PacifiCorp's Ten-Year Conservation Potential and 2010 - 2011 Biennial Conservation Target for its Washington Service Area

PACIFIC POWER
A DIVISION OF PACIFICORP

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Introduction

Initiative Measure No. 937, which was passed by Washington voters in 2006 and is codified as RCW 19.285.040 and WAC 480-109, seeks to increase energy conservation in the state of Washington. WAC 480-109 requires each electric utility subject to the jurisdiction of the Washington Utilities and Transportation Commission ("Commission") to project its cumulative ten-year electric conservation potential and to establish biennial conservation targets.

As specified in WAC 480-109-010(1), electric utilities were required to establish their ten-year conservation potential by January 1, 2010. As a means of demonstrating PacifiCorp's ("Company") compliance with this requirement, the Company provided its ten-year conservation potential to the Commission on December 31, 2009[1], which was subsequently assigned to Docket No. UE-091982 by the Commission. In determining its ten-year conservation potential, WAC 480-109-010(1) states that a utility need only consider conservation resources that are cost-effective, reliable and feasible. The sources from which a utility may derive its conservation potential are: a) the utility's most recent Integrated Resource Plan or b) the utility's proportionate share of the Northwest Power and Conservation Council's ("Council") current Northwest Power Plan[2] ("regional power plan") targets for the state of Washington.

In establishing its 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 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. WAC 480-109-010(3) requires that on or before January 31, 2010 and every two years thereafter, each electric utility must file with the Commission a report identifying its ten-year achievable conservation potential and its biennial conservation target. In compliance with the requirement, PacifiCorp submits this report to the Commission which identifies its ten-year achievable conservation potential and its biennial conservation target for 2010 and 2011 and describes the process by which they were developed.

Executive Summary

As permitted by WAC 480-109-010(1)(b)(i), PacifiCorp has elected to utilize its 2008 Integrated Resource Plan[3] ("IRP"), a copy of which is provided as Appendix 1 to this report, as the source for establishing its projected ten-year conservation potential for its Washington service area[4]. PacifiCorp elected to utilize the 2008 IRP as the source for its conservation potential and biennial target as it more accurately represents the Company's resource position, resource options and resource costs than does the regional power plan. More importantly, the 2008 IRP had available more representative data on PacifiCorp's conservation potential in Washington than that assumed in the regional power plan. The Company's 2008 IRP was informed by the

[1] PacifiCorp subsequently revised its ten-year conservation potential upward, as communicated by the Company in an email to the Commission staff, the Commission records center and other interested parties on January 28, 2010.
[2] As of the date of this report, the current power plan is the Council's 5th Northwest Power Plan dated May 2005, which is available at http://www.nwcouncil.org/energy/powerplan/5/. However, for the purposes of analysis and comparison, the Company references the Draft 6th Northwest Power Plan dated September 3, 2009 as the "regional power plan".
[3] PacifiCorp's 2008 IRP was filed with the Commission in Docket No. UE-080826.
[4] A map of PacifiCorp's Washington service area is provided in this report in Appendix 5.

conservation potential identified in PacifiCorp's Assessment of Long-Term System-Wide Potential for Demand-Side and Other Supplemental Resources ("conservation potential assessment")[5]. Completed in July 2007 by Quantec, LLC (now called the Cadmus Group, Inc.), the Company's conservation potential assessment represents an independent and reliable assessment of the magnitude, timing, and costs of conservation potential available specific to PacifiCorp, providing the Company a significant advantage in the development of its Washington conservation potential and biennial target. Unlike the regional avoided cost average data and sales allocation methodology used in the regional power plan to approximate economic potential available to each utility in the region, the use of PacifiCorp's 2008 IRP, informed by the service area specific conservation potential assessment, provides for the most reliable and accurate conservation forecast for both resource planning and the development of the Company's Washington conservation potential and biennial target. A copy of the conservation potential assessment is provided as Appendix 2 to this report.

The cumulative ten-year conservation potential determined by PacifiCorp and documented in this report is **49.2** average megawatts ("aMW"). Consistent with the rules under WAC-480-109, PacifiCorp's ten-year conservation potential represents the Company's 2008 IRP results adjusted to fully align for any differences between the process used by the Company in developing the 2008 IRP conservation results and that used by the Council in developing the regional power plan. Areas reviewed for process differences included planning methodologies, modeling methodologies and practices and measure sets. Table 1 shows PacifiCorp's cumulative ten-year conservation potential by year in aMW for the ten-year planning period from 2010 - 2019. As illustrated in Table 1, PacifiCorp added 14.5 aMW (an increase of 42 percent over the conservation resources identified in the 2008 IRP) to its 2008 IRP conservation targets in identifying its ten-year conservation potential documented in this report. These adjustments are described in further detail later in this document.

Table 1
2010 - 2019 Cumulative Ten-Year Conservation Potential (aMW)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2-year	10-year
2008 IRP	3.6	6.9	10.2	13.4	16.7	20.2	23.7	27.3	31.0	34.7	6.9	34.7
Total of adjustments	0.9	1.9	2.9	4.5	6.2	7.6	9.2	10.8	12.6	14.5	1.9	14.5
2008 IRP with adjustments	4.5	8.8	13.1	17.8	22.9	27.8	32.9	38.2	43.6	49.2	8.8	49.2

PacifiCorp's biennial conservation target, also shown in Table 1, for 2010 and 2011 is **8.8** aMW[6], which represents the sum of the first two years in the ten-year conservation potential

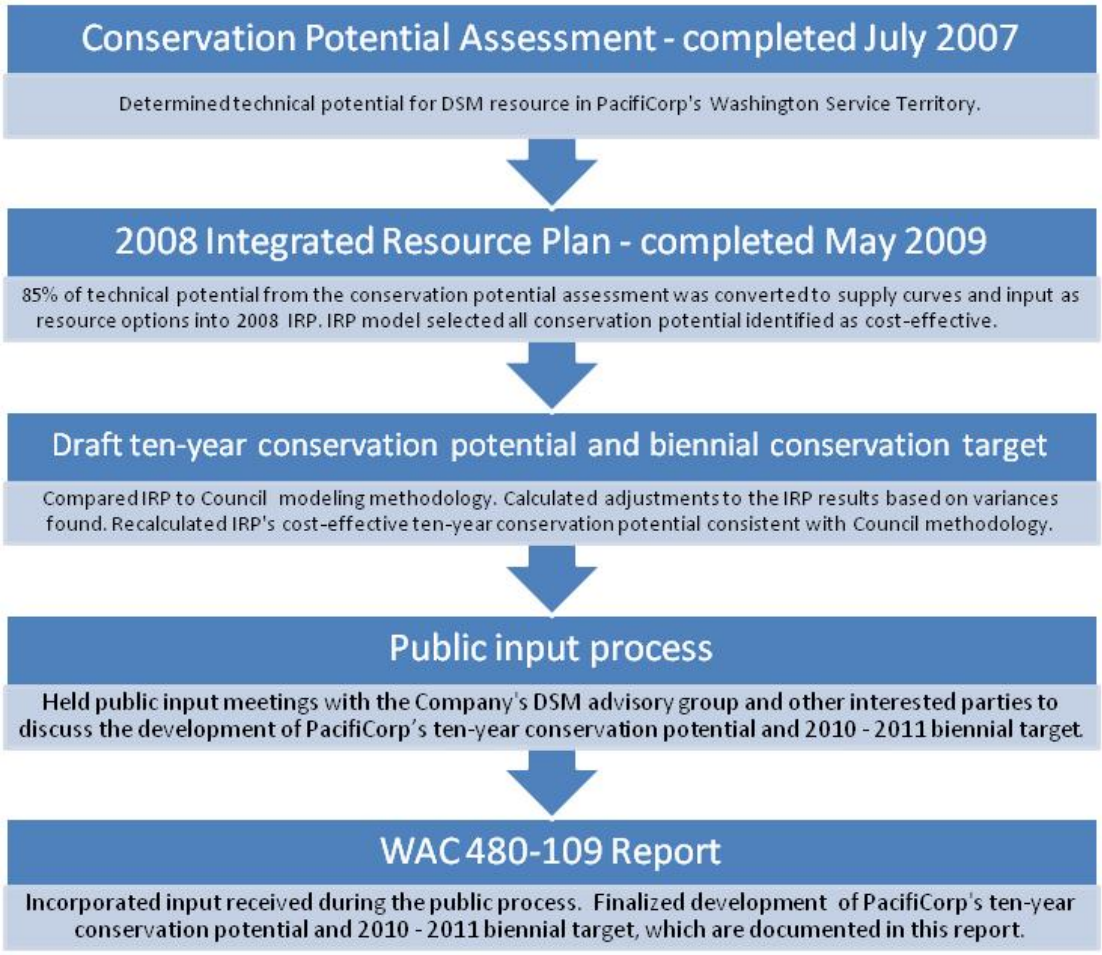
[5] This report, prepared by The Cadmus Group (formerly Quantec) is included as Appendix 2 of this document and is also available at http://www.pacificorp.com/env/dsm.html. The report contains the most accurate assessment of conservation potential available in PacifiCorp's service territories to date. The Company plans to update the report as part of the 2010 integrated resource planning cycle. The update will incorporate several of the measure modifications noted in the adjustment section of this document that were made to the Company's 2008 IRP conservation targets in the preparation of this document. As such, it is anticipated this will reduce the need for similar adjustments in the preparation of the Company's next biennial (2012 - 2013) conservation target.

[6] 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 include line losses between the customer site and the generation source. The Company's assumed line losses by sector are 11.031% for residential, 10.834% for

period. The Company influences but does not control all aspects of achieving its conservation targets. It relies upon customer action, availability of equipment, and availability of qualified installation contractors, among other variables. For this reason, setting a hard target for conservation resource acquisition increases the Company's risk in achieving its biennial targets, allowing for little time to react to any market anomalies, such as downward economic trends, should they occur. Despite these risks, the Company intends to aggressively work to achieve the biennial target as documented herein and consistent with the spirit of Initiative No. 937, fully participate in acquiring all available cost-effective conservation potential available in PacifiCorp's Washington service area.

Figure 1 below presents an overview of the process that was followed in determining PacifiCorp's ten-year conservation potential and the 2010 and 2011 biennial conservation target. Each of the steps in this process will be discussed in greater detail subsequently in this report.

Figure 1
Overview of I-937 Process



commercial and 9.137% for industrial. These values are based on the Company's 2001 Transmission and Distribution Loss Study by Management Applications Consulting published in June 2004.

Source for Conservation Potential and Biennial Target

PacifiCorp's 2008 IRP, which was filed May 29, 2009 (Docket No. UE-080826) and acknowledged by the Commission on September 2, 2009, was selected as the source for establishing the Company's ten-year conservation potential and biennial acquisition target. The IRP provides for a forecast of cost-effective demand-side resource opportunity available to the Company over the 2010 - 2019 planning period. It reflects conservation potential identified in the Company's conservation potential assessment and the Company's specific resource requirements and avoided costs. The IRP was selected because it replaces the regional averages and general avoided cost assumptions used in the development of the regional power plan with Company specific planning assumptions, commercially available resource options, service area specific conservation assessment data and resource costs all tailored to PacifiCorp's resource position and customer energy requirements. Similar to the Council's regional power plan development process, PacifiCorp's IRP planning assumptions, considerations, methodology, and findings were developed and vetted through a well documented public process. The regional power plan is the logical choice and starting position for conservation forecast planning for utilities that don't have the need, resources or experience to warrant the development of a more specific and tailored plan. For utilities like PacifiCorp, who have invested heavily in conservation potential assessments specific to their service territories and do complete well documented and specific resource plans, IRPs become the logical choice and starting position for identifying and setting conservation forecasts.

As part of developing the ten-year conservation potential documented herein, the Company reviewed the Council's planning methodology, modeling methodology and practices, and measure sets as used in the development of the regional power plan. Outcomes of this review included the following:

1. Appendix 3 contains an outline of the methodology used and provided by the Council in the development of the regional power plan[7] along with a description of the Company's aligning methodology. This analysis demonstrates the consistency of the methodologies used in the development of both plans as required by WAC 480-109-010(1)(b)(i).

2. The Company identified minor differences in modeling assumptions and measure sets between the regional power plan and the Company's IRP. These differences were analyzed and in most cases resulted in adjustments to PacifiCorp's ten-year conservation potential as documented in this filing.

To assist in the identification of measure set and conservation potential differences for the preparation of this filing, the Company enlisted the Cadmus Group, Inc. to compare and contrast the technical conservation potential identified in PacifiCorp's conservation potential assessment to the technical conservation potential identified for PacifiCorp (through the regional allocation process) from the regional power plan.

Starting at a comparison of technical potentials between the two plans provided for a more accurate way to compare and contrast differences in conservation opportunities assumed prior to

[7] This document is available at http://www.nwcouncil.org/energy/powerplan/6/supplycurves/I937/default.htm

any adjustments for service area refinements and avoided cost assumptions that would unnecessarily complicate the initial comparison work. The objective was to identify: (1) the degree to which the company's conservation potential assessment differed from the Council's regional power plan, (2) whether the difference was due to PacifiCorp's specific customer set, loads and service area, and (3) any adjustments to the IRP conservation forecast required in advance of filing PacifiCorp's conservation forecast and biennial target.

This work lead to several key observations:

1. There are significant differences between the Company's ten-year technical potential identified for PacifiCorp's Washington service area as identified in the Company's conservation potential assessment and that assumed, using regional averaging, available to PacifiCorp by the regional power plan.

2. The key differences, before further economic and achievable adjustments, are primarily found in the residential and industrial sector conservation potentials.

3. Assuming the Council's regional power plan is accurate in aggregate, Pacific Power's service area doesn't represent the regional average for conservation potential.

4. The most representative starting point in the development of the Company's ten-year conservation potential and biennial target, for the purposes of satisfying WAC 480-109, are the conservation targets identified in the Company's 2008 IRP.

Table 2 below provides the relative differences in the underlying sector level technical conservation potentials used in the development of both plans. As noted in the observations above, the sectors driving the key differences are residential and industrial. Distribution Efficiency contributes to the overall difference as well, and is addressed further in the adjustment section of this report.

Table 2
PacifiCorp Washington Two-Year and Ten-Year Technical Potential (aMW)[8]

	2-year (aMW)			10-year (aMW)		
Sector	Draft 6th Power Plan	PacifiCorp Conservation Potential Assessment (CPA)	Difference	Draft 6th Power Plan	PacifiCorp Conservation Potential Assessment (CPA)	Difference
Residential	7.1	5.5	1.6	65	23	42
Commercial	3.2	3.8	-0.6	18	21	-3
Industrial	2.0	1.2	0.8	14	5	9
Agricultural	0.6	0.3	0.3	3	1	2
Distribution Efficiency	0.4		0.4	7		7
Total	13.4	10.8	2.6	106	51	55

Note: distribution efficiency initiatives were included in the regional power plan but are not included in the Company's conservation potential assessment.

In reviewing the differences in technical potential behind the regional power plan and the Company's IRP, the Company and the Cadmus Group focused its analysis efforts on areas with significant differences in the two-year technical potential. The difference in the technical potential in the out years appear to be due to several factors, not the least of which include regional verses PacifiCorp specific opportunities (especially noteworthy in the residential, industrial and distribution efficiency sectors and measures). The Company intends to refresh the conservation potential assessment in support of the 2010 IRP, the results of which will be used in the development of the Company's 2012 - 2021 conservation potential and 2012 - 2013 biennial target.

Provided below are highlights from the analysis comparing the differences between the regional power plan and the IRP. Further detail on variances in the residential sector and modeling differences between the Company's IRP and the regional power plan are provided later in this section.

- Residential Sector - consumer electronics and water heating end uses account for 1.4 aMW of the 1.6 aMW difference in the two-year technical potential for the residential sector. These two end uses were reviewed at the measure level, and this analysis is described in further detail below. Based on the findings of the review, the Company determined adjustments to the 2008 IRP conservation potential were appropriate. These adjustments are detailed in the adjustments section of this report and in greater detail in Appendix 4.

[8] Source – The Cadmus Group, July 17, 2009. Note the values shown in this table are at the customer site (not including estimated line losses between the customer site and generation source). They represent the technical potential and do not reflect any achievable or economic screens. The Agriculture sector in the regional power plan includes dairy production and irrigation efficiency. Two-Year numbers are for 2010 and 2011. Ten-Year numbers are for 2010-2019.

- Commercial Sector - although the difference in technical potential for the commercial sector was not significant over the 10 year forecast, the Company noted one measure that was not considered during the development of the conservation potential assessment but was included by the Council in the regional power plan assessment. This measure, network personal computer power control, has been added to the 2008 IRP conservation potential. This adjustment is detailed in the adjustments section of this report and in greater detail in Appendix 4.

- Industrial Sector - Industrial energy management and operations and maintenance measures are a significant new addition to the regional power plan and were included, but to a lesser extent, in the Company's conservation potential assessment. It is the primary driver in the 0.8 aMW difference in two-year technical potential in the industrial sector. The key factors that influenced the Company's decision not to make an adjustment to account for industrial sector differences are as follows:

    - The measures and delivery practices are still emerging with significant development effort underway to define best practice program designs, appropriate measurement and verification strategies, and assumptions such as measure lives for these types of measures. The Northwest Energy Efficiency Alliance industrial sector work initially identified this opportunity. Utilities and other program delivery organizations are just starting to incorporate these types of resources in programs, and more work underway regionally must be completed to test designs and measurement and verification protocols sufficient to deem this resource cost-effective, reliable and feasible. While the regional power plan can be optimistic in the timing of the resources being available, provided they are available early enough in the regional power plan's ten-year planning period to be considered, utilities must take a more conservative approach, as they are required to guarantee the delivery of the resources when setting targets.

    - As it relates to the 2010 - 2011 biennial target, the 0.8 aMW difference in technical potential, after further being adjusted for economic and achievable potentials, would have a relatively small impact.

    - There is a greater difference in the assumed technical potential for these measures in the later years, years 2012 - 2019 which warrant further study. A factor that influences the technical potential is the demographics of PacifiCorp's industrial customer base. One large customer represents almost half of the industrial MWH sales. Additional detail on demographics is included in Appendix 5. Further analysis of the potential given customer demographics will be included in the Company's refresh of the conservation potential assessment and any relevant findings will be incorporated in the Company's subsequent conservation forecasts.

    - In addition to industrial energy management and operations and maintenance measures, transformers are included in the regional power plan's potential assessment but were not considered in the Company's conservation potential

assessment. The Council's potential for this measure was originally overstated in earlier versions of their draft assessment and has since been adjusted. The Company's assumed share of the region's average annual technical potential before the Council's adjustment was less than 0.1 aMW, leading the Company to conclude that the conservation potential for transformers is insufficient to warrant an adjustment in this report.

- Distribution Efficiency – Distribution efficiency measures are included in the regional power plan and are not considered in the Company's conservation potential assessment. The Company determined an adjustment is needed to include the additional savings from this category. This adjustment is detailed in the adjustments section and in greater detail in Appendix 4.

Residential Sector Adjustment Detail

In reviewing the residential sector at the end use level, the Company determined the major differences in two-year technical potential are coming from the consumer electronics and water heating end uses. These two end uses account for 1.4 aMW of the 1.6 aMW difference in two-year technical potential for the residential sector (excluding solar PV[9]). Table 3 below provides a comparison between the technical potential identified in the Company's conservation potential assessment and the regional power plan for residential end uses.

Table 3
Comparison - Residential Technical Potential - End Use Level[10]

	2-year (aMW)			10-year (aMW)		
Residential End Use	Draft 6th Power Plan	PacifiCorp Conservation Potential Assessment (CPA)	Difference	Draft 6th Power Plan	PacifiCorp Conservation Potential Assessment (CPA)	Difference
Appliances	0.3	0.7	-0.4	3.0	3.3	-0.3
Consumer Electronics	0.5	0.1	0.4	8.8	0.4	8.4
HVAC Equipment	1.1	0.9	0.2	8.7	4.1	4.7
Space Conditioning	2.1	1.9	0.3	11.7	9.3	2.4
Lighting	1.6	1.6	0.0	3.9	3.9	0.0
Solar PV	0.1		0.1	5.8		5.8
Water Heat	1.4	0.4	1.0	23.5	1.9	21.6
Residential Total	7.1	5.5	1.6	65.4	23.0	42.5
Residential Total w/o Solar PV	7.0	5.5	1.5	59.6	23.0	36.7

[9] Solar PV was considered in both the regional power plan and the Company's conservation potential assessment; however, it does not pass economic screens so it does not impact the ten-year conservation potential projected in this report.

[10] Note the values shown in this table are at the customer site (not including estimated line losses between the customer site and generation source).

In reviewing the measures within consumer electronics and water heating, the major differences are coming from the television and monitor measures and showerhead replacement measures.[11] Table 4 below provides a comparison between the technical potential from the Company's conservation potential assessment and the regional power plan for residential consumer electronics and water heating end use measures.

Table 4
Comparison – Residential Technical Potential - Measure Level
for Consumer Electronics and Water Heating End Uses[12]

End Use	Measure		2 Year Difference (aMW)	10 Year Difference (aMW)
	6th Power Plan	PacifiCorp CPA		
Consumer Electronics	**Energy Star - Weighted Average TV**	Efficient high definition televisions	0.2	4.2
	Energy Star - Weighted Average Desktop	--	0.1	2.4
	Energy Star - Set Top Boxes	Digital set top Receivers	0.1	1.4
	Energy Star - Monitors	--	0.0	0.6
	--	Powerstrip, DVD players, 1-W Standby Power, HE PowerSupply	0.0	-0.3
	Consumer Electronics Total		*0.4*	*8.4*
Water Heat	**Heat Pump Water Heater**	Heat Pump Water Heater	0.1	6.7
	Solar Residential Water Heater - bundled	Solar Water Heater - report	0.3	11.3
	High Efficiency Water Heater	High Efficiency Water Heater	0.1	0.5
	Gravity Film Heat Exchanger (drain water heat recovery)	Gravity Film Heat Exchanger (drain water heat recovery)	0.0	2.3
	Showerhead Replacement	Low-Flow Showerheads	0.8	1.7
	--	Other (Heat Trap, Faucet Aerator)	-0.2	-1.0
	Water Heating Total		*1.0*	*21.6*

Consumer Electronics

As previously noted, the 2008 IRP is based on data from PacifiCorp's conservation potential assessment, which essentially relied on data from 2006 or earlier in its development. Consumer electronics, especially televisions, have evolved significantly over the last several years and as a result the data used in the development of the regional power plan was deemed more current for these measures. To reflect this finding, the Company has included an adjustment in this filing

[11] Note twister compact fluorescent lamps (CFLs) are included in the 2008 IRP and not in the regional power plan (except for low income). This measure will be added back into the regional power plan. No adjustment to the 2008 IRP is necessary for this measure.
[12] Note the values shown in this table are at the customer site (not including estimated line losses between the customer site and generation source).

adding potential from the regional power plan (tailored to PacifiCorp's service area) for this category.

Water Heat

The primary measures driving the differences in the water heating end use are showerhead replacements and heat pump water heaters. Solar water heating is driving some of the differences in technical potential; however, this measure does not pass economic screens in either the regional power plan or the 2008 IRP so it does not impact the ten-year conservation potential in this report.

In reviewing the showerhead replacement measure, the Company found the primary difference in technical potential was the result of one assumption: the Company was assuming a reduction in showerhead performance from 4.0 gallons per minute to 2.5 gallons per minute and the regional power plan was assuming 2.5 gallons per minute to 2.0 gallons per minute. To account for this difference the Company adjusted its technical potential to include savings associated with achievement of savings from 2.0 gallon per minute showerheads. Table 5 below shows a comparison for this measure. This adjustment is detailed in the adjustments section and in greater detail in Appendix 4 of this report.

Table 5
Comparison - Residential Technical Potential - Showerhead Measure[13]

Low Flow Showerhead	Measure Description	Existing Saturation	Measure Cost	Levelized Cost ($/kWh)	Savings/ Measure (kWh/yr) *Generation	Two-year Technical Potential (aMW) *Generation
PacifiCorp	4.0 → 2.5 GPM	66%	$23	$0.01	395	0.083
6th Power Plan	2.5 → 2.0 GPM	5%	$24	<0	127	0.87

In reviewing the heat pump water heater measure, the Company determined the primary differences are driven by different assumptions, which stems from the timeliness of PacifiCorp's data for this measure compared to that used in the most recent regional power plan, in addition to the data sources used in support of those assumptions. The technical potential for this measure in the regional power plan is represented as available in the later years of the plan, years 2012-2019, reflecting the measure's level of commercialization and uncertainty as an emerging technology. For this reason no adjustment is planned at this time for this measure; however, the Company will consider revisions to this measure's assumptions as part of the Company's next conservation potential assessment refresh process. In addition, the Company will continue to follow the research and regional activity on this measure to help inform the refresh process. Table 6 below shows a comparison for this measure.

[13] Technical potential in this table is at the generation source (includes estimated line losses between the customer site and the generation)

Table 6
Comparison - Residential Technical Potential – Heat Pump Water Heater Measure[14]

Heat Pump Water Heater	Measure Description	Existing Saturation	Measure Cost	Levelized Cost ($/kWh)	Savings/ Measure (kWh/yr) *Generation	Two-year Technical Potential (aMW) *Generation
PacifiCorp Does not pass economic screen	2.9 EF	2%	$1,220	$0.22	1,074	0.047
6th Power Plan	2.2 EF	0%	$701	$0.03	2,182	0.162

Differences in two-year technical potential from residential space conditioning and envelope measures were also reviewed as part of the analysis. The two-year difference in technical potential for residential space conditioning (envelope measures) is 0.25 aMW and the two-year difference for HVAC equipment measures is 0.20 aMW. The difference in technical potential for these measures is small prior to any adjustments for achievable and economic potential. As such, the Company determined these differences were not sufficient to warrant an adjustment to the 2008 IRP conservation potential and biennial target. Table 7 shows the comparison for space conditioning and HVAC equipment categories at the measure level.

Table 7
Comparison – Residential Technical Potential – Space Conditioning and HVAC Equipment

End Use	Measure		2 Year	10 Year
	6th Power Plan	PacifiCorp CPA	Difference (aMW)	Difference (aMW)
Space Conditioning	Attic Insulation	Attic Insulation	0.18	1.09
	Wall Insulation	Wall Insulation	0.13	0.85
	Floor Insulation	Floor Insulation	0.39	2.12
	Windows	Windows	0.62	3.34
	Infiltration	Infiltration	-0.50	-2.38
	Other (Door)	Other (Cool/Green Roof, New Construction Bundle, Heat Exchangers, etc)	-0.57	-2.67
	Space Conditioning Total		*0.25*	*2.37*
HVAC Equipment	Ductless Heat Pump	Ductless Heat Pump	0.59	2.92
	High Efficiency Heat Pump	High Efficiency Heat Pump	-0.18	0.15
	Electric Furnace to Heat Pump Conversion	Duct Sealing/Commissioning	0.00	2.47
	--	High Efficiency Central AC	-0.12	-0.48
	High Efficiency Room AC	High Efficiency Room AC	-0.02	-0.04
	--	Ceiling Fan, Evaporative Coolers	-0.08	-0.35
	HVAC Equipment Total		*0.20*	*4.66*

[14] Technical potential in this table is at the generation source (includes estimated line losses between the customer site and the generation)

Modeling and Other Differences Adjustment Detail

The Company also reviewed modeling and other differences between those used by the Council in the development of the regional power plan and by the Company in the development of the conservation forecast in the 2008 IRP. The modeling and other differences identified included the treatment of the Regional Act Credit (also referred to as the "10% Adder"), the Council's market price adder which captures conservation resource portfolio risk reduction benefits, and federal lighting legislation. WAC 480-109-010(1)(b)(i) states that utilities using their IRP for the purpose of filing their ten-year conservation forecast and biennial target must adopt methodologies that are consistent with those used by the Council in its most recent regional power plan. The following are the results of the comparison as well actions taken by PacifiCorp to remedy differences identified.

- 10% Adder - The 2008 IRP is a multi-state resource plan, and accordingly does not incorporate a 10% adder as it is not recognized by all of PacifiCorp's states. However, the 10% adder is included in the regional power plan[15] and in the Council's outline of major elements document (refer to Appendix 3). To adjust for this variance between modeling methodologies, the Company used a modeling approach to determine what effect the 10% adder would have on the Company's 2008 IRP ten-year potential and two-year conservation target for Washington. This adjustment is detailed in the adjustments section and in greater detail in Appendix 4 of this document.

- Market Price Adder - The market price adder is not specifically called out as a modeling methodology in the Council's outline of major elements document. As part of the public input process, the Company met with the Council, and the Council provided information on their market price adder. The DSM advisory group and other interested parties participating in the public process for WAC 480-109 encouraged the Company to be proactive on the market price adder adjustment. The role of the Council's market price adder[16] is to ensure that the full risk mitigation value of conservation is accounted for in determining the cost-effective amount of conservation to include in resource portfolios developed by the Council's Regional Portfolio Model. PacifiCorp's understanding is that the adder is the price needed to shift a portfolio to the "efficient frontier" for the population of portfolios.[17] After evaluating the applicability of estimating a risk mitigation cost credit to PacifiCorp's IRP models, the Company developed two separate cost credits representing different aspects of risk mitigation. These two cost credits were then applied to the Washington conservation cost curves, and the capacity expansion model used to derive a new set of conservation targets. This adjustment is detailed in the adjustments section and in greater detail in Appendix 4 of this document.

- Lighting Legislation - Recent lighting legislation (enacted by the Energy Independence and Security Act of 2007) which increases lighting efficiency standards is accounted for in the regional power plan and not in the Company's conservation potential assessment.

[15] Refer to the draft 6th Power Plan, page E-7
[16] Refer to the draft 6th Power Plan, page J-8
[17] As defined by the Council, the efficient frontier represents the set of portfolios with the least cost for a given risk level. Risk is defined as "TailVar90", which is the mean of the highest 10 percent of portfolio net present values.

The effect is an overstatement (in the later years) of lighting potential affected by the standards in the Company's conservation potential assessment and 2008 IRP conservation forecast. Given the new standards begin taking effect in 2012, which is outside of the first biennial target period, no adjustments were made for this conservation forecast filing resulting from the changing standards. However, the new lighting standards will be taken into consideration at the next refresh of the Company's conservation potential assessment.

Table 8 below shows a summary of the adjustments considered by the Company in adjusting the results of the 2008 IRP in the development of PacifiCorp's ten-year conservation potential forecast and biennial target. Additional detail on each adjustment as they relate to the conservation forecast and biennial target documented in this report is provided in the Ten-Year Conservation Potential section and Appendix 4 of this document.

Table 8
Items Reviewed for Potential Adjustment

Sector	Measure	Adjustment?
Residential	Consumer electronics	Yes
	Showerheads	Yes
	Heat pump water heaters	No
	Twister CFLs, envelope measures	No
Commercial	Network PC Power management	Yes
Industrial	Energy management, transformers	No
DEI	Distribution efficiency	Yes
Modeling and other differences	10% adder	Yes
	Council's "market price adder" (PacifiCorp's "risk reduction credit")	Yes
	Lighting legislation	No

Ten-Year Conservation Potential

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

1. Potential identified directly from the 2008 IRP.
2. Changes to the 2008 IRP conservation potential due to adjustments informed by the regional power plan and involvement from PacifiCorp's DSM Advisory Group and other interested parties as documented in this report.

Tables 9 and 10 below show the annual and cumulative ten-year conservation potential in aMW respectively, followed by detail on each of the two components referenced above that comprise the potential.

Table 9
2010 – 2019 Annual Conservation Potential (aMW)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2-year	10-year
2008 IRP	3.6	3.3	3.3	3.1	3.3	3.5	3.5	3.6	3.7	3.7	6.9	34.7
Total of adjustments	0.9	1.0	1.0	1.6	1.7	1.4	1.6	1.6	1.8	1.9	1.9	14.5
2008 IRP with adjustments	4.5	4.3	4.3	4.7	5.0	5.0	5.1	5.2	5.5	5.6	8.8	49.2

Table 10
Cumulative 10-Year Conservation Potential (aMW)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2-year	10-year
2008 IRP	3.6	6.9	10.2	13.4	16.7	20.2	23.7	27.3	31.0	34.7	6.9	34.7
Total of adjustments	0.9	1.9	2.9	4.5	6.2	7.6	9.2	10.8	12.6	14.5	1.9	14.5
2008 IRP with adjustments	4.5	8.8	13.1	17.8	22.9	27.8	32.9	38.2	43.6	49.2	8.8	49.2

Potential Identified in the 2008 Integrated Resource Plan

Table 11 provides the ten-year conservation potential identified in the 2008 IRP preferred portfolio in units of capacity (MW).

Table 11
2008 Integrated Resource Plan Table 8.44 – Preferred Portfolio, Detail Level, Washington[18]

	Capacity, MW									
Resource	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
DSM, Class 2 Walla Walla	3	3	3	3	3	3	3	3	3	3
DSM, Class 2, Yakima	6	5	5	5	5	6	5	5	6	6
DSM, Class 2, WA total	9	8	8	8	8	9	8	8	9	9

[18] Refer to the 2008 Integrated Resource Plan, Volume I, page 245, Table 8.44. Note the line item "DSM, Class 2, Washington" in the 2008 IRP Table 8.44 refers to Walla Walla, not Washington in total. This correction has been made in the table above in this report and on page 2 of the Errata, 2008 IRP.

Table 12 provides the ten-year annual conservation potential in the 2008 IRP in units of energy (MWH/yr and average MW[19]) while Table 13 provides cumulative energy values.

Table 12
2008 Integrated Resource Plan – Preferred Portfolio, Washington

	Annual Energy											
	2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2-year total**	**10-year total**
MWH/yr	31,427	29,237	29,103	27,212	29,159	30,914	30,602	31,708	32,293	32,142	60,664	303,796
aMW	3.6	3.3	3.3	3.1	3.3	3.5	3.5	3.6	3.7	3.7	6.9	34.7

Table 13
2008 Integrated Resource Plan – Preferred Portfolio, Washington

	2010 - 2019 Cumulative Energy									
	2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
MWH/yr	31,427	60,664	89,767	116,979	146,138	177,051	207,653	239,361	271,654	303,796
aMW	3.6	6.9	10.2	13.4	16.7	20.2	23.7	27.3	31.0	34.7

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 DSM resources identified in the preferred portfolio are the resources 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).

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 29 zones or "bubbles". These models also simulate spot markets to optimize sales and purchases of energy for 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

[19] 1 average MW (aMW) = 8,760 MWH/yr

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[20] 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 163-169 of the 2008 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 cost. The supply curve is specified as 840 distinct resource options, reflecting quantities available by load area, year, and cost.

The conservation potential assessment analysis included a review of 156 unique measures across the residential, commercial industrial and irrigation sectors. Of those 156, there were 78 in the commercial sector, 62 in the residential sector, 13 in the industrial sector and 3 in the irrigation sector. Considering all permutations of these measures across all customer sectors, customer segments, and states, customized data was compiled and analyzed for nearly 12,500 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.[21]

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.

[20] 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.
[21] The Company's conservation potential assessment is provided in Appendix 2.

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 2008 IRP (pages 97-133) summarizes the data resources used to develop the resource options entered into the IRP models. Chapter 7 of the 2008 IRP (specifically the "General Assumptions and Price Inputs" section, pages 97-133) cites applicable sources for key input assumptions used in the IRP modeling.

Conservation

For development of the conservation supply curve, a number of primary and secondary data collection approaches were used by the DSM potentials development project team (PacifiCorp and contractor staff).[22] PacifiCorp provided load forecasts, economic assumptions (discount rates and conservation credits), historical energy-efficiency activities, current customer counts and forecasts, and the 2004 Energy Decisions Surveys for the residential and commercial sectors. The contractor team—Quantec (now called the Cadmus Group, Inc.), Summit Blue Consulting, and Nexant, Inc.—conducted two surveys to obtain primary data. The first involved more than 200 PacifiCorp customers in the commercial and industrial sectors, and was used in the assessment of energy-efficiency potential, primarily to develop estimates of market acceptance. The second survey targeted 30 HVAC and lighting contractors, and was used to assess variations in costs for urban and rural populations and to validate measure characterization assumptions. The survey instruments can be found in Assessment of Long-Term System-Wide Potential for Demand-Side and Other Supplemental Resources, Volume II, Appendix A.[23]

The contractor team also relied on several entities for data, including the Council, the Regional Technical Forum (RTF), 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 DSM potential study is both included as Appendix 2 in this document and is available for download from PacifiCorp's DSM Web site: http://www.pacificorp.com/env/dsm.html.

[22] The DSM potential study covered 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.

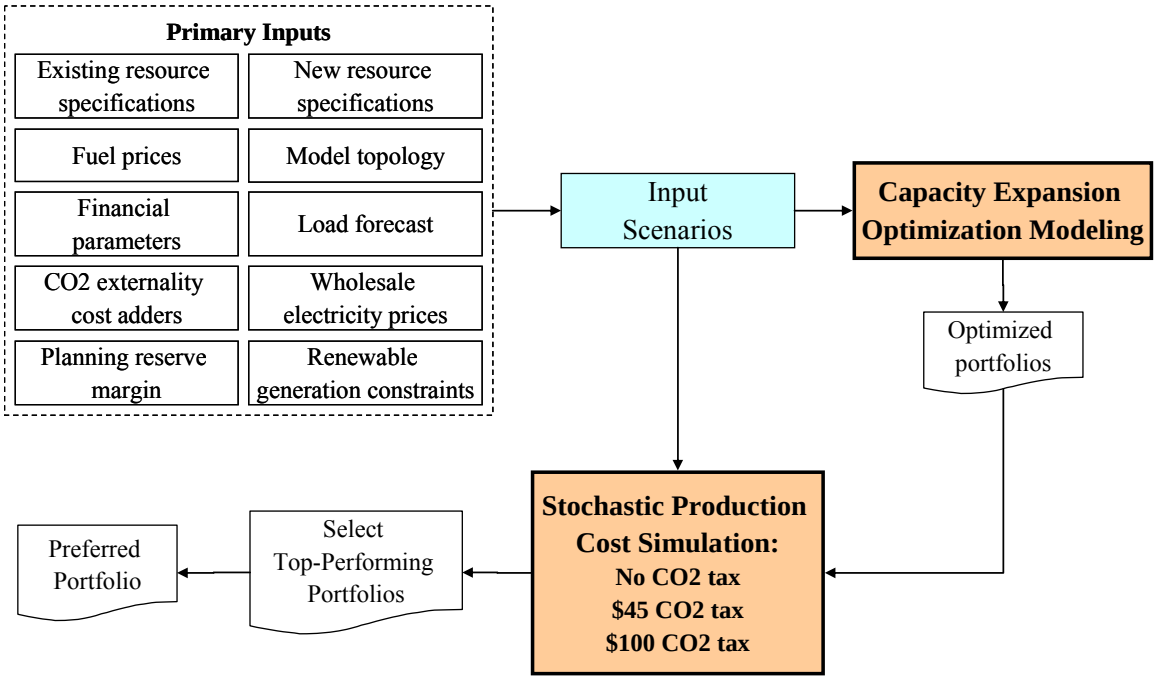
[23] The Company's conservation potential assessment is provided in Appendix 2.

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 2008 IRP, PacifiCorp developed 56 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-one of the 56 portfolios were subsequently simulated using the Planning and Risk system. For each of the 31 portfolios, PacifiCorp conducted three Monte Carlo simulations using different CO_2 cost assumptions to capture risk associated with an uncertain CO_2 regulatory cost liability.

To select its 2008 IRP preferred resource portfolio, PacifiCorp ranked the portfolios on the basis of a composite performance score developed from the output of the stochastic production cost simulations as well as portfolio capital cost estimates produced by System Optimizer. The

composite score consists of seven portfolio performance measures that are weighted based on their importance in meeting the Company's resource planning objectives. The performance measures cover (1) expected and "tail" costs (i.e., the extent of worst cost outcomes), (2) year-to-year total cost variability, (3) capital cost magnitude, (4) carbon dioxide cost risk, (5) production cost variability across the 100 simulation iterations, and (6) two measures that capture supply reliability risk.

In addition to performance scores, such considerations as procurement risks, rate impacts, resource diversity, and planning flexibility afforded by resource type, were also relied upon to select the IRP preferred portfolio. In keeping with various state IRP standards and guidelines, the 2008 IRP preferred portfolio was judged to be the least-cost set of resources after accounting for risk, uncertainty, and state energy regulations.

Conservation

This general methodology for 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.[24]

Using the conservation potential assessment data as the starting point, conservation resources by load area, marginal levelized cost, and year conservation resource supply curves were developed for input into System Optimizer and the Planning and Risk system as discussed above. The prime contractor for the conservation potential assessment study, Quantec, LLC (now called the Cadmus Group, Inc.), helped convert 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 2008 IRP (See pages 121 and 127-130) 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 achievable potential. PacifiCorp used an achievable potential adjustment of 85 percent in line with regional planning assumptions in the regional power plan[25]. The System Optimizer performs the role of the cost-effectiveness screen, directly competing conservation against many other resource options including market

[24] The Company's conservation potential assessment is provided in Appendix 2.
[25] For information on the 85% assumption, refer to the 2008 IRP, Volume I, page 128, and the draft 6th Power Plan, page 4-15.

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.

Assumptions

Integrated Resource Planning

Assumptions used for the 2008 IRP are documented throughout the IRP report. Key assumption references 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 provided in Chapter 7 (pages 136-138)
- Scenario design assumptions are provided in Chapter 7 (pages 141-148)
- Carbon dioxide compliance modeling and cost assumptions are cited on pages 143-145
- Alternative load growth assumptions for scenario analysis are cited on pages 145-146
- Wholesale electricity and natural gas price forecast assumptions are provided in Chapter 7 (pages 148-160)

Conservation

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 2027 measure potential by state and urban or rural area. Appendix C 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. The detailed assumptions behind the building simulation models are given in Appendix F of the DSM potential report.

The conservation potential assessment incorporated potential from "emerging technology" measures[26] that are not yet widely available, but are expected to become so over the planning horizon. This is consistent with the regional power plan.

Adjustments to the 2008 IRP Conservation Potentials and Target

In reviewing the regional power plan as part of the analysis identifying PacifiCorp's ten-year conservation potential and biennial target, key sector, measure and modeling differences were identified and analyzed, resulting in adjustments to the Company's projected ten-year

[26] Emerging technology measures are described in the Assessment of Long-Term, System-Wide Potential for Demand-Side and Other Supplemental Resources: Appendices (volume II). Residential emerging technology measures are on pages C-10 to 13; commercial emerging technology measures are described on pages C-27 to 29.

conservation potential. Table 14 below shows the measures and modeling differences identified which resulted in an adjustment to the 2008 IRP targets in this filing.

As described in the Source for Conservation Potential and Biennial Target section of this filing (see above), with the assistance of The Cadmus Group, the Company noted a difference between the customer technical potential identified by the regional power plan and the PacifiCorp conservation potential assessment. The differences were highest in the residential, industrial and distribution efficiency sectors and measures.

Based on the above noted comparison and analysis, the company focused on measures within the sectors with key differences in two-year technical potential as well as modeling and other differences to assist in determining whether adjustments were needed to the conservation potential identified in the 2008 IRP for the purposes of this filing. Table 14 below provides an overall summary of the areas where PacifiCorp determined adjustments were required to its 2008 IRP conservation potential prior to filing the Company's ten-year conservation forecast and biennial target provided in this report.

Table 14
Measures and Modeling Differences Identified for an Adjustment

Sector	Measure
Residential	Consumer electronics
	Showerheads
Commercial	Network PC Power management
DEI	Distribution efficiency
Modeling and Other Differences	
10% adder	
Council's "market price adder" (PacifiCorp's "risk reduction credit")	

Table 15 below provides the annual average MW (aMW) for each adjustment. More detail on each adjustment is included below with further detail in Appendix 4.

Table 15
2010 - 2019 Annual Conservation Potential - Summary of Adjustments (aMW)

		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2-year	10-year
2008 IRP		3.6	3.3	3.3	3.1	3.3	3.5	3.5	3.6	3.7	3.7	6.9	34.7
Adjustments													
Residential	Consumer Electronics	0.1	0.2	0.2	0.3	0.4	0.5	0.5	0.6	0.7	0.7	0.2	4.1
Residential	Showerheads	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.7	1.7
Commercial	Network PC Power Control	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	1.1
Distribution efficiency	Distribution Efficiency	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.7	0.7	0.8	0.3	5.1
Modeling	10% Adder	0.0	0.0	0.0	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.6
Other	Risk Reduction Credit	0.2	0.2	0.0	0.1	0.2	0.2	0.3	0.2	0.2	0.3	0.4	2.0
Total of adjustments		0.9	1.0	1.0	1.6	1.7	1.4	1.6	1.6	1.8	1.9	1.9	14.5
2008 IRP with adjustments		4.5	4.3	4.3	4.7	5.0	5.0	5.1	5.2	5.5	5.6	8.8	49.2

Consumer Electronics

As previously noted, the 2008 IRP is based on data from PacifiCorp's conservation potential assessment, which essentially relied on data from 2006 or earlier in its development. Consumer electronics, especially televisions, have evolved significantly over the last several years and as a result the data used in the development of the regional power plan was deemed more current for these measures. Savings from consumer electronics are calibrated on a "per home" basis rather than energy consumed or sales. On average, PacifiCorp's residential housing counts are below the regional average due to the rural nature of the company's Washington service area and availability of gas, both leading to higher average per customer use than the regional average assumes. For specifics on the housing data used and source, additional data is available in Appendix 5.

Showerheads

The showerhead measure in the 2008 IRP was for a replacement of a 4.0 gallon per minute (GPM) showerhead with a 2.5 GPM showerhead. The measure in the regional power plan is the replacement of a 2.5 GPM showerhead with a 2.0 GPM showerhead. The two measures are both possible, so the potential from the regional power plan for this measure is added to the potential identified in the 2008 IRP. This measure is also one where the savings is calculated on a "per home". On average, PacifiCorp's residential housing counts are below the regional average, this is due to the rural nature of the company's Washington service area and availability of gas, both leading to higher average per customer use than the regional average assumes. The adjustment is therefore based on the Company's share of regional housing units with electric water heat.

Network PC Power Control

This measure is included in the regional power plan's conservation assessment however wasn't part of the Company's conservation potential assessment and 2008 IRP. Savings for this measure

in the regional power plan were based on an estimated number of personal computers per employee within the business sector. PacifiCorp has no verifiable source for this type of information relevant to our service area at this time therefore has based our adjustment on the Company's share of data provided and savings identified by the Council using the regional averaging sales allocation methodology.

Distribution Efficiency

Like Network PC Power Controls the conservation potential for Distribution Efficiency was included in the regional power plan's conservation assessment however wasn't part of the Company's conservation potential assessment and 2008 IRP. In the preparation for the development of the regional power plan, a regional study, conducted by RW Beck, was done to approximate the opportunity from improving the voltage regulation of utility distribution systems among other improvements. PacifiCorp is currently reviewing that study and has plans to conduct a study specific to the Company's distribution systems. Until such time as the PacifiCorp study is available, the Company will assume the results of the regional study and savings assumed by the Council in the regional power plan again using the regional averaging sales allocation methodology. The Council assumed a reasonable ramp-in period for this measure, reducing PacifiCorp's risk of adopting their results in the near-term.

Modeling differences - 10% Adder

The 2008 IRP is a multi-state resource plan and did not recognize the Regional Act Credit (10% adder) when selecting conservation resources in the 2008 IRP. As a result, it was necessary for PacifiCorp to account for this modeling difference for alignment with the regional power plan's modeling that incorporated the adder. Conservation resources available in Washington were re-modeled using the Company's IRP capacity expansion optimization model in order to account for the 10% adder. The methodology used was consistent with that used in the modeling for the regional power plan. The Company applied the input assumptions used to develop the 2008 IRP preferred portfolio, including a $45/ton (in 2008 dollars) carbon dioxide cost beginning in 2013. Major non-conservation resources were fixed in the portfolio, including the 200 MW of Washington wind in 2011 as well as natural gas resources added in Utah in 2014 and 2016. Resources allowed to be optimized included firm market purchases ("front office transactions"), distributed generation, and Class 1 (load control) DSM programs. The approach consisted of first running the System Optimizer capacity expansion model with the base input assumptions and fixed resources for 2009 through 2028, then running the model with Washington conservation resource costs reduced by the 10% value, and, finally, computing the differences in annual capacity and energy between the two model runs. The results were then added to the 2008 IRP conservation potential in this filing.

The 10% adder adjustment results in a slight increase in the targets for 2013 and 2014. This reflects PacifiCorp's capacity and energy requirements, additional Washington wind resources, and other alternative energy options in the near-term.

Table 15 above shows the adjustment to the 2008 Integrated Resource Plan targets to account for the 10% adder. Please refer to Appendix 4 for further detail on the Company's efforts to quantify the impact of the 10% adder and explanation for the lack of near-term impact.

Other Differences – Council's "market price adder", PacifiCorp's "risk reduction credit"

PacifiCorp's demand side management and resource planning teams met with representatives from Council staff and participated in a conference call on December 21, 2009, to explain and discuss their respective conservation modeling methodologies. One of the topics for discussion was capturing and valuing the benefits of energy conservation in portfolio analysis, and how the Council accomplishes this, in part, through the use of a *market price adder.* PacifiCorp was asked by the Washington Demand-side Management Advisory Group to evaluate the applicability of the Council's market price adder to the Company's own conservation modeling methodology.

The role of the Council's market price adder is to ensure that the full risk mitigation value of conservation is accounted for in determining the cost-effective amount of conservation to include in resource portfolios developed by the Council's Regional Portfolio Model. PacifiCorp's understanding is that the adder is the price needed to shift a portfolio to the "efficient frontier" for the population of portfolios.[27]

After evaluating the applicability of estimating a risk mitigation cost credit to PacifiCorp's IRP models, the Company developed two separate cost credits representing different aspects of risk mitigation. These two cost credits were then applied to the Washington conservation cost curves, and the capacity expansion model used to derive a new set of conservation targets. This risk mitigation cost credit methodology reflects a broader effort by the Company to improve the characterization of resource risk across IRP models that will carry over into the next IRP.

Please refer to Appendix 4 for further detail on the Company's efforts to quantify the impact of the risk reduction credit.

[27] As defined by the Council, the efficient frontier represents the set of portfolios with the least cost for a given risk level. Risk is defined as "TailVar90", which is the mean of the highest 10 percent of portfolio net present values.

Biennial (2010 - 2011) Conservation Target

Conservation Target

PacifiCorp's biennial conservation target for 2010 and 2011 is 8.8 aMW[28].

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 target represents the achievable conservation potential for 2010 and 2011 and is 18% of PacifiCorp's ten-year conservation potential forecast for the planning years 2010 - 2019.

Range for the Target

The Company influences but does not control all aspects of achieving its conservation targets. It relies upon customer action, availability of equipment, availability of qualified installation contractors, among other variables. For this reason, setting a hard target increases the Company's risk of the achievement of the biennial target as stated. Despite this risk, the Company will aggressively pursue the biennial targets as stated in absolute terms.

Types of Resources

The ten-year potential identifies resources without identifying how the savings will be achieved. Savings may be achieved using a variety of methods which include but are not limited to the following:

- Customer participation in Company programs approved by the Commission,
- Utility system initiatives such as distribution efficiency improvements,
- Savings acquisitions from regional efforts such as Northwest Energy Efficiency Alliance activities,
- Savings from energy code and standards changes not already accounted for in the ten-year potential, and
- Savings from naturally occurring conservation[29] not already captured in one of the above types of resources.

Savings from these sources, subject to reasonability and acceptable methods for measurement and quantification, may be reported toward achieving the biennial conservation target.

[28] 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 include line losses between the customer site and the generation source. The Company's assumed line losses by sector are 11.031% for residential, 10.834% for commercial and 9.137% for industrial. These values are based on the Company's 2001 Transmission and Distribution Loss Study by Management Applications Consulting published in June 2004.

[29] 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, July 11, 2007, page 6.)

Reporting and Evaluation

Reporting

In the Accounting Order in Docket No. UE-001457, the Commission ordered the Company to report System Benefits Charge ("SBC") collections and demand-side management expenditures on a semi-annual basis with reports due within 45 days of the end of the second and fourth quarters. In compliance with this Order, the Company has provided SBC collections and demand-side management expenditures to the Commission on a semi-annual basis. The Company has also reported savings acquisitions by program on an annual basis for Company demand-side management programs approved by the Commission.

WAC 480-109-040 defines the annual requirements for reporting utility progress towards meeting conservation targets. As stated above in the Biennial (2010 - 2011) Conservation Target section of this report, PacifiCorp's proposed biennial target reflects more than the Company's currently approved demand-side management programs are designed to acquire. As such, the WAC 480-109-040 annual reporting may include savings reported for one or more of the resource types presented in Table 17 below, which contains detail on reporting for each of the types of resources listed above in the Biennial (2010 - 2011) Conservation Target section of this report.

Evaluation

For Company programs approved by the Commission, the Company has already provided evaluation plans in its program filings in which the programs were initially proposed by the Company and approved by the Commission. Table 17 below provides the docket number reference for each of the filings which contain evaluation plans for each of the current approved PacifiCorp DSM programs in Washington. In general, the Company selects evaluation contractors using a competitive procurement process. The Company requests that respondents demonstrate an understanding of the California Evaluation Framework, which references the International Performance Measurement and Verification Protocols ("IPMVP"). The Company and the selected third party evaluation contractor(s) prepare a more detailed evaluation scope of work as part of the procurement process for specific program evaluations. Final evaluation approaches are guided by protocols, such as the IPMVP. The Company provides draft evaluation reports to its Washington DSM advisory group and requests comments, which are incorporated as appropriate into the final evaluation report. Table 16 provides more information about the evaluation for each type of resource listed above in the Biennial (2010 - 2011) Conservation Target section of this report.

Table 16
Reporting and Evaluation by Type of Resource

Type of resource	Reporting	Evaluation
Customer participation in Company programs approved by the Commission	Currently reported in the Company's DSM annual report filed in accordance with the Commission's Accounting Order in Docket No. UE-001457. Deemed savings are reported for most residential measures. For non-residential measures, Energy FinAnswer results are reported based on a post-installation inspection (includes commissioning for more complex measures). FinAnswer Express savings reporting varies based on the measure type and includes a combination of post-installation inspection, deemed savings, and simplified calculation based on installed equipment.	Programs evaluated based on the evaluation plan included with the program filing[30].
Savings acquisitions from Northwest Energy Efficiency Alliance activities	As reported by the Northwest Energy Efficiency Alliance[31]	The Northwest Energy Efficiency Alliance is responsible for evaluation.
Utility system initiatives, such as distribution efficiency improvements	Prior to 2010, the Company has not reported savings from utility system initiatives. Plan for 2010: 1. Provide the DSM advisory group with a plan for a study of the distribution efficiency potential specific to PacifiCorp's distribution system in Washington 2. Share the results of the study and proposed next steps with the DSM Advisory Group 3. To the extent measures are implemented and savings is achieved in the 2010-2011 Biennial Target period, savings would be reported based on PacifiCorp's analysis of the measures that are installed and using the existing system and operation as a baseline.	To be determined at a later date based on the efficiency improvements that may be identified for implementation

[30] Evaluation plans were included with the program filings identified in the Table 17.
[31] The Company has a seat on the Northwest Energy Efficiency Alliance Board of Directors and participates in the Alliance expert committees.

Type of resource	Reporting	Evaluation
Savings from other regional activities and initiatives	If savings from this type of resource are reported, it will be based either on a proportionate share of savings identified via a regional effort or based on an analysis specific to PacifiCorp's Washington service area, whichever case was used in the identification of the conservation forecast and target. Efforts will be made to avoid double-counting savings (e.g. with Northwest Energy Efficiency Alliance savings reporting).	Based either on a proportionate share of savings identified via a regional evaluation or based on an evaluation specific to PacifiCorp's Washington service area, whichever case was used in the identification of the conservation forecast and target.
Savings from energy code and standards changes not already accounted for in the ten-year potential	The ten-year conservation potential identified in this document incorporates energy code and standards changes that were known at the time of the Company's conservation potential assessment. Energy code and standards changes that have not been anticipated may become effective during the ten year (and possibly the two year) planning periods covered in this report. If energy code or standards change and the Company intends to report related savings toward its biennial conservation target, savings reporting will be based either on a proportionate share of savings identified via a regional effort or based on an analysis specific to PacifiCorp's Washington service area, whichever case was used in the identification of the conservation forecast and target. Efforts will be made to avoid double-counting savings (e.g. with Northwest Energy Efficiency Alliance savings reporting).	Based either on a proportionate share of savings identified via a regional evaluation or based on an evaluation specific to PacifiCorp's Washington service area, whichever case was used in the identification of the conservation forecast and target.
Naturally occurring conservation	The 10-year conservation potential identified in this document includes potential without regard to whether the savings is achieved via program participation or otherwise. If a significant reduction in potential occurs outside of Company programs (e.g. a community receives 100% funding from federal stimulus money for a significant weatherization effort outside Company programs), the Company may elect to report these savings. If this is the case and the	Based either on a proportionate share of savings identified via a regional evaluation or based on an evaluation specific to PacifiCorp's Washington service area, whichever case was used in the identification of the conservation forecast and target.

Type of resource	Reporting	Evaluation
	Company intends to report savings toward its biennial conservation target, savings reported will be based either on a proportionate share of savings identified via a regional effort or based on an analysis specific to PacifiCorp's Washington service area, whichever case was used in the identification of the conservation forecast and target. Efforts will be made to avoid double-counting savings (e.g. with Northwest Energy Efficiency Alliance savings reporting).	

Table 17
Reference to Evaluation Plans in Program Filings

Advice No.	Docket No.	Date on filing	Requested effective date	Schedule	Program
Advice No. 06-004	UE-061297	8/11/2006	9/14/2006	118	Home Energy Savings
Advice No. 05-004	UE-050319	3/1/2005	4/1/2005	107	Residential Refrigerator Recycling
Advice No. 04-03	UE-040608	3/31/2004	5/1/2004	115	FinAnswer Express
Advice No. 01-011	UE-010826	6/5/2001	6/28/2001	125	Energy FinAnswer

Commission Staff and Public Involvement in Developing Potential and Target

In accordance with WAC 480-109-010(3)(a), PacifiCorp involved the Commission staff and other interested parties from the public in the development of its ten-year conservation potential and biennial target proposed herein. In addition to Commission staff, representatives from the following organizations were invited to participate in the Company's conservation potential development process: Public Counsel, the NW Energy Coalition, the Washington Department of Commerce, the Energy Project, the Blue Mountain Action Council, the Northwest Community Action Center, the Northwest Energy Efficiency Council, the Opportunities Industrialization Center of Washington, and the Industrial Customers of Northwest Utilities.

PacifiCorp held several meetings to seek input regarding and to discuss the development of its conservation targets. PacifiCorp found these meetings, and the input received therein, to be highly beneficial in the development of its conservation potential and biennial target. In fact, as a direct result of input received during these meetings, the Company determined the risk reduction credit adjustment was appropriate to include in the development of its conservation potential and biennial target. This adjustment adds 2.0 aMW to PacifiCorp's ten-year potential and 0.4 aMW to its 2010 - 2011 biennial conservation target. A summary of the meetings held with the parties listed above and the topics discussed therein is provided in Table 18 below.

Table 18
Overview - Commission Staff and Public Involvement

Date	Summary
10/15/2009	Initial meeting with the DSM advisory group. Declaration and rational provided as to the use of the Company's conservation potential assessment and 2008 IRP as the source for filing the Company's ten-year conservation forecast and biennial target. Outlined the process and analysis planned for this filing, soliciting comments on the process and planned work
11/18/2009	Provided initial analysis results and reviewed the preliminary ten-year potential and biennial target figures with the DSM advisory group
12/8/2009	Commission staff met with the Company and Cadmus Group, Inc. to review and become better acquainted with the conservation potential assessment, the foundational document used in the development of the 2008 IRP
12/10/2009	Reviewed the preliminary draft report with the DSM advisory group and other interested parties, soliciting comments on areas missing and level of detail
12/21/2009	Company and Council met via teleconference to discuss the methodology for the 10% adder as well as the Council's market price adder.
12/22/2009	Following the incorporation of feedback received from the December 10 meeting, reviewed the second draft of the report with the DSM advisory group and other interested parties, again soliciting feedback on the current report
12/30/2009	Provided Company analysis via e-mail on the 10% adder (Regional Act Credit) to the DSM advisory group and other interested parties, requested feedback on the analysis and results
12/31/2009	As required under WAC 480-109-010(1) provided the Company's initial ten-year conservation potential via e-mail to the DSM advisory group and other

Date	Summary
	interested parties (Commission records center also received a copy)
1/15/2010	Company contacted the DSM advisory group and other interested parties to determine interest in another meeting to address any outstanding questions. Meeting was not convened as the majority declined to meet.

Conclusion

The cumulative ten-year conservation potential documented in this report is **49.2** aMW. The biennial conservation target for 2010 and 2011 is **8.8** aMW[32].

The Company began the process of identifying its ten-year potential and biennial target with the potential identified in the 2008 IRP, which was informed by the Company's conservation potential assessment specific to the Company's customers and loads. If the Company used its IRP without any adjustments, its ten-year conservation potential would be 34.7 aMW with a biennial target of 6.9 aMW for 2010 and 2011.

As demonstrated in this report, the Company reviewed the Northwest Power and Conservation Council's planning methodology, modeling methodology and practices, and measure sets used in the development of the most recent regional power plan. From this review, the Company identified the adjustments necessary to comply with the requirements of WAC 480-109-010 and account for all cost-effective conservation potential available in the Company's Washington service area. The adjustments were applied to the 2008 IRP conservation potential to arrive at the ten-year conservation potential and 2010 - 2011 biennial target proposed herein. These adjustments increased PacifiCorp's ten-year potential by 14.5 aMW while the biennial target increased by 1.9 aMW.

PacifiCorp's conservation potential assessment and its use within the 2008 IRP process, as described in this report, provides the most relevant and tailored forecast of cost-effective conservation resource opportunity available to the Company in its Washington service area over the 2010 - 2019 planning period. The adjustments noted in this report represent PacifiCorp's efforts to account for modeling and measure differences between the Northwest Power and Conservation Council's and PacifiCorp's resource planning processes. To facilitate the next conservation potential and biennial target (2012 - 2013) filing, PacifiCorp intends to follow the schedule as identified in Table 20 below.

[32] To remain consistent with the Council's regional power plan, ten-year potential and two-year target values in this report are shown prior to any net-to-gross adjustment and include line losses between the customer site and the generation source. The Company's assumed line losses by sector are 11.031% for residential, 10.834% for commercial and 9.137% for industrial. These values are based on the Company's 2001 Transmission and Distribution Loss Study by Management Applications Consulting published in June 2004.

Table 19
Proposed Schedule for Next Ten-Year Potential and Biennial Conservation Target Filing

Action Item	Scope	Estimated Schedule
Update the Conservation Potential Assessment	Incorporate measures as appropriate that were in the regional power plan and not in the 2007 conservation potential assessment which will limit the necessary adjustments needed for the Company's subsequent WAC 480-109-010 compliance filings. Update for changes in energy codes and standards, including the federal lighting legislation.	Completion in 2010
2010 Integrated Resource Plan	Incorporate data from updated conservation potential assessment. Continue to investigate and refine approaches to address modeling differences identified in this document.	Begin work in 2010, file by 3/31/2011
Advisory Group Meeting	Begin formal discussion on the next ten-year conservation potential and two-year target to be filed by January 31, 2012.	Proposed first meeting in July 2011

List of Appendices

1. 2008 Integrated Resource Plan - PacifiCorp's 2008 Integrated Resource Plan filed on May 29, 2009 (Docket No. UE-080826) and acknowledged by the Washington Utilities and Transportation Commission on September 2, 2009. The 2008 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 July 11, 2009. This report is available at http://www.pacificorp.com/env/dsm.html.

3. Comparison of methodologies - Northwest Power and Conservation Council's Regional Power Plan and PacifiCorp's Integrated Resource Plan

4. Additional Detail on Adjustments made to PacifiCorp's 2008 IRP Conservation Targets

5. Demographic Information on PacifiCorp's Washington Service Area

6. List of Measures selected for 2010 and 2011 in the Preferred Portfolio during PacifiCorp's 2008 IRP Process

7. PacifiCorp's share of the Northwest Power and Conservation Council's Regional Conservation Target for Washington (based on the draft 6th Plan dated 09/03/09). The Council's Draft 6th Power Plan is available at: http://www.nwcouncil.org/energy/powerplan/6/default.htm

Appendix 1
PacifiCorp's 2008 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 Methodologies
Northwest Power Plan and PacifiCorp Integrated Resource Plan

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. This analysis demonstrates the consistency of the methodologies used in the development of both plans.

The information on the left side of the Table A3-1 below is Tom Eckman's outline of major elements for the Northwest Power and Conservation Council's Methodology for Determining Achievable Conservation Potential[33]. 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 2008 Integrated Resource Plan methodology. Differences are highlighted in yellow.

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

Northwest Power and Conservation Council		**PacifiCorp 2008 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 156 "unique" measures in its conservation potential assessment, inclusive of all measures included in the Council's 5th Plan (the current plan at the time). Distribution efficiency improvement (DEI) and the PC network management measure are in the 6th Plan, but not in PacifiCorp's 2008 IRP and are accounted for in this filing.
	b) Methodology	
	i) Technically feasibility savings = Number of applicable units * incremental savings/applicable unit	PacifiCorp used same methodology.
	ii) "Applicable" Units accounts for	

[33] Provided by Tom Eckman to utilities in attendance at a kickoff 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 2008 IRP
	(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.
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.	Total Resource Cost is the criterion for economic screening in the 2008 IRP. The 2008 IRP did not include the regional act credit, and it is discussed in the adjustments section of this filing.
	i) TRC B/C Ratio $\geq$ = 1.0	

Northwest Power and Conservation Council		PacifiCorp 2008 IRP
	ii) Levelized cost of conserved energy (CCE) ≤ 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	
	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)	PacifiCorp analyzed potential under 3 (baseline, high, low) avoided cost decrements for 2007 and 2 (expected, high) market penetration assumptions.
	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 $23/kW-yr. The 6th Plan uses a distribution-only credit of $25/kW-yr.
	v) Non-energy benefits (e.g. water savings)	These benefits were not included. The additional non-electric benefits in most cases will not have a decisive effect on cost effectiveness of the measure.
	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

Northwest Power and Conservation Council		PacifiCorp 2008 IRP
		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 values of $0, $45, $70, $100, and $45 with real escalation.
	e) Discounted Presented Value Inputs	
	i) Rate = After-tax average cost of capital weighted for project participants (real or nominal)	PacifiCorp used the weighted 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	PacifiCorp's 2008 IRP model treats DSM and supply options equally. Refer also to discussion of the regional act credit.
	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. For the 2008 Integrated Resource Plan the DSM supply curves were structured as 1/20th of the 20-year potential.
	(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	
	(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)	
	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 will revise its estimates of achievable potential based on latest data and, particularly, the effects Federal codes and standards established in EISA in the next compliance filing.

Northwest Power and Conservation Council		PacifiCorp 2008 IRP
	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.
	ii) Use International Performance Measurement and Verification Protocols (IPMVP) as a guide	

Appendix 4
Additional Detail on Adjustments made to PacifiCorp's 2008 IRP Conservation Targets

Consumer Electronics

The 2008 IRP is based on data from the conservation potential assessment, which is essentially from 2006 and before for this category. Consumer electronics, especially televisions, have evolved significantly since then. The data in the regional power plan is more current, so the Company is adding potential from the regional power plan (tailored to the Company's Washington service area) for this category.

This category is one where the savings is essentially "per home". Rather than an allocation based on MWH sales, the adjustment for this category is based on the Company's Washington share of housing units in the region. This allocation change is necessary because the Company's average annual MWH/residential consumer is 30% higher than the average for the four-state area of Oregon, Washington, Idaho, and Montana. Refer to Table A4-1 for detail.

Table A4-1 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 Oregon, Washington, Idaho, and Montana.

Table A4-1

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
WA/OR/ID/MT	67,644,242	5,452,210	12.4

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

Given the Company's higher average annual use per residential customer in Washington, Table A4-2 shows the assumed number of residential customers given PacifiCorp's 2007 residential sales of 1,626,726 MWH/yr and the average annual MWH/consumer for PacifiCorp in Washington, Washington as a whole, and the 4-state total for Oregon, Washington, Idaho, and Montana. An allocation based on MWH sales would imply PacifiCorp has approximately 31,000 more homes than actual.

Table A4-2
Illustration of Number of Residential Consumers
Based on the Different Average Annual MWH/consumer in Table A4-1

	Residential Sales (MWH)/yr (a)	Annual MWH/residential consumer (b)	Calculated # Residential Consumers (a/b)
PacifiCorp - WA	1,626,726	16.1	101,245
WA State-wide	1,626,726	12.9	126,331
WA/OR/ID/MT	1,626,726	12.4	131,116

Table A4-3 shows the detail for the adjustment calculation for the consumer electronics measures. The adjustment totals by year in aMW are in the last line of the table.

Table A4-3
Determination of Adjustment to 2008 IRP – Consumer Electronics

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Comments
Council # housing units	5,890,223	5,982,378	6,072,702	6,162,137	6,251,531	6,341,723	6,432,447	6,523,234	6,614,064	6,704,928	PNWResSectorSupplyCurveUnits_6th Plan
PacifiCorp # housing units	104,495	105,384	106,282	107,275	108,337	109,598	110,883	112,132	113,351	114,547	customer forecast used in CPA
PacifiCorp % of region housing units	1.8%	1.8%	1.8%	1.7%	1.7%	1.7%	1.7%	1.7%	1.7%	1.7%	
Council # TV per household	2.85	2.87	2.88	2.90	2.91	2.93	2.95	2.97	2.98	2.99	PNWConsumerElectronicsSupplyCurve_6th, Appendix_ResEconDrivers
Council # PC per household	1.26	1.31	1.36	1.40	1.44	1.47	1.50	1.53	1.56	1.59	PNWConsumerElectronicsSupplyCurve_6th, Residential_Desktops

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2-year	10-year
PacifiCorp share of regional savings based on % of region MWH sales (aMW)												
Energy Star - Weighted Average TV	0.07	0.12	0.18	0.24	0.30	0.36	0.42	0.47	0.53	0.59	0.19	3.28
Energy Star - Set top box	0.01	0.03	0.04	0.06	0.07	0.09	0.10	0.12	0.13	0.13	0.04	0.78
Energy Star - Weighted Average Residential Monitor	0.01	0.01	0.02	0.02	0.03	0.04	0.04	0.05	0.05	0.06	0.02	0.33
Energy Star - Weighted Average Residential Desktop	0.03	0.06	0.09	0.11	0.14	0.17	0.20	0.22	0.25	0.28	0.09	1.56
Total based on % of MWH sales	0.12	0.22	0.33	0.44	0.54	0.65	0.76	0.86	0.97	1.06	0.34	5.94

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2-year	10-year
PacifiCorp share based on % of region housing units (aMW)												
Energy Star - Weighted Average TV	0.05	0.09	0.13	0.17	0.21	0.25	0.29	0.33	0.37	0.41	0.13	2.28
Energy Star - Set top box	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.09	0.03	0.54
Energy Star - Weighted Average Residential Monitor	0.00	0.01	0.01	0.02	0.02	0.02	0.03	0.03	0.04	0.04	0.01	0.23
Energy Star - Weighted Average Residential Desktop	0.02	0.04	0.06	0.08	0.10	0.12	0.14	0.16	0.17	0.19	0.06	1.08
Total based on PacifiCorp % of housing units	0.08	0.16	0.23	0.31	0.38	0.45	0.53	0.60	0.67	0.73	0.24	4.13

Showerheads

The showerhead measure in the 2008 IRP is for a replacement of a 4.0 gallon per minute (GPM) showerhead with a 2.5 GPM showerhead. The measure in the regional power plan is replacement of a 2.5 GPM showerhead with a 2.0 one. The two measures are both possible, so the potential from the regional power plan for this measure is added to the potential identified in the 2008 IRP. This measure is also one where the savings is "per home with electric water heat". The adjustment is based on the Company's share of regional housing units with electric water heat.

Table A4-4
Comparison of % of Housing Units with Electric Water Heat

Residential Housing Units w/ Electric WH	WH fuel share	
Council # housing units with electric water heat	64%	DHW & Appliance Units sheet in PNWResSectorSupply CurveUnits_6thPlan
PacifiCorp # housing units with electric water heat	72%	Energy Decisions Survey, weighted avg across all res bldg types

Table A4-5
Determination of Adjustment to 2008 IRP – Showerhead

Residential Housing Units	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	Comments	
Council # housing units	5,890,223	5,982,378	6,072,702	6,162,137	6,251,531	6,341,723	6,432,447	6,523,234	6,614,064	6,704,928	PNWResSectorSupplyCurve Units_6th Plan	
PacifiCorp # housing units	104,495	105,384	106,282	107,275	108,337	109,598	110,883	112,132	113,351	114,547	customer forecast used in CPA	
PacifiCorp % of region housing units	1.8%	1.8%	1.8%	1.7%	1.7%	1.7%	1.7%	1.7%	1.7%	1.7%		
Residential Housing Units w/ Electric WH	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	WH fuel share	
Council # housing units with electric water heat	3,769,743	3,828,722	3,886,529	3,943,767	4,000,980	4,058,702	4,116,766	4,174,869	4,233,001	4,291,154	64%	Appliance Units sheet in PNWResSectorSupplyCurveUnits_6thPlan
PacifiCorp # housing units with electric water heat	75,236	75,876	76,523	77,238	78,003	78,911	79,836	80,735	81,613	82,474	72%	Energy Decisions Survey, weighted avg across all res bldg types
PacifiCorp % of region housing units with electric water heat	2.0%	2.0%	2.0%	2.0%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%		
	2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2-year**	**10-year**
Council's Orig Potential (Econ) aMW allocated based on MWH sales	0.43	0.43	0.43	0.43	0.43	0.00	0.00	0.00	0.00	0.00	0.86	2.14
New Potential aMW (adjusted for % of housing units with electric water heat)	0.34	0.34	0.34	0.34	0.34	0.00	0.00	0.00	0.00	0.00	0.69	1.70

Network PC Power Control

This measure is included in the regional power plan and not in the 2008 IRP. The adjustment is to add this measure to the 2008 IRP targets. The savings is estimated per personal computer and is based on the estimated number of personal computers per employee. Absent better data on the number of employees working for businesses served by PacifiCorp in Washington, the Company is adding its share of the regional target for this measure based on MWH sales.

Table A4-6
Determination of Adjustment to 2008 IRP – Network PC Power Control (aMW)

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2-year	10-year
0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.21	1.07

Distribution Efficiency

The regional power plan includes potential from distribution efficiency initiatives. This is a new source of savings that was not identified in prior regional power plans. It was not included in the 2008 IRP; however, as this technology may represent potential, it is being added to the 2008 IRP results in this filing. Absent Company specific information, the amount of potential the Company is adding is its proportionate share of the regional target for this category. Table A4-7 shows the distribution efficiency potential for the Company based on its share of the regional target using version 2.0 of the Council's utility target calculator.

Table A4-7
Determination of Adjustment to 2008 IRP – Distribution Efficiency

Option 3 - Target Based on Utility Reported Share of Total Regional Retail Sales by Sector - Adjusted for Irrigation Sales

Sector	2007 Retail Sales (MWH)	Share of Regional Sales	in its industrial sector total. In order to adjust for this, please enter your utility's 2007 retail sales in MWH for irrigation below in cell i35. The industrial sector sales will update automatically so that the total still agrees with EIA data.	Reported Industrial and Irrigated Agricultu
Residential	1,626,726	2.48%	Combined Ind & Irrig Sales (MWh)=>	997,157
Commercial	1,428,656	2.66%	Net Industrial Sales (MWh) =>	833,183
Industrial	833,183	2.37%	Enter 2007 Irrigation Sales (MWh) =>	163,974
Agriculture	163,974	2.88%		
Distribution System Efficiency	3,219,356	2.70%		
Total - All Sectors	4,052,539	2.53%		

	Annual Conservation Target (aMW)															
Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Total 2010 - 2023	Average Annual Target 2010 - 2023
Distribution System Efficiency	0.12	0.22	0.31	0.39	0.46	0.65	0.69	0.72	0.75	0.77	0.96	0.97	0.59	0.59	8.17	0.6
Total - All Sectors	5.04	5.55	6.06	6.57	7.07	7.34	8.09	8.60	8.83	9.08	9.19	9.19	9.18	9.05	108.85	7.8

Modeling Differences - 10% Adder

The 2008 IRP is a multi-state resource plan, and it does not incorporate a 10% adder (Regional Act Credit) since this adder is not recognized by all of the states. However, the 10% adder is included in the regional power plan[34]. For this filing, the Company used a modeling approach to determine the effect the 10% adder would have on the DSM targets for Washington.

The adjustment to account for the 10% adder results in a slight increase in the targets for 2013 and 2014. Table A4-8 below shows the adjustment to the 2008 IRP targets to account for the 10% adder.

Table A4-8
Determination of Adjustment to 2008 IRP – 10% Adder

Annual Energy (aMW)												
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2-year	10-year
Adjustments												
10% adder	0.0	0.0	0.0	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.6

Below is further detail on the effort to quantify the impact of the 10% adder.

PacifiCorp conducted a capacity expansion optimization study to determine the resource selection impact of reducing Washington energy conservation costs by 10 percent of the Levelized Market Prices. For this study, the Company applied the input assumptions used to develop the 2008 IRP preferred portfolio, including a $45/ton (in 2008 dollars) carbon dioxide cost beginning in 2013. Note that major non-conservation resources were fixed in the portfolio, including the 200 MW of Washington wind in 2011 as well as natural gas resources added in Utah in 2014 and 2016. Resources allowed to be optimized included firm market purchases ("front office transactions"), distributed generation, and Class 1 (load control) DSM programs. The study approach consisted of first running the System Optimizer capacity expansion model with the base input assumptions and fixed resources for 2009 through 2028, then running the model with Washington conservation resource costs reduced by the 10% value, and, finally, computing the differences in annual capacity and energy between the two model runs.

Table A4-9 below shows the Class 2 (energy efficiency) DSM Cost Bundles and Bundle Prices with the transmission & distribution (T&D) credit and 10% Market Value credit.

[34] Refer to the draft 6th Power Plan, page E-7

Table A4-9 – Class 2 DSM Bundle Prices with the T&D Credit and 10% Market Value Credit

Class 2 DSM Cost Bundle	Resource Cost Range	Bundle Price ($/MWh)	Bundle Price with $23 kw-year T&D Credit ($/MWh)	Bundle Price with T&D Credit and 10% Market Value Credit ($/MWh)
Cost Bundle 1	$0.01/kWh to $0.07/Kwh	$70	$65	$56
Cost Bundle 2	$0.07/kWh to $0.09/Kwh	$90	$83	$74
Cost Bundle 3	$0.09/kWh to $0.11/Kwh	$110	$103	$94
Cost Bundle 4	$0.11/kWh to $0.13/Kwh	$130	$123	$114
Cost Bundle 5	$0.13/kWh to $0.15/Kwh	$150	$143	$134
Cost Bundle 6	$0.15/kWh to $0.18/Kwh	$180	$173	$164

Study Results

The tables below show the annual incremental and cumulative megawatt (capacity) differences in conservation between the base and cost-reduction model runs for 2010 – 2019.

Table A4-10 - Incremental (1st year) MW Capacity Differences Between Base and Cost Reduction Runs

Year	Incremental Megawatts		Percent Diff.
	WA Base DSM	DSM with 10% Mkt Value credit	
2010	7.36	7.36	0.0%
2011	6.86	6.86	0.0%
2012	6.83	6.83	0.0%
2013	6.26	7.21	15.2%
2014	6.84	7.35	7.5%
2015	7.35	7.35	0.0%
2016	7.27	7.27	0.0%
2017	7.33	7.33	0.0%
2018	7.67	7.67	0.0%
2019	7.43	7.43	0.0%
TOTAL	71.2	72.66	2.1%

The tables below show the annual incremental (first-year) energy differences in conservation between the base and cost-reduction model runs for 2010 – 2019.

Table A4-11 - Incremental (1st year) GWH and Average MW (aMW) Energy Differences Between Base and Cost Reduction Runs

	Incremental GWH				Incremental aMW		
Year	Base DSM	DSM with 10% Mkt Value credit	Percent Diff.	Year	Base DSM	DSM with 10% Mkt Value credit	Percent Diff.
2010	31.4	31.4	0.0%	2010	3.59	3.59	0.0%
2011	29.2	29.2	0.0%	2011	3.34	3.34	0.0%
2012	29.1	29.1	0.0%	2012	3.32	3.32	0.0%
2013	27.2	30.4	11.7%	2013	3.11	3.47	11.7%
2014	29.2	30.9	5.9%	2014	3.33	3.52	5.9%
2015	30.9	30.9	0.0%	2015	3.53	3.53	0.0%
2016	30.6	30.6	0.0%	2016	3.49	3.49	0.0%
2017	31.7	31.7	0.0%	2017	3.62	3.62	0.0%
2018	32.3	32.3	0.0%	2018	3.69	3.69	0.0%
2019	32.1	32.1	0.0%	2019	3.67	3.67	0.0%
TOTAL	303.8	308.7	1.6%	TOTAL	34.7	35.2	1.6%

The average increase for the period from 2010 through 2019 was 2.1 percent on a capacity basis (1.6 percent on a gigawatt-hour energy basis).

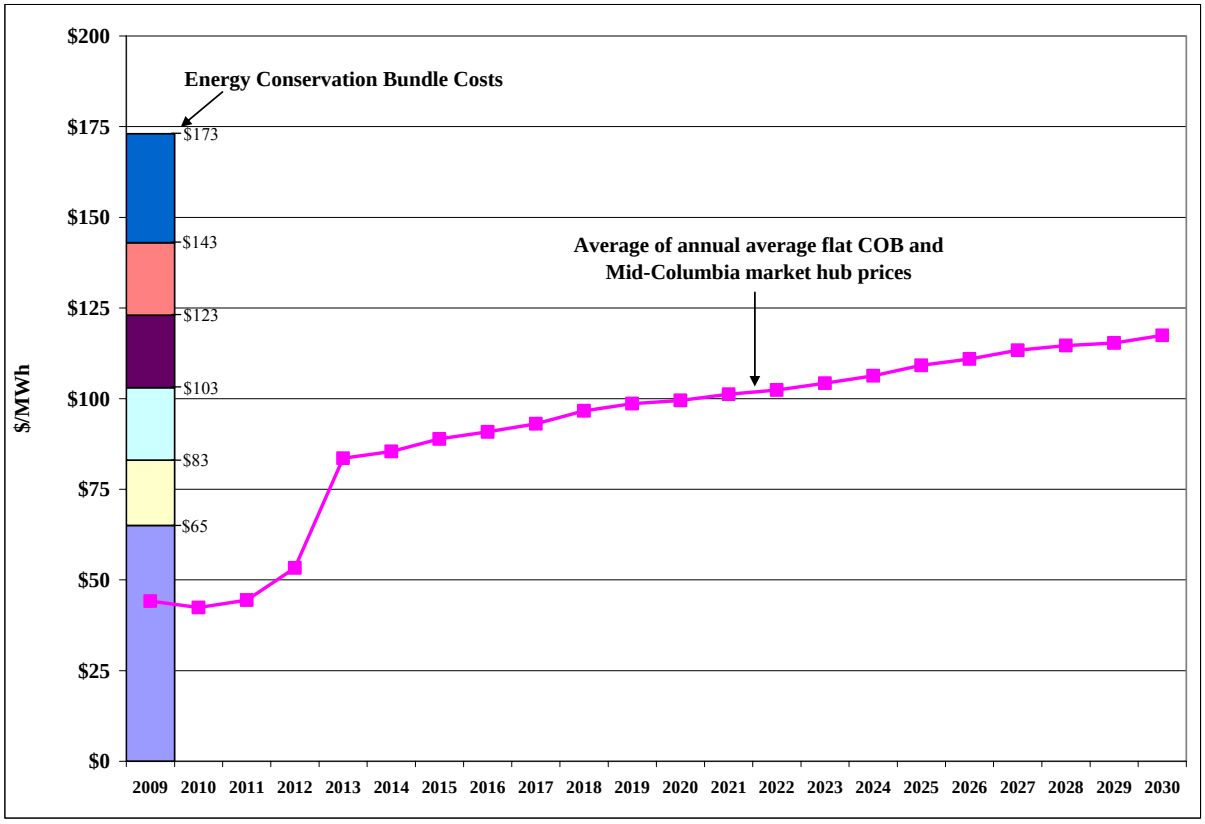
For the 2010-2011 biennial conservation target period, the 10-percent cost reduction was found to have no impact on conservation capacity selected by the System Optimizer model. The reasons for this outcome include the following:

- The west side of the system is long on capacity until 2012, and is long on energy on an average annual basis until 2012-2013.
- A significant amount of wind generation has been added in Washington and Oregon in the 2008 to 2011 period, which reduces the need for incremental resources.[35]
- Forward wholesale electricity prices are below (or at least competitive with) energy conservation costs until 2013. Low gas prices also tend to favor increased dispatch of existing gas plants over the cost of new conservation.

The following chart (Figure A4-1) shows average annual western electricity prices used for developing the 2008 IRP preferred portfolio (Table 7.15 pg 157) as compared with the per-MWh levelized conservation costs for each measure bundle. (Note that wheeling costs would need to be accounted for in making a direct comparison between conservation and market purchase costs.)

[35] Wind projects are treated as must-run generation in the model.

Figure A4-1



In addition to the role of market and gas prices, the increase in conservation capacity in 2013 and 2014 resulting from the 10-percent cost reduction—about 1.1 megawatts capacity—is attributable to an increased need for resources because of purchase contract expirations and load growth. The imposition of carbon dioxide costs in 2013 may also contribute to the increase.

A sensitivity analysis was conducted to determine the impact of the early wind resource additions on the quantity and timing of conservation and front office transactions selected. The base and cost-reduction simulations were configured to allow the model to choose the amount and timing of wind resources. (Previous portfolio modeling for the IRP indicated that the model prefers to defer the start of wind additions to 2015). The impact on wind resources was to defer them to 2015 and beyond as expected. The model selected front office transactions to make up for the deferred wind resources, as well as reduced Washington conservation capacity by 1.2 megawatts in 2009. This result supports the expectation that in the near term, conservation is not cost-effective *on the margin* relative to firm market purchases based on the forecasted prices and resource costs used in the model.

Study Considerations

A consideration for this sensitivity study is the capacity size of the conservation measure bundles and associated prices. A more granular representation of the conservation supply curve may change the marginal quantity of conservation selected by the model. However, the extent and

timing of such changes cannot be determined without reformulating the supply curve to test at what quantity-price thresholds cause resource selection changes. Nevertheless, it is reasonable to expect that a more granular supply curve would not result in materially higher conservation capacity in the near-term as a result of the 10-percent cost reduction, and using the 2008 IRP input assumptions.

Conclusion

The impact of the 10-percent cost reduction on capacity is to increase Washington conservation by about 1.5 megawatts by 2019, with the majority of the increase occurring in 2013 (about one megawatt capacity). The impact of the 10-percent cost reduction on energy is to increase Washington conservation by about 0.56 aMW over the 2010 – 2019 planning period.

Other Differences – Council's "market price adder", PacifiCorp's "risk reduction credit"

PacifiCorp and Northwest Power and Conservation Council ("Council") staff participated in a conference call on December 21, 2009, to explain and discuss their respective conservation modeling methodologies. One of the topics for discussion was capturing and valuing the benefits of energy conservation in portfolio analysis, and how the Council accomplishes this, in part, through the use of a *market price adder.* The market price adder is not specifically called out as a modeling methodology in the Council's outline of major elements document. The DSM advisory group and additional invitees participating in the public process for WAC 480-109 asked the Company to evaluate the applicability of the Council's market price adder to the Company's own conservation modeling methodology. The background and description of this effort is provided below. Table A4-12 shows the adjustment to the 2008 Integrated Resource Plan conservation potential for what PacifiCorp refers to as a risk reduction credit and the Council accomplishes via a market price adder.

Table A4-12
Determination of Adjustment to 2008 IRP – Risk Reduction Credit
(Council's Market Price Adder)

		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2-year	10-year
Modeling	Risk Reduction Credit	0.2	0.2	0.0	0.1	0.2	0.2	0.3	0.2	0.2	0.3	0.4	2.0

Below is background and further detail on this adjustment. The information is broken into two parts. Part 1 covers the planning and pre-work before any modeling work. Part 2 describes PacifiCorp's modeling work and results.

Part 1 – Planning and Pre-work to Define the Approach

This section first describes the key differences in portfolio modeling strategy adopted by the Council and PacifiCorp to provide context for the rest of the section. It then summarizes PacifiCorp's understanding of the role of the Council's market price adder, and discusses the appropriateness of implementing the adder concept in PacifiCorp's resource portfolio modeling

framework. The conclusion section outlines a proposal for testing and implementing an interim capacity expansion modeling approach for Washington conservation selection that is more in line with the Council's risk mitigation valuation objectives.

Portfolio Modeling Strategy

The Council's Regional Portfolio Model, a sophisticated spreadsheet-based modeling system, was developed from the ground up with evaluation of regional conservation potential as a key policy objective. The model's logic and data processing routines are based on an integrated approach to modeling uncertainty, risk, and portfolio cost-effectiveness evaluation. To accomplish this with reasonable execution run-times, the model relies on certain simplifications such as aggregating regional resources into reference technologies and bypassing representation of intra-regional transmission.

In contrast, PacifiCorp and most other utilities rely on separate modeling systems—typically proprietary products from well-established software vendors—to perform these analytic functions for integrated resource planning. For example, PacifiCorp uses a capacity expansion optimization model to develop portfolios based on various futures. These portfolios are then analyzed with a detailed production cost model using stochastic Monte Carlo simulation methods. The Monte Carlo production cost model is also used to develop conservation avoided cost estimates for the Company's demand-side management department for program development and evaluation.

This multi-model strategy takes advantage of each individual model's strengths and capabilities to represent the utility system in detail. For example, the capacity expansion model can represent various market purchase product types consistent with those frequently transacted by the Company's front office as well as include transmission expansions as portfolio resource options. This detail is necessary to (1) comprehensively characterize system operations and transmission constraints on a wide geographic scale, (2) analyze individual resources[36], and (3) assist in validating other PacifiCorp models used for commercial and regulatory compliance purposes.

On the other hand, use of separate proprietary models in this fashion presents its own challenges. These challenges include addressing differences in representation of system characteristics and costs across the models, the need for additional data management activities, and model evolution that can lag regulatory, market, and energy technology developments.

The upshot is that while there are many parallels between the modeling strategies employed by PacifiCorp and the Council (for example, the use of conservation supply curves and the framework for estimating conservation potential) there are also fundamental differences reflecting dissimilar modeling tools, analytical objectives, and planning requirements. This means that functionality cannot be lifted from the Council's Portfolio Model without re-architecting PacifiCorp's capacity expansion model. Such re-architecting has to be performed by the model vendor, assuming that the model could accommodate the added solution complexity

[36] For example, PacifiCorp's IRP models are used to evaluate investment and contract opportunities, transmission system expansions, and multiple bid resources as part of competitive procurements.

without compromising other required functionality. Such a project would involve significant time and cost to complete.

Market Price Adder Overview

The Council's market price adder is a construct tailored to the Portfolio Model's logic and data processing routines. The role of the Council's market price adder is to ensure that the full risk mitigation value of conservation is accounted for in determining the cost-effective amount of conservation to include in resource portfolios developed by the Council's Regional Portfolio Model. PacifiCorp's understanding is that the adder is the price needed to shift a portfolio to the "efficient frontier" for the population of portfolios.[37] Since conservation is viewed as the least-risk resource among all alternatives by virtue of having minimal operating costs and other risk mitigation benefits such as electricity price volatility mitigation, this price is attributed to conservation as marginal benefit, and therefore increases conservation's cost-effectiveness threshold by this amount. The market price adder is determined dynamically inside the Regional Portfolio Model as portfolios are developed and portfolio cost/risk profiles based on the Council's 750 futures are determined. The Council stresses that the market price adder is positive (reflecting a net benefit) even in cases where a utility system has surplus resources and/or low electricity market prices—the rationale being that conservation's risk mitigation value helps make it the least expensive source of reserve capacity.

Applicability of the Market Price Adder Concept to PacifiCorp's Conservation Modeling

PacifiCorp's current IRP modeling framework assesses the relative cost-effectiveness of conservation in relation to many other resource types over a 20-year period, accounting for fixed and operating costs (including carbon dioxide emission costs), capacity value, T&D investment deferral benefits, and stochastic risk mitigation. In line with the Council, PacifiCorp also computes stochastic average cost and tail risk measures to enable inspection of an efficient frontier for assessing the trade-off between portfolio cost and risk. For the risk measure, PacifiCorp uses the mean of the five highest PVRRs stemming from a stochastic production cost simulation involving 100 simulation iterations. Real levelized fixed costs included in the PVRR are determined by the capacity expansion model.

Since the efficient frontier is determined after portfolios and associated conservation amounts are developed, the market price adder concept is not directly applicable to PacifiCorp's portfolio modeling. (Recall that the market price adder is dynamically estimated as portfolios are developed and assessed by the Council's Portfolio Model.) Nevertheless, the Company can derive an average dollars-per-megawatt price from the efficient frontier of portfolios evaluated for its 2008 Integrated Resource Plan. This price can be compared against the Council's market price adders ($10/MWh for discretionary conservation and $50/MWh for lost opportunity conservation), and if believed to be reasonable, can then be credited against PacifiCorp's conservation cost curve and tested for the impact on Washington conservation selection. This may be a practical way, on an interim basis, to more closely align with the Council's risk

[37] As defined by the Council, the efficient frontier represents the set of portfolios with the least cost for a given risk level. Risk is defined as "TailVar90", which is the mean of the highest 10 percent of portfolio net present values.

mitigation valuation approach until PacifiCorp revisits the conservation modeling methodology for its next IRP. Alternatively, PacifiCorp can model Washington conservation with a time-period average of forward market prices to remove the volatility predicted in the early years. This is consistent with the view that a utility's conservation planning must account for phasing in quantities over several years. Either or both approaches may be applied as stop-gap solutions.

Ultimately, the issue for PacifiCorp is not whether a market price adder can or should be adopted, but rather to what extent do the IRP models capture the risk mitigation value of conservation in a way that is consistent with the IRP regulatory mandate to treat all resource options on a consistent and comparable basis. Any improvements that the Company makes in modeling resource risk mitigation benefits will therefore need to apply to all technologies.

With this caveat in mind, PacifiCorp identified four options for more closely aligning with the Council's approach for valuing conservation in portfolio modeling.

- Option 1 – Apply an externally determined cost adjustment to the conservation supply curve used in System Optimizer that reflects risk mitigation value. This cost adjustment can be provided as an output of PacifiCorp's conservation avoided cost estimation process, which could include the market price averaging approach described above.

- Option 2 – Redesign PacifiCorp's capacity expansion model to incorporate a risk processor that determines a market adder in the same (or simplified) fashion as the Council's Portfolio Model.

- Option 3 – Adopt the Council's Portfolio Model for estimating conservation targets only, and feed these targets as fixed resource selections in System Optimizer.

- Option 4 – Replace System Optimizer with the Council's Portfolio Model.

Option 1 is attractive because it utilizes the current modeling tools and processes, and avoids having to make structural model changes. PacifiCorp is currently developing a revised resource avoided cost methodology using System Optimizer to estimate capacity value and the stochastic production cost model to estimate energy value. A more comprehensive treatment of risk mitigation value can be integrated into the avoided cost estimation methodology. However, the Company is not in a position to churn out a quick I-937 analysis with such an enhanced avoided cost methodology because it is still under development and has not been vetted within the Company.

PacifiCorp rules out Option 2. Such model changes are probably not technically feasible given the model's current complexity and the scope of the set-up reflecting the Company's transmission topology and resources. An alternative approach is to operate System Optimizer in a batch process with stochastically determined futures, effectively turning System Optimizer into a "pseudo" stochastic capacity expansion model. A separate automated post-processing routine could adjust conservation selection based on the efficient frontier concept. System Optimizer would then need to be re-run with the adjusted fixed conservation quantities. This approach,

while technically feasible, dramatically complicates the portfolio development process, and is not realistic given IRP and business planning development requirements and schedules.

Options 3 and 4 involve adoption of the Portfolio Model to different degrees to ensure that conservation target development is fully aligned with the Council's evaluation methodology. The Company has strong reservations regarding expanding its modeling tool set because of the additional work load and model management requirements, and therefore rules out Option 3. As the modeling strategy section above suggests, replacing System Optimizer with the Council's Portfolio Model is not a practical solution given the Company's analytical objectives and planning requirements.

Conclusion

PacifiCorp agrees to test an interim capacity expansion modeling approach for Washington conservation selection more in line with the Council's risk mitigation valuation objectives. The Company describes two approaches for this testing:

- Use stochastic cost and risk measures from its 2008 IRP to adjust conservation costs based on the efficient frontier concept.

- Conduct the capacity expansion modeling with average forward market prices over a designated period.

After evaluating the results of both tests individually and in combination, the Company will adjust the Washington conservation targets accordingly.

The Company is also developing an improved resource avoided cost estimation methodology, the results of which can be used to adjust conservation resource costs in the capacity expansion model (Option 1). Option 1 represents the Company's favored long-term solution for fully accounting for risk mitigation benefits in the IRP modeling framework.

Part 2 – Modeling and Results

Risk Mitigation Cost Credit Estimation

After further evaluating the applicability of estimating a risk mitigation cost credit to PacifiCorp's IRP models, the Company developed two separate cost credits representing different aspects of risk mitigation. These two cost credits were then applied to the Washington conservation cost curves, and the capacity expansion model used to derive a new set of conservation targets.

The first cost credit, a measure of average stochastic risk reduction benefit, was developed by comparing the value of a 100-megawatt increment of conservation derived from both deterministic and stochastic production cost simulations of the 2008 IRP preferred portfolio, assuming a \$45/ton CO_2 regulatory cost. The difference in value, expressed as a reduction in the portfolio's 20-year Present Value Revenue Requirements (PVRR), reflects the stochastic risk

reduction benefit.[38] This value is then converted to a dollars-per-megawatt-hour figure. Table A4-13 below shows the derivation of the stochastic average risk reduction benefit from the four simulations conducted (two deterministic and two stochastic) using PacifiCorp's Planning and Risk production cost model.

Table A4-13

	20-Year Present Value Revenue Requirement, $ Million		
Simulation Type	**2008 Preferred Portfolio**	**2008 Preferred Portfolio with 100 MW of Additional Conservation**	**Difference**
Deterministic	35,900	35,332	567
Stochastic	34,091	33,507	583
Risk Reduction Value	1,809	1,825	16
$/MWh Risk Reduction Value Calculation			
NPV of GWh Generation (Stochastic Simulation)			5,889
$/MWh Risk Reduction Value			**2.74**

As the table shows, the addition of 100 megawatts of conservation reduces portfolio deterministic PVRR by $567 million, while on a stochastic average basis, the PVRR is reduced by $583 million. The difference—$16 million, or $2.74/MWh—reflects the average stochastic risk reduction value of the additional conservation.

The second cost credit reflects the price premium one needs to pay to significantly reduce a portfolio's upper-tail risk by adjusting the resource mix towards clean, zero or low operating cost resources such as conservation and wind; in other words, to move the portfolio closer to the low-risk end of the efficient frontier of portfolios. PacifiCorp defines tail risk as the average of the five highest PVRR outcomes out of the 100 simulated futures determined through the stochastic Monte Carlo production cost modeling.

PacifiCorp selected two portfolios for comparison of upper-tail costs, chosen from the set of portfolios developed for the 2008 IRP. These two portfolios consist of the Company's preliminary preferred portfolio, referred to in the 2008 IRP document as "Case 5", and the lowest-risk portfolio that excludes coal resource additions, referred to as "Case 20". Case 20 was developed assuming a high carbon dioxide regulatory cost ($70/ton in 2008 dollars, beginning in 2013 and escalating at the rate of inflation) and a high electricity market and gas commodity cost scenario. Relative to Case 5, Case 20 includes 5,000 MW of additional wind and 200 MW of additional conservation on a system basis through 2028. Other resource differences are trivial.

[38] The stochastic simulation uses Monte Carlo sampling to generate 100 simulated futures, consistent with PacifiCorp's regular IRP practice. As the primary stochastic cost measure, the Company computes the average PVRR across the 100 simulated futures.

To derive the tail-risk mitigation premium, PacifiCorp took the difference in tail-risk PVRR between Case 5 and Case 20, and converted it to a dollars-per-megawatt-hour value. Table A4-14 below shows the derivation of the $12.24/MWh credit.

Table A4-14

Portfolio ID	Stochastic Upper-Tail Risk	
	PVRR, $ Million	Difference
Case 5	78,168	9,722
Case 20	68,446	--
NPV of Cumulative Generation 2009-2028, GWh		794,582
Upper-tail Risk Mitigation Premium		**$12.24**

There are a few caveats associated with the upper-tail risk mitigation premium:

- Wind plants and conservation are both modeled as fixed energy resources in the IRP models (each assigned an hourly energy pattern), so the assumption was made that a joint price premium was a reasonable proxy for a conservation value determined independently. Differences in the wind and conservation energy patterns would affect the premium value.

- As a premium determined as a joint contribution of both wind and conservation, this value would appropriately be applied to both wind and conservation resource option costs in the capacity expansion model. However, the credit was only applied to the conservation supply curve for this study. Applying the credit to wind would change the resource mix, and likely reduce the amount of conservation selected.

- As mentioned above, wind plant output is modeled in the IRP as a fixed hourly energy pattern as opposed to a stochastic variable. The tail-risk risk mitigation premium will thus be overstated because wind volatility, another source of risk, is not accounted for in the stochastic production simulations.

- The two cost credits are assumed to be additive. However, the stochastic average PVRR includes the five highest PVRR outcomes used for deriving the tail-risk PVRR, so these two risk metrics are not strictly independent.

The two cost credits, totaling $14.98/MWh, were then applied to the conservation supply curve costs. Tables A4-15, A4-16 and A4-17 below shows the annual conservation selection impacts of the 10 percent Northwest Power Act credit, the risk reduction credit, and the combined impact.

Table A4-15

Year	Incremental Megawatts				Percent Diff.
	WA Base DSM	Additional DSM from 10% credit	Additional DSM with Risk Reduct. Value	TTL DSM with 10% Credit + Risk Reduct. Value	
2009	6.77	0.00	0.42	7.19	6.2%
2010	7.36	0.00	0.57	7.93	7.7%
2011	6.86	0.00	0.48	7.34	7.0%
2012	6.83	0.00	0.00	6.83	0.0%
2013	6.26	0.95	0.24	7.45	19.0%
2014	6.84	0.51	0.59	7.94	16.1%
2015	7.35	0.00	0.63	7.98	8.6%
2016	7.27	0.00	0.79	8.06	10.9%
2017	7.33	0.00	0.47	7.80	6.4%
2018	7.67	0.00	0.65	8.32	8.5%
2019	7.43	0.00	0.80	8.23	10.8%
2020	7.79	0.00	0.67	8.46	8.6%
2021	8.52	0.00	0.03	8.55	0.4%
2022	8.06	0.07	0.02	8.15	1.1%
2023	8.18	0.59	0.00	8.77	7.2%
2024	8.61	0.88	0.00	9.49	10.2%
2025	8.07	0.74	0.00	8.81	9.2%
2026	8.35	0.62	0.00	8.97	7.4%
2027	8.24	0.47	0.41	9.12	10.7%
2028	8.33	0.56	0.44	9.33	12.0%
TOTAL	152.12	5.39	7.21	164.72	8.3%

Table A4-16

Year	Cumulative Megawatts				Percent Diff.
	WA Base DSM	Additional DSM from 10% credit	Additional DSM with Risk Reduct. Value	TTL DSM with 10% Credit + Risk Reduct. Value	
2009	6.77	0.00	0.42	7.19	6.2%
2010	14.13	0.00	0.99	15.12	7.0%
2011	20.99	0.00	1.47	22.46	7.0%
2012	27.82	0.00	1.47	29.29	5.3%
2013	34.08	0.95	1.71	36.74	7.8%
2014	40.92	1.46	2.30	44.68	9.2%
2015	48.27	1.46	2.93	52.66	9.1%
2016	55.54	1.46	3.72	60.72	9.3%
2017	62.87	1.46	4.19	68.52	9.0%
2018	70.54	1.46	4.84	76.84	8.9%
2019	77.97	1.46	5.64	85.07	9.1%
2020	85.76	1.46	6.31	93.53	9.1%
2021	94.28	1.46	6.34	102.08	8.3%
2022	102.34	1.53	6.36	110.23	7.7%
2023	110.52	2.12	6.36	119.00	7.7%
2024	119.13	3.00	6.36	128.49	7.9%
2025	127.20	3.74	6.36	137.30	7.9%
2026	135.55	4.36	6.36	146.27	7.9%
2027	143.79	4.83	6.77	155.39	8.1%
2028	152.12	5.39	7.21	164.72	8.3%
TOTAL	152.12	5.39	7.21	164.72	8.3%

Table A4-17

Year	Cumulative Gigawatt-hours				Percent Diff.
	WA Base DSM	Additional DSM from 10% credit	Additional DSM with Risk Reduct. Value	TTL DSM with 10% Credit + Risk Reduct. Value	
2009	28.8	0.0	1.4	30.3	4.9%
2010	60.3	0.0	3.3	63.6	5.5%
2011	89.5	0.0	4.9	94.4	5.5%
2012	118.6	0.0	4.9	123.5	4.2%
2013	145.8	3.2	5.7	154.8	6.1%
2014	175.0	4.9	7.7	187.6	7.2%
2015	205.9	4.9	9.8	220.6	7.2%
2016	236.5	4.9	12.5	253.9	7.4%
2017	268.2	4.9	14.1	287.2	7.1%
2018	300.5	4.9	16.2	321.6	7.0%
2019	332.6	4.9	18.9	356.5	7.2%
2020	365.4	4.9	21.2	391.5	7.1%
2021	400.7	4.9	21.3	426.9	6.5%
2022	434.6	4.9	21.6	461.1	6.1%
2023	469.0	6.9	21.6	497.5	6.1%
2024	503.8	9.8	21.6	535.2	6.2%
2025	537.9	12.3	21.6	571.8	6.3%
2026	572.8	14.4	21.6	608.7	6.3%
2027	607.3	16.0	23.0	646.2	6.4%
2028	642.0	17.9	24.4	684.3	6.6%
TOTAL	6,495.3	124.5	297.4	6,917.2	6.5%

Tables A4-18, A4-19 and A4-20 below are the same information specific to the 2010-2019 planning period and including a table with the data in energy units of aMW. The difference column in the third table shows the adjustment to the 2008 IRP conservation potential in aMW.

Table A4-18

Year	Incremental Megawatts		
	DSM with 10% Mkt Value credit	DSM with 10% Mkt Value + Risk/Opt credit	Differnce (MW)
2010	7.36	7.93	0.57
2011	6.86	7.34	0.48
2012	6.83	6.83	0
2013	7.21	7.45	0.24
2014	7.35	7.94	0.59
2015	7.35	7.98	0.63
2016	7.27	8.06	0.79
2017	7.33	7.8	0.47
2018	7.67	8.32	0.65
2019	7.43	8.23	0.8
Total	72.66	77.9	5.22

Table A4-19

Year	1st Year Gigawatt-hours		
	DSM with 10% Mkt Value credit	DSM with 10% Mkt Value + Risk/Opt credit	Difference (GWH)
2010	31.43	33.34	1.91
2011	29.24	30.85	1.61
2012	29.10	29.10	-
2013	30.40	31.21	0.81
2014	30.87	32.85	1.98
2015	30.91	33.03	2.11
2016	30.60	33.25	2.65
2017	31.71	33.29	1.58
2018	32.29	34.47	2.18
2019	32.14	34.83	2.68
Total	308.70	326.21	17.52

Table A4-20

Year	aMW		
	DSM with 10% Mkt Value credit	DSM with 10% Mkt Value + Risk/Opt credit	Difference (aMW)
2010	3.59	3.81	0.22
2011	3.34	3.52	0.18
2012	3.32	3.32	-
2013	3.47	3.56	0.09
2014	3.52	3.75	0.23
2015	3.53	3.77	0.24
2016	3.49	3.80	0.30
2017	3.62	3.80	0.18
2018	3.69	3.94	0.25
2019	3.67	3.98	0.31
Total	35.24	37.24	2.00

Appendix 5
Demographic Information on 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 50% 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.

- 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 A5-2) and service area map (Figure A5-1) 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 A5-1 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 A5-1 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 Oregon, Washington, Idaho, and Montana.

Table A5-1

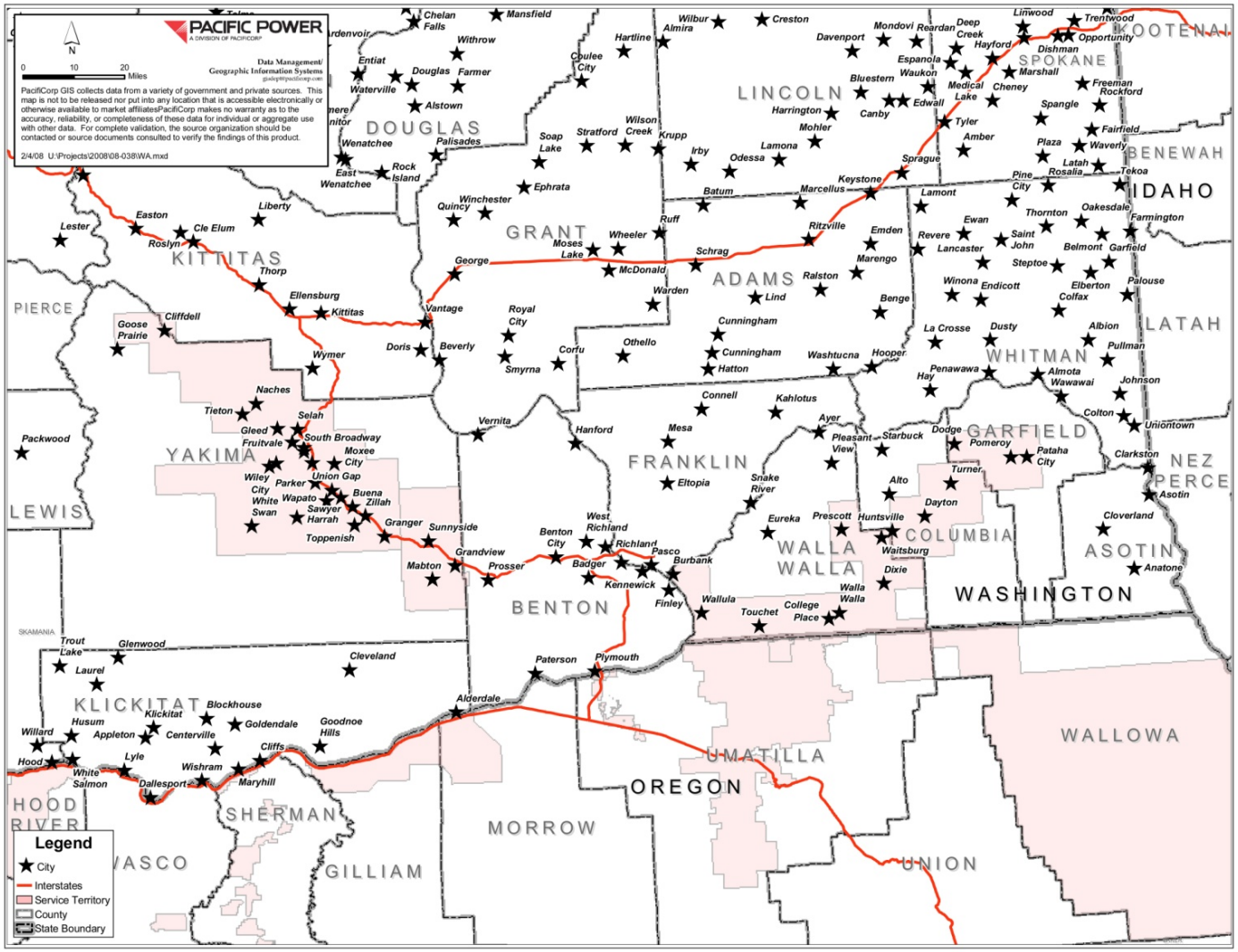
Form EIA-861 Final Data File for 2007				
UTILITY_NAME	RESIDENTIAL_ SALES (MWH/yr)	RESIDENTIAL_ CONSUMERS		Annual MWh/ residential consumer
PacifiCorp - WA	1,626,726	101,245		16.1
WA State-wide	35,388,779	2,748,270		12.9
WA/OR/ID/MT	67,644,242	5,452,210		12.4

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

Table A5-2
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 A5-1
PacifiCorp Washington Service Area Map - Detail View



Appendix 6

The 2008 Integrated Resource Plan selected all of the measures in Bundle 1. Below is a list of measures in Bundle 1 for 2010 and 2011 sorted by year and sector. Table A6-1 provides the Bundle 1 measures included in 2010 and Table A6-2 provides the measures in Bundle 1 included in 2011.

Table A6-1
Bundle 1 2010 Measures

State	Year	Sector	Measure Name	Cost Bundle
WA	2010	Residential	1-Watt Standby Power	$0.00 to$0.07
WA	2010	Residential	CFL Fixtures	$0.00 to$0.07
WA	2010	Residential	CFL Lamps	$0.00 to$0.07
WA	2010	Residential	CFL Torchieries	$0.00 to$0.07
WA	2010	Residential	Check Me Tune-up/Maintenance	$0.00 to$0.07
WA	2010	Residential	Cool Roof	$0.00 to$0.07
WA	2010	Residential	Duct Insulation Upgrade	$0.00 to$0.07
WA	2010	Residential	Ductless Heat Pump	$0.00 to$0.07
WA	2010	Residential	ECPM Furnace Fan Motor	$0.00 to$0.07
WA	2010	Residential	Efficient DVD systems	$0.00 to$0.07
WA	2010	Residential	Energy Star Dishwasher	$0.00 to$0.07
WA	2010	Residential	Evaporative coolers	$0.00 to$0.07
WA	2010	Residential	Faucet Aerators	$0.00 to$0.07
WA	2010	Residential	Heat Pumps - Service Contracts	$0.00 to$0.07
WA	2010	Residential	Heat Trap	$0.00 to$0.07
WA	2010	Residential	Low-Flow Showerheads	$0.00 to$0.07
WA	2010	Residential	Power Supply Transformer/Converter	$0.00 to$0.07
WA	2010	Residential	Removal of Secondary Freezer	$0.00 to$0.07
WA	2010	Residential	Removal of Secondary Refrigerator	$0.00 to$0.07
WA	2010	Residential	VFD Furnace Fan Motor	$0.00 to$0.07
WA	2010	Residential	Whole house air sealing	$0.00 to$0.07
WA	2010	Residential	Windows, ENERGY STAR or better	$0.00 to$0.07
WA	2010	Commercial	Chemical Dishwashing System	$0.00 to$0.07
WA	2010	Commercial	Cold Cathode Lighting	$0.00 to$0.07
WA	2010	Commercial	Compressor VSD retrofit	$0.00 to$0.07
WA	2010	Commercial	Cool Roof	$0.00 to$0.07
WA	2010	Commercial	Cooling Tower-Decrease Approach Temperature	$0.00 to$0.07
WA	2010	Commercial	Cooling Tower-Two-Speed Fan Motor	$0.00 to$0.07
WA	2010	Commercial	Duct Insulation	$0.00 to$0.07
WA	2010	Commercial	Duct Repair and Sealing	$0.00 to$0.07
WA	2010	Commercial	DX Package-Air Side Economizer	$0.00 to$0.07
WA	2010	Commercial	Faucet Aerators	$0.00 to$0.07
WA	2010	Commercial	High Efficiency Case Fans	$0.00 to$0.07
WA	2010	Commercial	High Efficiency Compressors	$0.00 to$0.07
WA	2010	Commercial	High Efficiency Convection Oven	$0.00 to$0.07
WA	2010	Commercial	Hot Water (SHW) Pipe Insulation	$0.00 to$0.07
WA	2010	Commercial	Ice Maker	$0.00 to$0.07

State	Year	Sector	Measure Name	Cost Bundle
WA	2010	Commercial	Infiltration Reduction	$0.00 to$0.07
WA	2010	Commercial	Installation of Floating Condenser Head Pressure C	$0.00 to$0.07
WA	2010	Commercial	Insulation - 2*4 Walls 16" O.C.	$0.00 to$0.07
WA	2010	Commercial	Leak Proof Duct Fittings	$0.00 to$0.07
WA	2010	Commercial	LED Exit Signs	$0.00 to$0.07
WA	2010	Commercial	LED Refrigeration Case Lights	$0.00 to$0.07
WA	2010	Commercial	Lighting Package, High Efficiency	$0.00 to$0.07
WA	2010	Commercial	Lighting Package, Premium Efficiency	$0.00 to$0.07
WA	2010	Commercial	Lighting Package, Premium High Bay	$0.00 to$0.07
WA	2010	Commercial	Low Wattage Ceramic Metal Halide Lamps	$0.00 to$0.07
WA	2010	Commercial	Low-Flow Showerheads	$0.00 to$0.07
WA	2010	Commercial	Low-flow spray heads	$0.00 to$0.07
WA	2010	Commercial	Occupancy Sensor Control, Fluorescent	$0.00 to$0.07
WA	2010	Commercial	Power Supply Transformer/Converter	$0.00 to$0.07
WA	2010	Commercial	Programmable Thermostat	$0.00 to$0.07
WA	2010	Commercial	Refrigeration System Upgrade	$0.00 to$0.07
WA	2010	Commercial	Solid Door ES Refrigerators/Freezers	$0.00 to$0.07
WA	2010	Commercial	Special Glass Doors for Refrigerated Reach-in Cas	$0.00 to$0.07
WA	2010	Commercial	Strip Curtains for Walk-Ins	$0.00 to$0.07
WA	2010	Commercial	Terminal HVAC units-Occupancy Sensor Control	$0.00 to$0.07
WA	2010	Commercial	Vending Machines- High Efficiency	$0.00 to$0.07
WA	2010	Commercial	Water Heater Temperature Setback	$0.00 to$0.07
WA	2010	Industrial	Air Comp Improvements	$0.00 to$0.07
WA	2010	Industrial	Air Comp O&M	$0.00 to$0.07
WA	2010	Industrial	Bldg Improvements	$0.00 to$0.07
WA	2010	Industrial	Cool Improvements	$0.00 to$0.07
WA	2010	Industrial	Heat Improvements	$0.00 to$0.07
WA	2010	Industrial	HVAC Improvements	$0.00 to$0.07
WA	2010	Industrial	HVAC O&M	$0.00 to$0.07
WA	2010	Industrial	Lighting Improvements	$0.00 to$0.07
WA	2010	Industrial	Motor Improvements	$0.00 to$0.07
WA	2010	Industrial	Motor O&M	$0.00 to$0.07
WA	2010	Industrial	Other Improvements	$0.00 to$0.07
WA	2010	Irrigation	System Improvements	$0.00 to$0.07
WA	2010	Irrigation	Motor Improvements	$0.00 to$0.07

Table A6-2
Bundle 1 2011 Measures

State	Year	Sector	Measure Name	Cost Bundle
WA	2011	Residential	1-Watt Standby Power	$0.00 to$0.07
WA	2011	Residential	CFL Fixtures	$0.00 to$0.07
WA	2011	Residential	CFL Lamps	$0.00 to$0.07
WA	2011	Residential	CFL Torchieries	$0.00 to$0.07
WA	2011	Residential	Check Me Tune-up/Maintenance	$0.00 to$0.07
WA	2011	Residential	Cool Roof	$0.00 to$0.07
WA	2011	Residential	Duct Insulation Upgrade	$0.00 to$0.07
WA	2011	Residential	Ductless Heat Pump	$0.00 to$0.07
WA	2011	Residential	ECPM Furnace Fan Motor	$0.00 to$0.07
WA	2011	Residential	Efficient DVD systems	$0.00 to$0.07
WA	2011	Residential	Energy Star Dishwasher	$0.00 to$0.07
WA	2011	Residential	Evaporative coolers	$0.00 to$0.07
WA	2011	Residential	Faucet Aerators	$0.00 to$0.07
WA	2011	Residential	Heat Pumps - Service Contracts	$0.00 to$0.07
WA	2011	Residential	Heat Trap	$0.00 to$0.07
WA	2011	Residential	Low-Flow Showerheads	$0.00 to$0.07
WA	2011	Residential	Power Supply Transformer/Converter	$0.00 to$0.07
WA	2011	Residential	Removal of Secondary Freezer	$0.00 to$0.07
WA	2011	Residential	Removal of Secondary Refrigerator	$0.00 to$0.07
WA	2011	Residential	VFD Furnace Fan Motor	$0.00 to$0.07
WA	2011	Residential	Whole house air sealing	$0.00 to$0.07
WA	2011	Residential	Windows, ENERGY STAR or better	$0.00 to$0.07
WA	2011	Commercial	Chemical Dishwashing System	$0.00 to$0.07
WA	2011	Commercial	Cold Cathode Lighting	$0.00 to$0.07
WA	2011	Commercial	Compressor VSD retrofit	$0.00 to$0.07
WA	2011	Commercial	Cool Roof	$0.00 to$0.07
WA	2011	Commercial	Cooling Tower-Decrease Approach Temperature	$0.00 to$0.07
WA	2011	Commercial	Cooling Tower-Two-Speed Fan Motor	$0.00 to$0.07
WA	2011	Commercial	DX Package-Air Side Economizer	$0.00 to$0.07
WA	2011	Commercial	Duct Insulation	$0.00 to$0.07
WA	2011	Commercial	Duct Repair and Sealing	$0.00 to$0.07
WA	2011	Commercial	Faucet Aerators	$0.00 to$0.07
WA	2011	Commercial	High Efficiency Case Fans	$0.00 to$0.07
WA	2011	Commercial	High Efficiency Compressors	$0.00 to$0.07
WA	2011	Commercial	High Efficiency Convection Oven	$0.00 to$0.07
WA	2011	Commercial	Hot Water (SHW) Pipe Insulation	$0.00 to$0.07
WA	2011	Commercial	Ice Maker	$0.00 to$0.07
WA	2011	Commercial	Infiltration Reduction	$0.00 to$0.07
WA	2011	Commercial	Installation of Floating Condenser Head Pressure C	$0.00 to$0.07
WA	2011	Commercial	Insulation - 2*4 Walls 16" O.C.	$0.00 to$0.07
WA	2011	Commercial	LED Exit Signs	$0.00 to$0.07
WA	2011	Commercial	LED Refrigeration Case Lights	$0.00 to$0.07
WA	2011	Commercial	Leak Proof Duct Fittings	$0.00 to$0.07

State	Year	Sector	Measure Name	Cost Bundle
WA	2011	Commercial	Lighting Package, High Efficiency	$0.00 to$0.07
WA	2011	Commercial	Lighting Package, Premium Efficiency	$0.00 to$0.07
WA	2011	Commercial	Lighting Package, Premium High Bay	$0.00 to$0.07
WA	2011	Commercial	Low Wattage Ceramic Metal Halide Lamps	$0.00 to$0.07
WA	2011	Commercial	Low-Flow Showerheads	$0.00 to$0.07
WA	2011	Commercial	Low-flow spray heads	$0.00 to$0.07
WA	2011	Commercial	Occupancy Sensor Control, Fluorescent	$0.00 to$0.07
WA	2011	Commercial	Power Supply Transformer/Converter	$0.00 to$0.07
WA	2011	Commercial	Programmable Thermostat	$0.00 to$0.07
WA	2011	Commercial	Refrigeration System Upgrade	$0.00 to$0.07
WA	2011	Commercial	Solid Door ES Refrigerators/Freezers	$0.00 to$0.07
WA	2011	Commercial	Special Glass Doors for Refrigerated Reach-in Cas	$0.00 to$0.07
WA	2011	Commercial	Strip Curtains for Walk-Ins	$0.00 to$0.07
WA	2011	Commercial	Terminal HVAC units-Occupancy Sensor Control	$0.00 to$0.07
WA	2011	Commercial	Vending Machines- High Efficiency	$0.00 to$0.07
WA	2011	Commercial	Water Heater Temperature Setback	$0.00 to$0.07
WA	2011	Industrial	Air Comp Improvements	$0.00 to$0.07
WA	2011	Industrial	Air Comp O&M	$0.00 to$0.07
WA	2011	Industrial	Bldg Improvements	$0.00 to$0.07
WA	2011	Industrial	Cool Improvements	$0.00 to$0.07
WA	2011	Industrial	HVAC Improvements	$0.00 to$0.07
WA	2011	Industrial	HVAC O&M	$0.00 to$0.07
WA	2011	Industrial	Heat Improvements	$0.00 to$0.07
WA	2011	Industrial	Lighting Improvements	$0.00 to$0.07
WA	2011	Industrial	Motor Improvements	$0.00 to$0.07
WA	2011	Industrial	Motor O&M	$0.00 to$0.07
WA	2011	Industrial	Other Improvements	$0.00 to$0.07
WA	2011	Irrigation	Motor Improvements	$0.00 to$0.07
WA	2011	Irrigation	System Improvements	$0.00 to$0.07

Appendix 7

Table A7-1 shows a summary view of PacifiCorp's Washington share of the draft 6th Power Plan regional target based on the 6th Plan, calculator version 2.0, option 3. In this calculator, the Company's allocation of the regional target is based on MWH sales by sector. Table A7-2 provides a more detailed view.

Table A7-1
Summary - PacifiCorp Washington share of Northwest Power Plan Regional Target Allocated Based on MWH Sales (aMW)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2-year	10-year
6th Plan	5.0	5.6	6.1	6.6	7.1	7.3	8.1	8.6	8.8	9.1	10.6	72.2

6th Plan, calculator version 2.0, option 3
http://www.nwcouncil.org/energy/powerplan/6/supplycurves/I937/default.htm

Table A7-2
Detail - PacifiCorp Washington share of Northwest Power Plan Regional Target, Allocated Based on MWH Sales

Option 3 - Target Based on Utility Reported Share of Total Regional Retail Sales by Sector - Adjusted for Irrigation Sales

Sector	2007 Retail Sales (MWH)	Share of Regional Sales	sales in its industrial sector total. In order to adjust for this, please enter your utility's 2007 retail sales in MWH for irrigation below in cell I35. The industrial sector sales will update automatically so that the total still agrees with	Reported Industrial and Irrigated Agriculture
Residential	1,626,726	2.48%	Combined Ind & Irrig Sales (MWh)=>	997,157
Commercial	1,428,656	2.66%	Net Industrial Sales (MWh) =>	833,183
Industrial	833,183	2.37%	Enter 2007 Irrigation Sales (MWh) =>	163,974
Agriculture	163,974	2.88%		
Distribution System	3,219,356	2.70%		
Sectors	4,052,539	2.53%		

Annual Conservation Target (aMW)

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Total 2010 - 2023	Average Annual Target 2010 - 2023
Residential	2.811	2.968	3.158	3.376	3.649	3.105	3.660	4.051	4.521	4.726	5.077	5.164	5.516	5.519	57.30	4.1
Commercial	1.130	1.339	1.526	1.703	1.836	2.076	2.224	2.315	2.063	2.094	2.202	2.087	2.176	2.050	26.82	1.9
Industrial	0.742	0.797	0.847	0.890	0.928	1.253	1.262	1.255	1.243	1.234	0.959	0.968	0.902	0.894	14.17	1.0
Agriculture	0.244	0.230	0.219	0.207	0.196	0.256	0.259	0.256	0.253	0.251	-	-	-	-	2.37	0.2
Distribution System Efficiency	0.116	0.218	0.310	0.392	0.464	0.646	0.687	0.718	0.746	0.774	0.956	0.966	0.589	0.587	8.17	0.6
Total - All Sectors	5.043	5.552	6.061	6.568	7.072	7.336	8.092	8.595	8.827	9.078	9.193	9.186	9.183	9.050	108.84	7.8

Annual Conservation Target (MWH)

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Total 2010 - 2023	Average Annual Target 2010 - 2023
Residential	24,629	26,004	27,665	29,574	31,965	27,200	32,059	35,489	39,608	41,398	44,471	45,235	48,319	48,349	501,966	35,854.7
Commercial	9,897	11,726	13,372	14,915	16,081	18,185	19,478	20,277	18,073	18,345	19,292	18,286	19,059	17,954	234,939	16,781.4
Industrial	6,499	6,983	7,420	7,794	8,126	10,974	11,057	10,995	10,891	10,807	8,397	8,480	7,898	7,835	124,155	8,868.2
Agriculture	2,139	2,018	1,917	1,816	1,715	2,245	2,270	2,245	2,220	2,195	-	-	-	-	20,782	1,484.4
Distribution System Efficiency	1,015	1,908	2,717	3,435	4,064	5,658	6,017	6,286	6,533	6,780	8,374	8,464	5,164	5,141	71,555	5,111.1
Total - All Sectors	44,178	48,639	53,090	57,534	61,952	64,261	70,882	75,292	77,325	79,525	80,534	80,465	80,440	79,280	953,397	68,099.8