Room Energy Control System	2. $0.07 to $0.09
WA	2012	Commercial	Insulation - Floor (non-slab)	2. $0.07 to $0.09
WA	2012	Commercial	Insulation - Duct	2. $0.07 to $0.09
WA	2012	Commercial	Air Source Heat Pump 65 to 135 kBTU/hr - Premium Efficiency	2. $0.07 to $0.09
WA	2012	Commercial	Case Replacement Med Temp	2. $0.07 to $0.09
WA	2012	Commercial	DX Package 65 to 135 kBTU/hr - High Efficiency	2. $0.07 to $0.09
WA	2012	Commercial	Air Source Heat Pump 65 to 135 kBTU/hr - High Efficiency	2. $0.07 to $0.09
WA	2012	Commercial	Air Source Heat Pump 135 to 240 kBTU/hr - High Efficiency	2. $0.07 to $0.09
WA	2012	Commercial	Steam Cooker	2. $0.07 to $0.09

State	Year	Sector	Measure Name	Cost Bundle
WA	2012	Commercial	Daylighting Controls, Outdoors (Photocell)	2. $0.07 to $0.09
WA	2012	Commercial	DX Package 65 to 135 kBTU/hr - Premium Efficiency	2. $0.07 to $0.09
WA	2012	Commercial	Automated Ventilation VFD Control(Occupancy Sensors / CO2 Sensors)	2. $0.07 to $0.09
WA	2012	Commercial	Programmable Thermostat	2. $0.07 to $0.09
WA	2012	Commercial	Room AC (10,000 BTU/HR) High-Efficiency	2. $0.07 to $0.09
WA	2012	Commercial	Motor Rewind	2. $0.07 to $0.09
WA	2012	Commercial	Motor - CEE Premium-Efficiency Plus	2. $0.07 to $0.09
WA	2012	Commercial	Clothes Washer Residential	2. $0.07 to $0.09
WA	2012	Commercial	Power Supply Transformer/Converter	2. $0.07 to $0.09
WA	2012	Commercial	Infiltration Reduction	2. $0.07 to $0.09
WA	2012	Commercial	Computer ENERGY STAR	2. $0.07 to $0.09
WA	2012	Commercial	Demand Control Defrost - Hot Gas	2. $0.07 to $0.09
WA	2012	Commercial	Dishwasher Residential	2. $0.07 to $0.09
WA	2012	Commercial	Vending Machines- High Efficiency	2. $0.07 to $0.09
WA	2012	Industrial	Material Handling VFD	1. Up to $0.07
WA	2012	Industrial	Improved Controls	1. Up to $0.07
WA	2012	Industrial	Fruit Storage Refer Retrofit	1. Up to $0.07
WA	2012	Industrial	Pump Equipment Upgrade	1. Up to $0.07
WA	2012	Industrial	Equipment Upgrades	1. Up to $0.07
WA	2012	Industrial	Paper: Premium Fan	1. Up to $0.07
WA	2012	Industrial	HighBay Lighting 3 Shift	1. Up to $0.07
WA	2012	Industrial	Efficient Centrifugal Fan	1. Up to $0.07
WA	2012	Industrial	Optimization of operating parameters	1. Up to $0.07
WA	2012	Industrial	Air Compressor Optimization	1. Up to $0.07
WA	2012	Industrial	Adjustable speed drive on compressors	1. Up to $0.07
WA	2012	Industrial	Wood: Replace Pneumatic Conveyor	1. Up to $0.07
WA	2012	Industrial	Lighting Controls	1. Up to $0.07
WA	2012	Industrial	Pump Energy Management	1. Up to $0.07
WA	2012	Industrial	Equipment: Chillers	1. Up to $0.07
WA	2012	Industrial	Pump System Optimization	1. Up to $0.07
WA	2012	Industrial	Air Compressor Demand Reduction	1. Up to $0.07
WA	2012	Industrial	HighBay Lighting 1 Shift	1. Up to $0.07
WA	2012	Industrial	Switch from Belt drive to Direct Drive	1. Up to $0.07
WA	2012	Industrial	Properly Sized Fans	1. Up to $0.07
WA	2012	Industrial	Motors Other	1. Up to $0.07
WA	2012	Industrial	Bldg Improvements	1. Up to $0.07
WA	2012	Industrial	Fan System Optimization	1. Up to $0.07
WA	2012	Industrial	Efficient Lighting 3 Shift	1. Up to $0.07
WA	2012	Industrial	Food: Cooling and Storage	1. Up to $0.07
WA	2012	Industrial	Fruit Storage Tune-up	1. Up to $0.07
WA	2012	Industrial	Synchronous Belts	1. Up to $0.07
WA	2012	Industrial	Food: Refrig Storage Tune-up	1. Up to $0.07
WA	2012	Industrial	High Efficiency Motors	1. Up to $0.07
WA	2012	Industrial	Process Heat O&M	1. Up to $0.07
WA	2012	Industrial	Motor Management Plan	1. Up to $0.07
WA	2012	Industrial	HighBay Lighting 2 Shift	1. Up to $0.07
WA	2012	Industrial	Integrated Plant Energy Management	1. Up to $0.07
WA	2012	Industrial	Efficient Lighting 1 Shift	1. Up to $0.07
WA	2012	Industrial	Energy Project Management	1. Up to $0.07
WA	2012	Industrial	Air Compressor Equipment	1. Up to $0.07
WA	2012	Industrial	Kraft: Efficient Agitator	1. Up to $0.07

State	Year	Sector	Measure Name	Cost Bundle
WA	2012	Industrial	Efficient Lighting 2 Shift	1. Up to $0.07
WA	2012	Industrial	Plant Energy Management	1. Up to $0.07
WA	2012	Industrial	Mech Pulp: Refiner Replacement	1. Up to $0.07
WA	2012	Industrial	High efficiency Compressor motors	1. Up to $0.07
WA	2012	Industrial	Paper: Efficient Pulp Screen	1. Up to $0.07
WA	2012	Industrial	Transformers	1. Up to $0.07
WA	2012	Industrial	Kraft: Effluent Treatment System	1. Up to $0.07
WA	2012	Industrial	Motors: Rewind 20-50 HP	1. Up to $0.07
WA	2012	Industrial	Motors: Rewind 51-100 HP	1. Up to $0.07
WA	2012	Industrial	Motors: Rewind 101-200 HP	1. Up to $0.07
WA	2012	Industrial	Motor rewinds	1. Up to $0.07
WA	2012	Industrial	Cold Storage Retrofit	1. Up to $0.07
WA	2012	Industrial	Motors: Rewind 500+ HP	1. Up to $0.07
WA	2012	Industrial	Motors: Rewind 201-500 HP	1. Up to $0.07
WA	2012	Industrial	Cold Storage Tune-up	1. Up to $0.07
WA	2012	Industrial	Mech Pulp: Refiner Plate Improvement	1. Up to $0.07
WA	2012	Industrial	Mech Pulp: Premium Process	1. Up to $0.07
WA	2012	Industrial	Paper: Premium Control Large Material	2. $0.07 to $0.09
WA	2012	Industrial	Material Handling	2. $0.07 to $0.09
WA	2012	Irrigation	SIS	1. Up to $0.07
WA	2012	Irrigation	System Improvements	2. $0.07 to $0.09
WA	2012	Residential	Lighting CFL 15 W	1. Up to $0.07
WA	2012	Residential	CFL, Flood (17 W)	1. Up to $0.07
WA	2012	Residential	Low-Flow Showerheads	1. Up to $0.07
WA	2012	Residential	Faucet Aerators	1. Up to $0.07
WA	2012	Residential	Refrigerator/Freezer - Removal of Secondary	1. Up to $0.07
WA	2012	Residential	Ceiling Insulation (WA) ave to code	1. Up to $0.07
WA	2012	Residential	Smart Strip	1. Up to $0.07
WA	2012	Residential	Conversion Electric Furnace to ASHP	1. Up to $0.07
WA	2012	Residential	Wall Insulation 2x4 (WA) zero to max feasible	1. Up to $0.07
WA	2012	Residential	Clothes Washer	1. Up to $0.07
WA	2012	Residential	CFL (13 W, 20 W, 25 W)	1. Up to $0.07
WA	2012	Residential	Set Top Box, Energy Star	1. Up to $0.07
WA	2012	Residential	Infiltration Control (Caulk, Weather Strip, etc.) Blower-Door test	1. Up to $0.07
WA	2012	Residential	TV CRT, Energy Star	1. Up to $0.07
WA	2012	Residential	Wall Insulation 2x6 (WA) zero to code	1. Up to $0.07
WA	2012	Residential	Duct Sealing	1. Up to $0.07
WA	2012	Residential	Water_Heater Tank Blanket/Insulation	1. Up to $0.07
WA	2012	Residential	Duct Sealing - Aerosol-Based	1. Up to $0.07
WA	2012	Residential	Canned Lighting Air Tight Sealing	1. Up to $0.07
WA	2012	Residential	Motor, ECM - VFD	1. Up to $0.07
WA	2012	Residential	Monitor, Energy Star	1. Up to $0.07
WA	2012	Residential	Leak Proof Duct Fittings	1. Up to $0.07
WA	2012	Residential	Water Heater, Storage EF 0.95	1. Up to $0.07
WA	2012	Residential	Pool Pump Timers	1. Up to $0.07
WA	2012	Residential	Ceiling Insulation (WA) zero to code	1. Up to $0.07
WA	2012	Residential	Office Copier	1. Up to $0.07
WA	2012	Residential	Pool Pump, 2 Speed	1. Up to $0.07
WA	2012	Residential	Stand-Alone Freezer - Removal	1. Up to $0.07
WA	2012	Residential	Room AC, EER 10.8	1. Up to $0.07
WA	2012	Residential	Thermal Shell - Infiltration @0.2 ACH w/HRV	1. Up to $0.07

State	Year	Sector	Measure Name	Cost Bundle
WA	2012	Residential	Freezer, Energy Star	1. Up to $0.07
WA	2012	Residential	Heat Pump High Efficiency, SEER 14, HSPF 8.5	1. Up to $0.07
WA	2012	Residential	Doors	1. Up to $0.07
WA	2012	Residential	Floor Insulation (WA) zero to code	1. Up to $0.07
WA	2012	Residential	Refrigerator, Energy Star	1. Up to $0.07
WA	2012	Residential	TV LCD, Energy Star	1. Up to $0.07
WA	2012	Residential	Proper Sizing - HVAC Unit	1. Up to $0.07
WA	2012	Residential	Lighting LED 7 W	2. $0.07 to $0.09
WA	2012	Residential	Infiltration Control (Caulk, Weather Strip, etc.) Blower-Door test	2. $0.07 to $0.09
WA	2012	Residential	Wall Insulation 2x6 (WA) zero to code	2. $0.07 to $0.09
WA	2012	Residential	Canned Lighting Air Tight Sealing	2. $0.07 to $0.09
WA	2012	Residential	Duct Sealing	2. $0.07 to $0.09
WA	2012	Residential	Doors	2. $0.07 to $0.09
WA	2012	Residential	Ceiling Insulation (WA) ave to code	2. $0.07 to $0.09
WA	2012	Residential	Water Heater, Storage EF 0.95	2. $0.07 to $0.09
WA	2012	Residential	Motor, ECM - VFD	2. $0.07 to $0.09
WA	2012	Residential	Floor Insulation (WA) above code	2. $0.07 to $0.09
WA	2012	Residential	Ceiling Insulation (WA) zero to code	2. $0.07 to $0.09
WA	2012	Residential	Heat Pump High Efficiency, SEER 14, HSPF 8.5	2. $0.07 to $0.09
WA	2012	Street Lighting	Streetlight - HPS 100W - Group Relamp - to LED 62W - NR	1. Up to $0.07
WA	2012	Street Lighting	Streetlight - HPS 200W - Group Relamp - to LED 120W - NR	1. Up to $0.07
WA	2012	Street Lighting	Streetlight - HPS 70W - Group Relamp - to LED 42W - NR	1. Up to $0.07
WA	2012	Street Lighting	Streetlight - HPS 250W - Group Relamp - to LED 150W - NR	1. Up to $0.07
WA	2012	Street Lighting	Streetlight - HPS 150W - Group Relamp - to LED 113W - NR	1. Up to $0.07
WA	2012	Street Lighting	Streetlight - HPS 400W - Group Relamp - to LED 225W - NR	1. Up to $0.07
WA	2012	Street Lighting	Streetlight - HPS 150W - Group Relamp - to LED 113W - NR	1. Up to $0.07

Table A5-2
Bundle 1, 2, and 3 - 2013 Measures

State	Year	Sector	Measure Name	Cost Bundle
WA	2013	Commercial	Combination Oven	1. Up to $0.07
WA	2013	Commercial	Griddle	1. Up to $0.07
WA	2013	Commercial	Hot Food Holding Cabinet	1. Up to $0.07
WA	2013	Commercial	DX Package 65 to 135 kBTU/hr - Premium Efficiency	1. Up to $0.07
WA	2013	Commercial	Evaporative Cooler replaces DX Package 65 to 135 kBTU/hr - Advanced Efficiency	1. Up to $0.07
WA	2013	Commercial	Direct Digital Control System-Optimization	1. Up to $0.07
WA	2013	Commercial	Infiltration Reduction	1. Up to $0.07
WA	2013	Commercial	Leak Proof Duct Fittings	1. Up to $0.07
WA	2013	Commercial	Programmable Thermostat	1. Up to $0.07
WA	2013	Commercial	Insulation - Duct	1. Up to $0.07
WA	2013	Commercial	Re-Commissioning	1. Up to $0.07
WA	2013	Commercial	Motor - CEE Premium-Efficiency Plus	1. Up to $0.07
WA	2013	Commercial	Covered Parking Lighting	1. Up to $0.07
WA	2013	Commercial	Cold Cathode Lighting	1. Up to $0.07
WA	2013	Commercial	Exit Sign - LED	1. Up to $0.07
WA	2013	Commercial	Lighting Package, High Efficiency	1. Up to $0.07
WA	2013	Commercial	Occupancy Sensor Control, Fluorescent	1. Up to $0.07
WA	2013	Commercial	Time Clock	1. Up to $0.07

State	Year	Sector	Measure Name	Cost Bundle
WA	2013	Commercial	Lighting Package, Premium Efficiency	1. Up to $0.07
WA	2013	Commercial	Lighting Package, Premium High Bay	1. Up to $0.07
WA	2013	Commercial	ENERGY STAR - Fax	1. Up to $0.07
WA	2013	Commercial	ENERGY STAR - Printers	1. Up to $0.07
WA	2013	Commercial	ENERGY STAR - Scanners	1. Up to $0.07
WA	2013	Commercial	ENERGY STAR - Water Cooler	1. Up to $0.07
WA	2013	Commercial	Ice Maker	1. Up to $0.07
WA	2013	Commercial	Power Supply Transformer/Converter	1. Up to $0.07
WA	2013	Commercial	Smart Strips	1. Up to $0.07
WA	2013	Commercial	ENERGY STAR - Battery Charging System	1. Up to $0.07
WA	2013	Commercial	Anti-Sweat (Humidistat) Controls	1. Up to $0.07
WA	2013	Commercial	Case Electronically Commutated Motor	1. Up to $0.07
WA	2013	Commercial	Case Replacement Low Temp	1. Up to $0.07
WA	2013	Commercial	Compressor VSD Retrofit	1. Up to $0.07
WA	2013	Commercial	Demand Control Defrost - Hot Gas	1. Up to $0.07
WA	2013	Commercial	Floating Condenser Head Pressure Controls	1. Up to $0.07
WA	2013	Commercial	Glass Door ES Refrigerators/Freezers	1. Up to $0.07
WA	2013	Commercial	Night Covers for Display Cases	1. Up to $0.07
WA	2013	Commercial	Refrigeration Commissioning or Re-commissioning	1. Up to $0.07
WA	2013	Commercial	Standalone to Multiplex Compressor	1. Up to $0.07
WA	2013	Commercial	Strip Curtains for Walk-Ins	1. Up to $0.07
WA	2013	Commercial	Solid Door ES Refrigerators/Freezers	1. Up to $0.07
WA	2013	Commercial	Walk-In Electronically Commutated Motor	1. Up to $0.07
WA	2013	Commercial	Dishwashing - Commercial - High Temp	1. Up to $0.07
WA	2013	Commercial	Dishwashing - Commercial - Low Temp	1. Up to $0.07
WA	2013	Commercial	Low-Flow Faucet Aerators	1. Up to $0.07
WA	2013	Commercial	Low-Flow Pre-Rinse Spray Valves	1. Up to $0.07
WA	2013	Commercial	Network PC Power Management	1. Up to $0.07
WA	2013	Commercial	Cooling Tower-Two-Speed Fan Motor	1. Up to $0.07
WA	2013	Commercial	Clothes Washer Commercial	1. Up to $0.07
WA	2013	Commercial	Low-Flow Showerheads	1. Up to $0.07
WA	2013	Commercial	Clothes Washer Residential	1. Up to $0.07
WA	2013	Commercial	Chillers >300 tons (centrifugal) - High Efficiency	1. Up to $0.07
WA	2013	Commercial	Chillers >300 tons (centrifugal) - Premium Efficiency	1. Up to $0.07
WA	2013	Commercial	Chillers >300 tons (centrifugal) with VSD - Advanced Efficiency	1. Up to $0.07
WA	2013	Commercial	Evaporative Cooler replaces DX Package - Advanced Efficiency	1. Up to $0.07
WA	2013	Commercial	Hot Water (SHW) Pipe Insulation	1. Up to $0.07
WA	2013	Commercial	Daylighting Controls, Outdoors (Photocell)	1. Up to $0.07
WA	2013	Commercial	Hotel Key Card Room Energy Control System	1. Up to $0.07
WA	2013	Commercial	Insulation - Floor (non-slab)	1. Up to $0.07
WA	2013	Commercial	Clothes Washer Commercial	1. Up to $0.07
WA	2013	Commercial	Insulation - Wall	1. Up to $0.07
WA	2013	Commercial	Anti-Sweat (Humidistat) Controls	1. Up to $0.07
WA	2013	Commercial	Electric Water Heater - High Efficiency	1. Up to $0.07
WA	2013	Commercial	Heat Pump Water Heater - Advanced-Efficiency	1. Up to $0.07
WA	2013	Commercial	Water Heater Temperature Setback	1. Up to $0.07
WA	2013	Commercial	Evaporative Cooler replaces DX Package 135 to 240 kBTU/hr - Advanced Efficiency	1. Up to $0.07
WA	2013	Commercial	Insulation - Ceiling	1. Up to $0.07
WA	2013	Commercial	Evaporative Cooler replaces DX Package 65 to 135 kBTU/hr -	1. Up to $0.07

State	Year	Sector	Measure Name	Cost Bundle
			Advanced Efficiency	
WA	2013	Commercial	CA - Fruit Storage-Efficient Lighting Upgrade Package	1. Up to $0.07
WA	2013	Commercial	CA - Fruit Storage-HighBay Lighting Upgrade Package	1. Up to $0.07
WA	2013	Commercial	CA - Fruit Storage-Lighting Controls	1. Up to $0.07
WA	2013	Commercial	CA - Fruit Storage-CA Retrofit - CO2 Scrub	1. Up to $0.07
WA	2013	Commercial	CA - Fruit Storage-CA Retrofit - Membrane	1. Up to $0.07
WA	2013	Commercial	CA - Fruit Storage-Fruit Storage Refrigeration Tune-up	1. Up to $0.07
WA	2013	Commercial	Computer ENERGY STAR	2. $0.07 to $0.09
WA	2013	Commercial	Steam Cooker	2. $0.07 to $0.09
WA	2013	Commercial	DX Package 65 to 135 kBTU/hr - High Efficiency	2. $0.07 to $0.09
WA	2013	Commercial	Re-Commissioning	2. $0.07 to $0.09
WA	2013	Commercial	Room AC (10,000 BTU/HR) High-Efficiency	2. $0.07 to $0.09
WA	2013	Commercial	Direct Digital Control System-Optimization	2. $0.07 to $0.09
WA	2013	Commercial	Air Source Heat Pump 65 to 135 kBTU/hr - High Efficiency	2. $0.07 to $0.09
WA	2013	Commercial	Air Source Heat Pump 65 to 135 kBTU/hr - Premium Efficiency	2. $0.07 to $0.09
WA	2013	Commercial	Lighting Package, Premium High Bay	2. $0.07 to $0.09
WA	2013	Commercial	Vending Machines- High Efficiency	2. $0.07 to $0.09
WA	2013	Commercial	Case Replacement Med Temp	2. $0.07 to $0.09
WA	2013	Commercial	Insulation - Ceiling	2. $0.07 to $0.09
WA	2013	Commercial	Insulation - Floor (non-slab)	2. $0.07 to $0.09
WA	2013	Commercial	Computer ENERGY STAR	2. $0.07 to $0.09
WA	2013	Commercial	Leak Proof Duct Fittings	2. $0.07 to $0.09
WA	2013	Commercial	Insulation - Duct	2. $0.07 to $0.09
WA	2013	Commercial	Programmable Thermostat	2. $0.07 to $0.09
WA	2013	Commercial	Motor Rewind	2. $0.07 to $0.09
WA	2013	Commercial	Hot Water (SHW) Pipe Insulation	2. $0.07 to $0.09
WA	2013	Commercial	Air Source Heat Pump 135 to 240 kBTU/hr - High Efficiency	2. $0.07 to $0.09
WA	2013	Commercial	Air Source Heat Pump 65 to 135 kBTU/hr - Premium Efficiency	2. $0.07 to $0.09
WA	2013	Commercial	Lighting Package, High Efficiency	2. $0.07 to $0.09
WA	2013	Commercial	Automated Ventilation VFD Control(Occupancy Sensors / CO2 Sensors)	2. $0.07 to $0.09
WA	2013	Commercial	Infiltration Reduction	2. $0.07 to $0.09
WA	2013	Commercial	Hotel Key Card Room Energy Control System	2. $0.07 to $0.09
WA	2013	Commercial	Clothes Washer Residential	2. $0.07 to $0.09
WA	2013	Commercial	Daylighting Controls, Outdoors (Photocell)	2. $0.07 to $0.09
WA	2013	Commercial	Motor - CEE Premium-Efficiency Plus	2. $0.07 to $0.09
WA	2013	Commercial	Power Supply Transformer/Converter	2. $0.07 to $0.09
WA	2013	Commercial	Demand Control Defrost - Hot Gas	2. $0.07 to $0.09
WA	2013	Commercial	Dishwasher Residential	2. $0.07 to $0.09
WA	2013	Commercial	Insulation - Wall	2. $0.07 to $0.09
WA	2013	Commercial	DX Package 65 to 135 kBTU/hr - High Efficiency	3. $0.09 to $0.11
WA	2013	Commercial	Direct Digital Control System-Optimization	3. $0.09 to $0.11
WA	2013	Commercial	Programmable Thermostat	3. $0.09 to $0.11
WA	2013	Commercial	Room AC (10,000 BTU/HR) High-Efficiency	3. $0.09 to $0.11
WA	2013	Commercial	Air Source Heat Pump 65 to 135 kBTU/hr - High Efficiency	3. $0.09 to $0.11
WA	2013	Commercial	Lighting Package, High Efficiency	3. $0.09 to $0.11
WA	2013	Commercial	Lighting Package, Premium Efficiency	3. $0.09 to $0.11
WA	2013	Commercial	Insulation - Duct	3. $0.09 to $0.11
WA	2013	Commercial	Dishwasher Residential	3. $0.09 to $0.11
WA	2013	Commercial	Pipe Insulation	3. $0.09 to $0.11

State	Year	Sector	Measure Name	Cost Bundle
WA	2013	Commercial	Insulation - Ceiling	3. $0.09 to $0.11
WA	2013	Commercial	Chillers >300 tons (centrifugal) with VSD - Advanced Efficiency	3. $0.09 to $0.11
WA	2013	Commercial	Lighting Package, Premium High Bay	3. $0.09 to $0.11
WA	2013	Commercial	Heat Pump Water Heater - Advanced-Efficiency	3. $0.09 to $0.11
WA	2013	Commercial	Automated Ventilation VFD Control(Occupancy Sensors / CO2 Sensors)	3. $0.09 to $0.11
WA	2013	Commercial	Insulation - Floor (non-slab)	3. $0.09 to $0.11
WA	2013	Commercial	Hotel Key Card Room Energy Control System	3. $0.09 to $0.11
WA	2013	Commercial	Demand Controlled Circulating Systems	3. $0.09 to $0.11
WA	2013	Commercial	Infiltration Reduction	3. $0.09 to $0.11
WA	2013	Commercial	Daylighting Controls, Outdoors (Photocell)	3. $0.09 to $0.11
WA	2013	Commercial	Exhaust Air to Ventilation Air Heat Recovery	3. $0.09 to $0.11
WA	2013	Commercial	Insulation - Wall	3. $0.09 to $0.11
WA	2013	Commercial	Vending Machines- High Efficiency	3. $0.09 to $0.11
WA	2013	Commercial	CA - Fruit Storage-Fruit Storage Refrigeration Retrofit	3. $0.09 to $0.11
WA	2013	Industrial	Efficient Centrifugal Fan	1. Up to $0.07
WA	2013	Industrial	High Efficiency Motors	1. Up to $0.07
WA	2013	Industrial	Improved Controls	1. Up to $0.07
WA	2013	Industrial	Properly Sized Fans	1. Up to $0.07
WA	2013	Industrial	Synchronous Belts	1. Up to $0.07
WA	2013	Industrial	Equipment Upgrades	1. Up to $0.07
WA	2013	Industrial	Efficient Lighting 1 Shift	1. Up to $0.07
WA	2013	Industrial	Efficient Lighting 2 Shift	1. Up to $0.07
WA	2013	Industrial	Efficient Lighting 3 Shift	1. Up to $0.07
WA	2013	Industrial	HighBay Lighting 1 Shift	1. Up to $0.07
WA	2013	Industrial	HighBay Lighting 2 Shift	1. Up to $0.07
WA	2013	Industrial	HighBay Lighting 3 Shift	1. Up to $0.07
WA	2013	Industrial	Lighting Controls	1. Up to $0.07
WA	2013	Industrial	Material Handling VFD	1. Up to $0.07
WA	2013	Industrial	Motor Management Plan	1. Up to $0.07
WA	2013	Industrial	Motors Other	1. Up to $0.07
WA	2013	Industrial	Motors: Rewind 101-200 HP	1. Up to $0.07
WA	2013	Industrial	Motors: Rewind 20-50 HP	1. Up to $0.07
WA	2013	Industrial	Motors: Rewind 201-500 HP	1. Up to $0.07
WA	2013	Industrial	Motors: Rewind 500+ HP	1. Up to $0.07
WA	2013	Industrial	Switch from Belt drive to Direct Drive	1. Up to $0.07
WA	2013	Industrial	Bldg Improvements	1. Up to $0.07
WA	2013	Industrial	Integrated Plant Energy Management	1. Up to $0.07
WA	2013	Industrial	Plant Energy Management	1. Up to $0.07
WA	2013	Industrial	Transformers	1. Up to $0.07
WA	2013	Industrial	Air Compressor Demand Reduction	1. Up to $0.07
WA	2013	Industrial	Air Compressor Equipment	1. Up to $0.07
WA	2013	Industrial	Air Compressor Optimization	1. Up to $0.07
WA	2013	Industrial	High efficiency Compressor motors	1. Up to $0.07
WA	2013	Industrial	Equipment: Chillers	1. Up to $0.07
WA	2013	Industrial	Process Heat O&M	1. Up to $0.07
WA	2013	Industrial	Adjustable speed drive on compressors	1. Up to $0.07
WA	2013	Industrial	Food: Cooling and Storage	1. Up to $0.07
WA	2013	Industrial	Food: Refrig Storage Tune-up	1. Up to $0.07
WA	2013	Industrial	Fruit Storage Refer Retrofit	1. Up to $0.07
WA	2013	Industrial	Fruit Storage Tune-up	1. Up to $0.07

State	Year	Sector	Measure Name	Cost Bundle
WA	2013	Industrial	Optimization of operating parameters	1. Up to $0.07
WA	2013	Industrial	High Efficiency Motors	1. Up to $0.07
WA	2013	Industrial	Motor rewinds	1. Up to $0.07
WA	2013	Industrial	Pump Energy Management	1. Up to $0.07
WA	2013	Industrial	Pump Equipment Upgrade	1. Up to $0.07
WA	2013	Industrial	Pump System Optimization	1. Up to $0.07
WA	2013	Industrial	Wood: Replace Pneumatic Conveyor	1. Up to $0.07
WA	2013	Industrial	Cold Storage Retrofit	1. Up to $0.07
WA	2013	Industrial	Cold Storage Tune-up	1. Up to $0.07
WA	2013	Industrial	Paper: Premium Fan	1. Up to $0.07
WA	2013	Industrial	Kraft: Efficient Agitator	1. Up to $0.07
WA	2013	Industrial	Kraft: Effluent Treatment System	1. Up to $0.07
WA	2013	Industrial	Mech Pulp: Premium Process	1. Up to $0.07
WA	2013	Industrial	Mech Pulp: Refiner Plate Improvement	1. Up to $0.07
WA	2013	Industrial	Mech Pulp: Refiner Replacement	1. Up to $0.07
WA	2013	Industrial	Paper: Efficient Pulp Screen	1. Up to $0.07
WA	2013	Industrial	Fan System Optimization	1. Up to $0.07
WA	2013	Industrial	Energy Project Management	1. Up to $0.07
WA	2013	Industrial	Material Handling	2. $0.07 to $0.09
WA	2013	Industrial	Paper: Premium Control Large Material	2. $0.07 to $0.09
WA	2013	Industrial	Paper: Material Handling	3. $0.09 to $0.11
WA	2013	Irrigation	SIS	1. Up to $0.07
WA	2013	Irrigation	System Improvements	2. $0.07 to $0.09
WA	2013	Residential	Proper Sizing - HVAC Unit	1. Up to $0.07
WA	2013	Residential	Room AC, EER 10.8	1. Up to $0.07
WA	2013	Residential	Freezer, Energy Star	1. Up to $0.07
WA	2013	Residential	Canned Lighting Air Tight Sealing	1. Up to $0.07
WA	2013	Residential	Ceiling Insulation (WA) ave to code	1. Up to $0.07
WA	2013	Residential	Ceiling Insulation (WA) zero to code	1. Up to $0.07
WA	2013	Residential	Duct Sealing	1. Up to $0.07
WA	2013	Residential	Duct Sealing - Aerosol-Based	1. Up to $0.07
WA	2013	Residential	Infiltration Control (Caulk, Weather Strip, etc.) Blower-Door test	1. Up to $0.07
WA	2013	Residential	Wall Insulation 2x6 (WA) zero to code	1. Up to $0.07
WA	2013	Residential	Doors	1. Up to $0.07
WA	2013	Residential	Heat Pump High Efficiency, SEER 14, HSPF 8.5	1. Up to $0.07
WA	2013	Residential	Duct Sealing - Aerosol-Based	1. Up to $0.07
WA	2013	Residential	Floor Insulation (WA) zero to code	1. Up to $0.07
WA	2013	Residential	CFL, Flood (17 W)	1. Up to $0.07
WA	2013	Residential	CFL (13 W, 20 W, 25 W)	1. Up to $0.07
WA	2013	Residential	Lighting CFL 15 W	1. Up to $0.07
WA	2013	Residential	Office Copier	1. Up to $0.07
WA	2013	Residential	Refrigerator, Energy Star	1. Up to $0.07
WA	2013	Residential	Refrigerator/Freezer - Removal of Secondary	1. Up to $0.07
WA	2013	Residential	Set Top Box, Energy Star	1. Up to $0.07
WA	2013	Residential	TV CRT, Energy Star	1. Up to $0.07
WA	2013	Residential	TV LCD, Energy Star	1. Up to $0.07
WA	2013	Residential	Clothes Washer	1. Up to $0.07
WA	2013	Residential	Faucet Aerators	1. Up to $0.07
WA	2013	Residential	Water_Heater Tank Blanket/Insulation	1. Up to $0.07
WA	2013	Residential	Water_Heater Thermostat Setback	1. Up to $0.07
WA	2013	Residential	Stand-Alone Freezer - Removal	1. Up to $0.07

State	Year	Sector	Measure Name	Cost Bundle
WA	2013	Residential	Conversion Electric Furnace to ASHP	1. Up to $0.07
WA	2013	Residential	Thermal Shell - Infiltration @0.2 ACH w/HRV	1. Up to $0.07
WA	2013	Residential	Wall Insulation 2x4 (WA) zero to max feasible	1. Up to $0.07
WA	2013	Residential	Monitor, Energy Star	1. Up to $0.07
WA	2013	Residential	Pool Pump, 2 Speed	1. Up to $0.07
WA	2013	Residential	Pool Pump Timers	1. Up to $0.07
WA	2013	Residential	Motor, ECM - VFD	1. Up to $0.07
WA	2013	Residential	Low-Flow Showerheads	1. Up to $0.07
WA	2013	Residential	Doors	2. $0.07 to $0.09
WA	2013	Residential	Ceiling Insulation (WA) zero to code	2. $0.07 to $0.09
WA	2013	Residential	Duct Sealing	2. $0.07 to $0.09
WA	2013	Residential	Infiltration Control (Caulk, Weather Strip, etc.) Blower-Door test	2. $0.07 to $0.09
WA	2013	Residential	Ceiling Insulation (WA) ave to code	2. $0.07 to $0.09
WA	2013	Residential	Lighting LED 7 W	2. $0.07 to $0.09
WA	2013	Residential	Motor, ECM - VFD	2. $0.07 to $0.09
WA	2013	Residential	Water Heater, Storage EF 0.95	2. $0.07 to $0.09
WA	2013	Residential	Floor Insulation (WA) above code	2. $0.07 to $0.09
WA	2013	Residential	Heat Pump High Efficiency, SEER 14, HSPF 8.5	2. $0.07 to $0.09
WA	2013	Residential	Wall Insulation 2x6 (WA) zero to code	2. $0.07 to $0.09
WA	2013	Residential	Canned Lighting Air Tight Sealing	2. $0.07 to $0.09
WA	2013	Residential	Doors	3. $0.09 to $0.11
WA	2013	Residential	Wall Insulation 2x6 (WA) zero to code	3. $0.09 to $0.11
WA	2013	Residential	Motor, ECM - VFD	3. $0.09 to $0.11
WA	2013	Residential	Drain Water Heat Recovery (GFX)	3. $0.09 to $0.11
WA	2013	Residential	Ceiling Insulation (WA) above code	3. $0.09 to $0.11
WA	2013	Residential	Doors - Weatherization	3. $0.09 to $0.11
WA	2013	Residential	Infiltration Control (Caulk, Weather Strip, etc.) Blower-Door test	3. $0.09 to $0.11
WA	2013	Residential	Heat Pump Premium Efficiency, SEER 16, HSPF 8.8	3. $0.09 to $0.11
WA	2013	Street Lighting	Streetlight - HPS 100W - Group Relamp - to LED 62W - NR	1. Up to $0.07
WA	2013	Street Lighting	Streetlight - HPS 150W - Group Relamp - to LED 113W - NR	1. Up to $0.07
WA	2013	Street Lighting	Streetlight - HPS 150W - Tariff Relamp - to LED 113W - NR	1. Up to $0.07
WA	2013	Street Lighting	Streetlight - HPS 200W - Group Relamp - to LED 120W - NR	1. Up to $0.07
WA	2013	Street Lighting	Streetlight - HPS 250W - Group Relamp - to LED 150W - NR	1. Up to $0.07
WA	2013	Street Lighting	Streetlight - HPS 400W - Group Relamp - to LED 225W - NR	1. Up to $0.07
WA	2013	Street Lighting	Streetlight - HPS 70W - Group Relamp - to LED 42W - NR	1. Up to $0.07

Appendix 6
Demographic Information
PacifiCorp's Washington Service Area

The Company determined early in the planning process the ten-year technical potential identified in its conservation potential assessment was significantly lower than the Company's Washington share of the technical potential identified in the regional power plan. This is a significant indication the Company's service area is not similar to the regional average for the four-state planning area of the regional power plan.

Below are a few demographic differences between the Company's Washington service area and the region as a whole. The purpose of this information is to inform parties as to why PacifiCorp's conservation forecast may differ from regional estimates.

- Communities the Company serves in Washington are smaller and more rural
  - The Company has customers in 36 communities in WA (refer to detailed list of communities (Table A6-2) and service area map (Figure A6-1) included below)
    - 10 communities have 87% of the Company's residential customers
    - 20 communities have fewer than 1,000 residential customers
  - Infrastructure characteristics in smaller markets (e.g. vendors and contractors)
    - More generalists, fewer specialists
    - Implication – longer ramps for new measures/technology
  - Percent of low income households - significantly higher percentage than the statewide average
  - As is typical for many rural areas, many (but not all) of the Company's customers have access to gas. Cascade Natural Gas just started ramping up DSM programs fairly recently, so there is not a significant benefit to Company program participation from gas company marketing efforts yet.
  - In the industrial sector,
    - One large customer represents almost half of the industrial MWh sales, and this customer has been active in Company energy efficiency programs for many years.
    - There are approximately 36 Schedule 48 industrial customers (> 1 MW each)

- The Company's average annual electric consumption per home is significantly higher than the regional average likely due to higher than average number of homes with electric space heating, water heating, and clothes dryers. See Table A6-1 below.
  - If a regional savings target is allocated based on MWH sales and the potential were determined per housing unit, the Company's share of the regional target would be out of proportion with the number of housing units.
  - This is a factor for measures where there is typically one per housing unit such as water heaters, clothes washers, and other appliances.

Table A6-1 provides a comparison of annual average MWh/residential customer based on Energy Information Administration data for 2007, the same reference and year used by the Council in its draft 6th Power Plan and utility target calculator. Note the average annual electric consumption per housing unit in the Company's service area is 25% higher than the Washington state-wide average and 30% higher than the average for the 4-state total for the Northwest Region.

Table A6-1

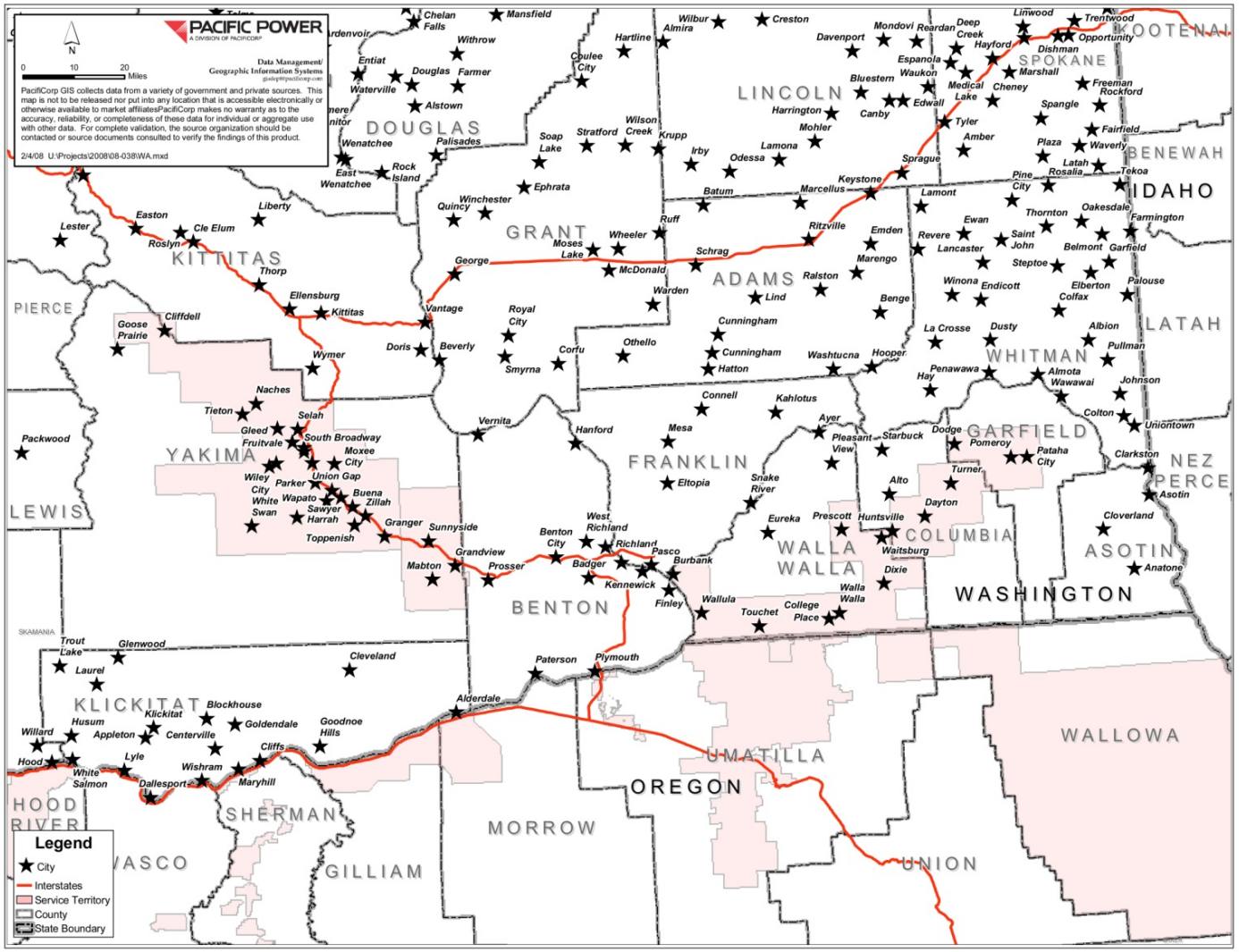
Form EIA-861 Final Data File for 2007			
	RESIDENTIAL _SALES (MWH/yr)	RESIDENTIAL _CONSUMERS	Annual MWh/ residential consumer
PacifiCorp - WA	1,626,726	101,245	16.1
WA State-wide	35,388,779	2,748,270	12.9
Northwest Region	67,644,242	5,452,210	12.4

Source: http://www.eia.doe.gov/cneaf/electricity/page/eia861.html

Table A6-2
Communities (including unincorporated areas)
Served by PacifiCorp in Washington

Community (including unincorporated areas)	County	# Residential customers
PROSSER Total	Yakima/Benton	35
YAKIMA	Yakima	44,307
SELAH	Yakima	6,307
SUNNYSIDE	Yakima	5,795
GRANDVIEW	Yakima	3,908
WAPATO	Yakima	3,484
TOPPENISH	Yakima	3,063
ZILLAH	Yakima	2,205
UNION GAP	Yakima	2,181
NACHES	Yakima	2,011
MOXEE CITY Total	Yakima	1,908
GRANGER Total	Yakima	1,221
TIETON Total	Yakima	1,015
MABTON Total	Yakima	823
OUTLOOK Total	Yakima	529
COWICHE Total	Yakima	458
WHITE SWAN Total	Yakima	340
HARRAH Total	Yakima	256
BUENA Total	Yakima	235
PARKER Total	Yakima	87
BROWNSTONE Total	Yakima	6
WALLA WALLA	Walla Walla	14,934
COLLEGE PLACE	Walla Walla	3,067
BURBANK Total	Walla Walla	810
WAITSBURG Total	Walla Walla	612
TOUCHET Total	Walla Walla	326
PRESCOTT Total	Walla Walla	174
DIXIE Total	Walla Walla	110
WALLULA Total	Walla Walla	74
LOWDEN Total	Walla Walla	17
PASCO Total	Walla Walla	6
WHITE SALMON Total	Klickitat	2
POMEROY Total	Garfield	858
DAYTON Total	Columbia	1,483
HUNTSVILLE Total	Columbia	14
		102,661

Figure A6-1
PacifiCorp Washington Service Area Map - Detail View



Appendix 7
PacifiCorp's Washington Demand-side Management Business Plan for 2012-2013

(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 2012-2013 PacifiCorp Forecast and Forecast Methodology

Memorandum

September 1, 2011

TO: Jeff Bumgarner and Don Jones, PacifiCorp

CC: Susan Hermenet and Jeff Harris, NEEA

FROM: Christine Jerko, NEEA

SUBJECT: Final Estimate of 2012 and 2013 Savings Targets

Dear Jeff and Don,

Per your request, this memorandum first provides PacifiCorp's high level savings targets for 2012 and 2013. Next, the methodology for arriving at these values is outlined. Lastly, the attached spreadsheet details savings calculations at the initiative level.

Savings Target Summary

This report is in response to your request for a 2012 and 2013 savings targets. You have requested that NEEA show NEEA's Total Regional Savings, NEEA's Net Market Effects, and Total Regional Savings less PacifiCorp specific Local Program savings. Below is the high level estimate of the 2012 and 2013 targets.

PacifiCorp - WA 2012 Target Savings Estimate		
Total Regional Savings	Net Market Effects	Total Regional Savings less Local Programs
1.67	0.50	1.13

PacifiCorp - WA 2013 Target Savings Estimate		
Total Regional Savings	Net Market Effects	Total Regional Savings less Local Programs
1.80	0.59	1.03

PacifiCorp's share of Total Regional savings resulted from a combined methodology described in the Methodology section below. Net Market Effects (NME) is a subset of Total Regional savings with the following formula:

NME = Total Regional savings - Naturally Occurring Baseline - Local Program savings

The third value provided, 'Total Regional Savings less Local Program Savings' resulted by subtracting PacifiCorp's Local Program savings from the Total Regional Savings. No baseline values are removed from this category. The large difference for Net Market Effects compared to Total Regional Savings less Local Programs Savings is due to Televisions baselines, which accounts for approximately 0.4 aMW.

Accounting Methodology

Total Regional Savings are calculated via two accounting methodologies, Funder Share or Service Territory Level. Funder share implies that PacifiCorp's specific funder shares, for currently and previously funded initiatives, are applied to regionally obtained savings numbers. Conversely, where zip code level data was available, NEEA was able to estimate a savings number specific to PacifiCorp's service territory. The caveat here is that the 2012 and 2013 service territory estimates are based on one year, 2010, of data.

PacifiCorp asked that NEEA use a mixed approach for the Residential Sector. In the areas where zip code data was pervasive and likely to represent future years, Service Territory Level reporting is applied to the following initiatives:

- Efficient Homes
- Televisions
- Ductless Heat Pumps (*Please, note that PacifiCorp was in the best position to estimate sales in their service territory and this forecast came directly from them)
- General Purpose and Specialty Lighting

The remainder of the Residential initiatives, as well as all Commercial, Industrial and Agricultural initiatives, uses the Funder Share accounting methodology. For all initiatives, regardless of sector, the application of funder share is dependent upon the status of funding. The status of an initiative is either currently funded or previously funded. Below are the corresponding funder shares.

Funder Share Area	PacifiCorp WA
Currently Funded Initiatives (2010 – 2014 Business Plan)	3.04%
Previously Funded Initiatives (Business Plans 1997 - 2009)	2.56%

In the Net Market Effects calculation, Local Program savings are decremented by reducing Local Program savings by the fraction of Local Program to Total Regional savings multiplied by Baseline savings. NEEA has historically performed this calculation because it is assumed that some of the Local Programs initiatives would have occurred naturally.

The next measure listed "Total Regional Savings Less Local Program Savings" does not decrement Local Program savings for baseline.

Savings per Unit:
All savings per units are those used by NEEA with the exception of General Purpose and Specialty Lighting with the following savings rates provided by PacifiCorp:

GP Lighting at 24 kWh per bulb
Specialty Lighting at 35 kWh per bulb

Portfolio description:
The initiatives used to produce the savings in this report are compatible with the product specifications listed in PacifiCorp's 'Appendix E'. For example, only MEF 2.0 and above are used for Energy Star Clothes Washers.

All models used to produce PacifiCorp's targets are saved and available for viewing.

Spreadsheet Detail

I've also attached the spreadsheet which contains the initiative level savings, service territory level shares, and funder shares used to produce PacifiCorp's aggregate savings values. The tabs of relevance are: 'Pacific WA 2012' and 'Pacific WA 2013'. PacifiCorp's savings are found in columns D and E.

Additionally, a snapshot of all of the models used to produce these savings has been stored in order to assure that we 'freeze' any assumptions used to produce future savings reports for PacifiCorp. These models will be at your disposal, so you are welcome to look at individual details of any initiative savings forecasts.

The next portion of the memorandum explains some of the high level accounting methodology.

1) Per PacifiCorp's ask, NEEA has provided Service Territory Level (STL) detail where data was available. If you look in PacifiCorp's spreadsheet tabs of interest, you will find service territory level data in columns R and S. If service territory data exists, you will see

PacifiCorp's portion of that data in column R and the resulting Service Territory Level aMW savings in column S.

a) NEEA has only one year of Service Territory Level data, 2010. This data was used for 2012 and 2013. It should be noted that these shares could change dramatically over time depending upon market conditions and the level of utility participation.
b) NEEA does not have Net Market Effects for Service Territory Level reporting. Net Market Effects were estimated by using the corresponding ratio of Net Market Effects to Total Regional Savings for funder share savings (columns M & N). You can see an example of the savings calculation in column E.

2) If NEEA did not have Service Territory Level (STL) data available, funder shares were used. Funder shares are applied based on the initiative funding date. Below are PacifiCorp's funder shares.

   PacifiCorp's funder share savings can be found in columns M, N, and O.

3) When provided, NEEA used PacifiCorp's specific incentives. The resulting savings are listed in column U.

Appendix 10
Commonwealth Associates, Inc. Study
Distribution Efficiency Initiative

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

Appendix 11
Cascade Energy, Inc. Study
Production Efficiency

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

Appendix 12
RTF Simplified VO M&V Protocol

(Appendix 12 is in .pdf format therefore provided on compact disc)