EXHIBIT NO. ___(CB-3HC)
DOCKET NO. UE-12____
WITNESS: CHRIS BEVIL

BEFORE THE
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

Petition of **PUGET SOUND ENERGY, INC.** **for Approval of a Power Purchase Agreement for Acquisition of Coal Transition Power, as Defined in RCW 80.80.010, and the Recovery of Related Acquisition Costs**	**Docket No. UE-12____**

SECOND EXHIBIT (HIGHLY CONFIDENTIAL) TO THE
PREFILED DIRECT TESTIMONY OF
CHRIS BEVIL
ON BEHALF OF PUGET SOUND ENERGY, INC.

REDACTED
VERSION

AUGUST 20, 2012

PUGET SOUND ENERGY

2011 RFP Process Document

PUGET SOUND ENERGY

PSE 2011 RFP Document

Table of Contents

PUGET SOUND ENERGY

PSE 2011 RFP Document

Appendices

PUGET SOUND ENERGY

PSE 2011 RFP Document

1 Executive Summary

Puget Sound Energy, Inc. ("PSE") conducted its 2011 Request for Proposals for All Generation Sources (the "2011 RFP") in an environment with slow economic growth, falling gas and power prices, and expectations of lower load growth. While these variables introduce uncertainty for predicting future resource needs and conditions, they also produce opportunities to procure resources that will provide long-term benefits for customers at today's lower prices.

PSE's evaluation team relied upon its experience as a resource owner and evaluator, its familiarity with the region's energy market and various analytical tools to analyze and identify the lowest reasonable cost resource opportunities that meet PSE's resource and timing needs. To do this, PSE's evaluation process involved quantitative analyses that used portfolio screening and optimization models, and qualitative analyses that evaluated the risks and merits associated with each proposal. PSE also updated its load, power and gas price forecasts multiple times between the publication of the May 2011 Integrated Resource Plan and completion of the RFP quantitative analyses in May 2012 to reflect the most current information available to us at the time the analysis was conducted. The results of this analysis led PSE's evaluation team to recommend pursuing the following proposals:

(i) the **Coal Transition (Centralia) PPA (#11102)**, a 13-year fixed-price power purchase agreement ("PPA) that ramps up to 498 MW over a four-year period to match PSE's capacity need;

(ii) the [redacted] **(#11117)**, [redacted] beginning in 2016;

(iii) the [redacted] **(#11124)**, a 10-year PPA for 100 MW from an existing natural gas-fired combined cycle facility [redacted]

PSE's analysis shows that when combined with PSE's existing resources, the selected RFP resources represent the lowest cost portfolio with the lowest risk compared to other alternatives in the 2011 RFP. This report describes the 2011 RFP evaluation process, the results it produced, and how PSE balanced a variety of findings and considerations to select the lowest reasonable cost resources to meet the needs of its customers.

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PUGET SOUND ENERGY

PSE 2011 RFP Document

2 Resource Need

A Need for New Resources Drives the 2011 RFP

The Integrated Resource Plan guides PSE's efforts to acquire new energy resources at the lowest reasonable cost, as directed by the Revised Code of Washington chapter 19.280 (RCW 19.280). PSE biennially prepares a revised Integrated Resource Plan. Each Integrated Resource Plan provides an updated customer demand forecast and an analysis of the costs and risks involved in securing new energy supplies.

PSE filed its 2011 Integrated Resource Plan (the "2011 IRP") with the Washington Utilities and Transportation Commission ("WUTC") in May 2011 in Docket Nos. UG-10960 & UE-10961. The 2011 IRP presented a strategy to meet the growing needs of PSE's customers that included (i) a combination of increased energy efficiency, (ii) increased renewable power, (iii) additional transmission capacity, and (iv) the addition of natural gas-fired peaking facilities.

Although the 2011 IRP recommended a resource acquisition strategy, PSE must make decisions in a dynamic environment of changing needs, pricing and other external factors to acquire specific resources based on actual resource availability and cost. Such considerations also inform PSE's decisions regarding the size and timing of resource additions. A discussion of PSE's capacity and renewable resource needs, as prescribed by PSE's resource planning process, is included below.

The 2011 IRP identified a need for new capacity resources within three years.

The 2011 IRP identified a need for 917 MW of additional supply-side and demand-side capacity resources in 2012 to meet customer's peak and energy needs.

Updates to the PSE's capacity continue to show a growing capacity need driven by expiring contracts

At the time of the publication of the 2011 Request for Proposals (the "2011 RFP") in October 2011, PSE updated its supply side capacity need to 385 MW to reflect resources added after publication of the 2011 IRP and the F2011 load forecast. PSE continued to update the capacity need throughout the 2011 RFP process by incorporating resources added after publication of the 2011 IRP[1] and results from the F2012 load forecast[2]. PSE's final capacity need forecast for the 2011 RFP is depicted in Figure 1.

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1 Approximately 500 MW of short-term resources (various contract starts and lengths) and transmission contract extensions were not known for inclusion in the analysis for the 2011 IRP which partially meet PSE's 2012 capacity need.
2 The 2011 RFP analysis uses the draft F2012 load forecast from April 17, 2012. This difference between the April 17, 2012 peak forecast and the final F2012 forecast is less than 0.1% through 2025 and grows to 0.5% by 2031.

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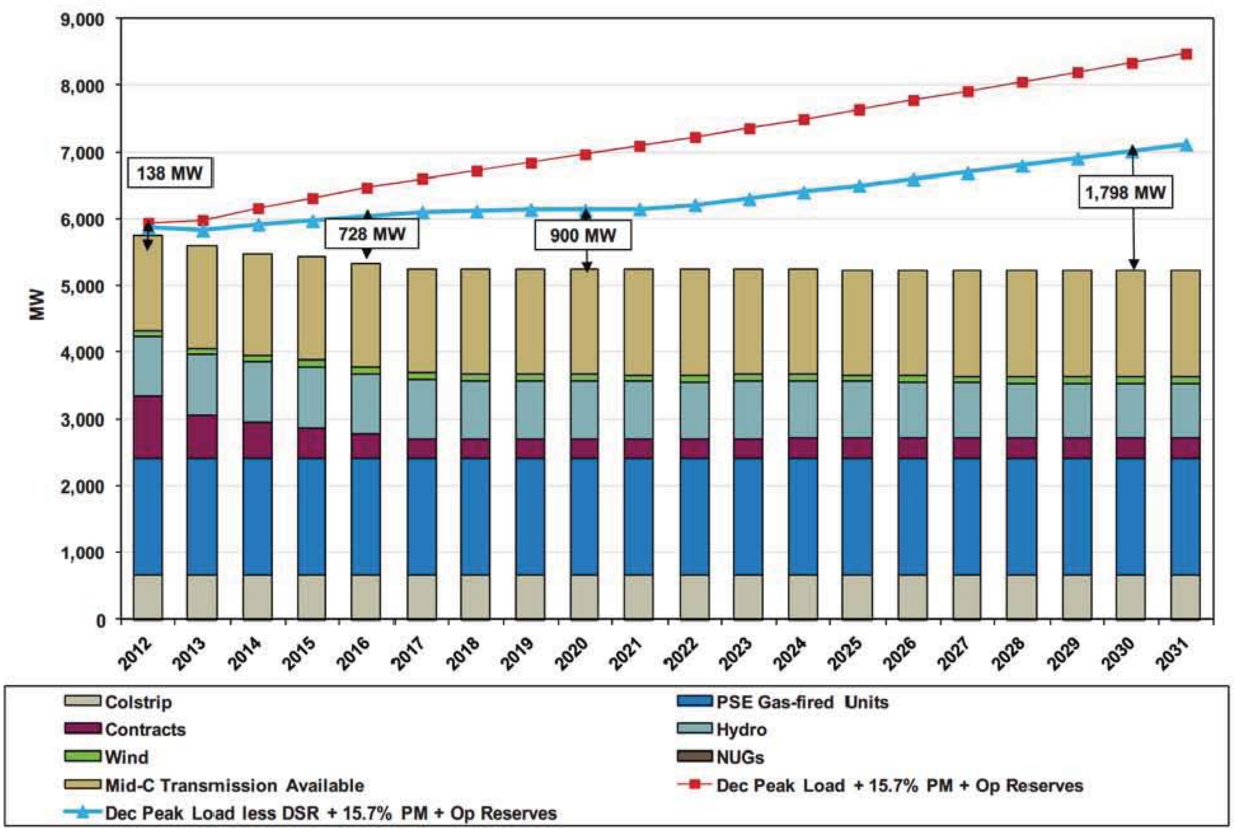
PSE 2011 RFP Document

Figure 1. Electric Resource Capacity Need Forecast[3]



Capacity Need in MW[1]	2012	2013	2014	2015	2016	2017
2011 RFP published (F2011)1	385	434	636	713	862	1,317
11/9/2011 Update (F2011)[2,3]	241	451	653	730	879	1,005
DRAFT 4/17/2012 (F2012 draft)[2,4,5]	**138**	**242**	**460**	**554**	**728**	**866**

Table notes:
(1) Based on 2011 Integrated Resource Plan; includes a planning reserve margin of 15.7%
(2) Capacity need reflects need for additional operating reserves if new resources are on PSE's system
(3) Update to need reflects addition of short-term hedges, no existing gas plant retirements, line loss update (presented to EMC on 12/15/2011 and 3/15/2012)
(4) F2012 reflects loss of Jefferson County as of 4/2013, updates of existing gas plant contribution to peak
(5) Final F2012 load forecast shows negligible change to capacity need

3 Electric peak capacity need as defined in the 2011 IRP.

PSE 2011 RFP Document

The ability of a capacity resource to provide reliable power during winter months is an important consideration for the 2011 RFP. PSE performs winter season peak planning for the months of November through February. PSE's winter peak, however, usually occurs in December. PSE's capacity need in Figure 1 is a one-hour December peak.

PSE's near-term (2012-2016) need for resources is driven by expiring contracts. According to the 2011 IRP, contracts amounting to more than 850 MW of nameplate capacity are scheduled to expire between 2011 and 2016.[4]

The 2011 IRP shows PSE is on track to meet near-term renewable targets.

Washington state's renewable portfolio standard ("RPS") requires that PSE meet specific targets for qualifying renewable energy. PSE must have sufficient "qualifying renewable energy" to equal at least 3% of load by 2012, 9% by 2016 and 15% by 2020.

The 2011 IRP renewable energy compliance forecast predicted that PSE would be able to achieve its renewable targets through 2019 with its current portfolio of renewable resources. The 2011 IRP further predicted that PSE would need to acquire approximately 823 additional renewable energy credits ("RECs") to meet its 2020 target.

Updates to PSE's renewable outlook continue to indicate that PSE is on track to meet near-term renewable targets.

Updates to PSE's forecast continue to predict that PSE has sufficient renewable resources to achieve its near-term compliance targets under the RPS. By the time PSE filed its final RFP in October 2012, the company's updated renewable resource outlook reflected a reduced need of approximately 771 RECs in 2020. The company continued to update its forecast during the RFP process. Figure 2 depicts the final RFP renewable outlook, which was prepared using the F2012 load forecast and updated REC banking assumptions.

4 See PSE's 2011 Integrated Resource Plan at www.pse.com/irp, Chapter 5, pages 5-16 to 5-17, for a table depicting PSE long-term contracts for electric power generation and the dates they are scheduled to expire.

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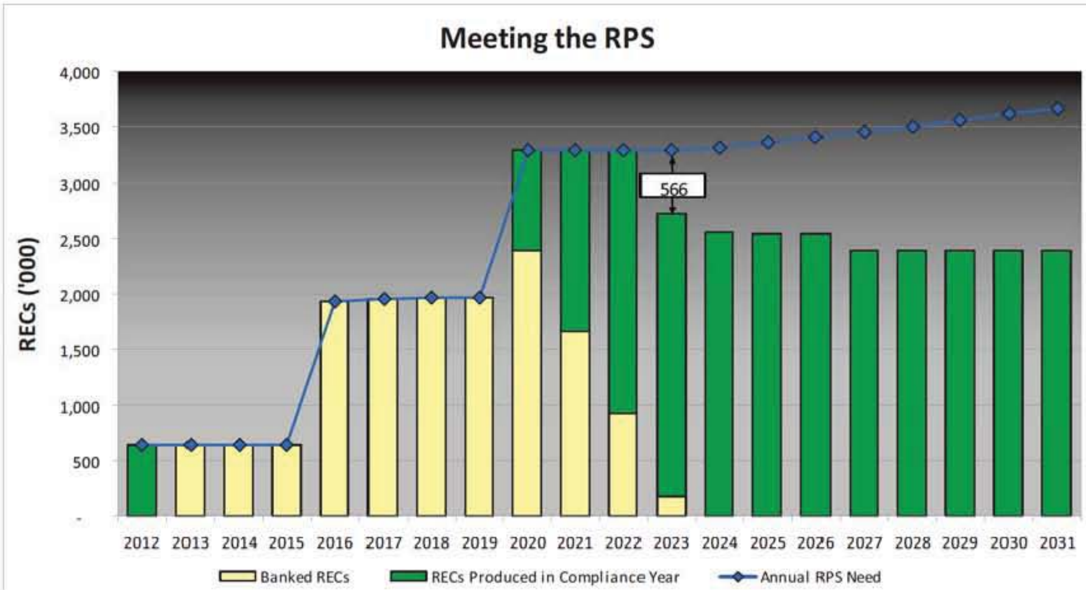
Figure 2. PSE's renewable resource compliance outlook



The final renewable outlook predicts that PSE would need to secure an additional 566,000 RECs[5] by 2023 for compliance purposes. This update assumes REC banking to the extent allowable by law, and that RECs in excess of the banking provision would be sold at a voluntary market price. This timing may change if it becomes more cost-effective to sell rather than bank excess RECs, or to acquire additional renewable resources early. Other changes, such as load forecast updates or environmental policy changes, could also impact the timing and volume of renewable resource additions. See Appendix D for details about PSE's REC banking assumptions.

PSE released the 2011 RFP in October 2011

PSE filed a draft 2011 RFP with the WUTC on August 1, 2011. The WUTC subsequently approved the draft 2011 RFP on October 13, 2011. PSE released the 2011 RFP on October 17, 2011.

The 2011 RFP asked power producers, marketers, and power-plant developers to help PSE procure new electricity resources by 2016. The RFP indicated that PSE would consider various contract arrangements, such as investment in existing power plants, ownership of new plants, or long-term PPAs.

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5 The REC need was incorrectly identified in the EMC presentation on June 12, 2012. The above chart reflects the REC need considered in the Phase 2 analysis of alternatives.

The RFP is not the only method by which PSE may acquire new resources.

PSE may acquire new resources to meet the needs of customers in several ways. The Washington Administrative Code ("WAC") 480-107-001 states that a utility may acquire additional generation resources:

1) through a competitive bidding process, which PSE refers to as its request for proposal process,

2) by constructing additional electric resources, or

3) by purchasing power through negotiated contracts.

PSE's evaluation team screened two self-build opportunities during the 2011 RFP evaluation process. Both self-build development opportunities are based on natural gas-fired peaking resources. PSE also screened two PPA proposals submitted outside of the 2011 RFP ("unsolicited proposals"), one for power sourced from a photovoltaic solar development project and one for power sourced from an existing waste-to-energy facility.

Section 4 summarizes the RFP proposals received and briefly describes both the unsolicited proposals and self-build development resources included in PSE's evaluation. Appendix A is a complete list of all of the RFP and unsolicited proposals. Appendix F describes the self-build opportunities.

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PSE 2011 RFP Document

3 RFP Environment

Economy

National Economic Outlook

The 2011 RFP was conducted in an environment with slower economic growth than the 2011 IRP forecasted. During the RFP process, PSE revised its load forecast. For the purpose of creating the F2012 load forecast incorporated into Phase 2 of the RFP process, PSE used the Moody's Analytics U.S. Macroeconomic Forecast dated February 2012, which projected a delayed, but continued, recovery with real GDP growth reaching near 4% by 2014. The Moody's Analytics U.S. Macroeconomic Forecast also projected declines in the unemployment rate every year in the near-term, in lockstep with increasing total employment, which started to grow at a healthy pace by 2014. With manufacturing gaining strength and businesses beginning to hire more, the Moody's Analytics U.S. Macroeconomic Forecast projects positive signs for an impending economic recovery.

Risks to the outlook still exist. Economic problems in Europe, foreclosures preventing price stabilization in the U.S. housing market, job cuts by local governments and uncertain government action over extension of programs like payroll tax cuts and unemployment insurance programs, are all downside risks to the national economic outlook.

Regional Economic Outlook

Although PSE's service area does possess some distinctive characteristics, it is integrated with the broader national and global economies and its pattern of growth is highly correlated with that of the rest of the nation. Total employment growth in the service area shows recovery as the national economy recovers, and then moderates in the long term as hiring by the major employers in the area levels off. The Boeing Company helps the short term outlook due to strong growth and associated job creation, but job additions from The Boeing Company are not likely to continue at the same level in the future.

Any anticipated economic slowdown in China is a potential risk to the region because PSE's service area is highly dependent on international trade, and Asian markets in particular. In addition, lackluster recovery in the construction sector and continued job cuts by government continue to pose threats to recovery in the area.

The current regional economic forecast shows worse results than the economic forecast underlying the F2011 Load Forecast but performs better than the economic forecast underlying the 2011 IRP Alternate Cyclical Low scenario. Most areas of the economy fall between the F2011 and the IRP Alternate Cyclical Low scenario, with housing recovery trending closer to the IRP Alternate Cyclical Low scenario in the short term through 2012. Housing recovery does come closer to the F2011 forecast levels through 2016 before slowing to near the Alternate Cyclical Low for the remainder of the forecast.

PSE 2011 RFP Document

Commodity pricing

Gas prices

Trends in gas prices and forecast since 2008.

Gas prices have trended downward since 2008. The declining prices are due to the continued and increasingly efficient development of shale gas resources and stagnant growth in demand. As gas producers have gained more experience in drilling and developing shale gas resources, the cost of production has declined. This is especially noticeable in the short-term prices. The relatively slow economic recovery in the U.S. and uncertainty in world-wide growth prospects have also tended to reduce prices. Specifically for Sumas, slowing demand for Western Canadian Sedimentary Basin (WCSB) gas in eastern markets, due to penetration of Marcellus and Utica shale gas in eastern Canada and northeastern United States, and delays in Alberta Oil Sands demand, has created a relative surplus of supply in western Canada.

Additionally over the shorter term, the relatively warm 2011-12 winter in North America reduced gas demand. This reduction in demand tended to reduce prices during the heating season. Much of this gas was diverted to storage, which has tended to reduce prices for the 2012 summer and 2012-13 winter. PSE reflected this reduction in gas demand in its 2011 RFP Base with New Gas forecast shown below where forwards marks for 2012 are as low as 2002 historical prices.

Figure 3. Comparison of Historical Annual Average Sumas Gas Prices to Forecast

[redacted]

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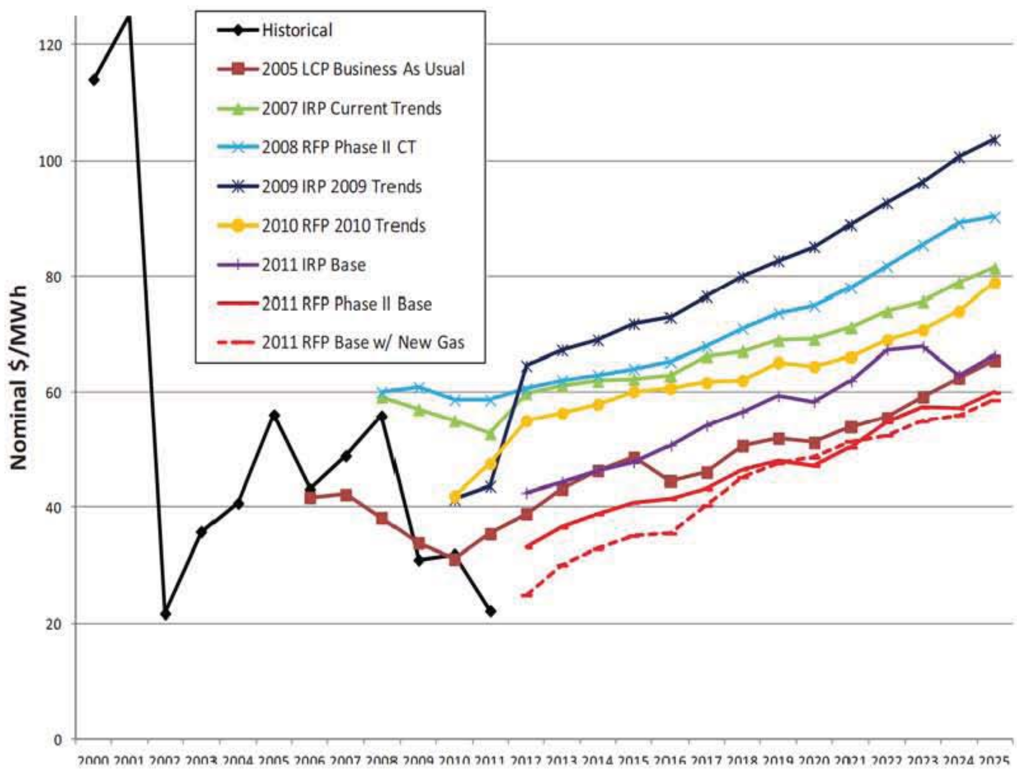
Electric prices

Due to the correlation between power and gas prices, the downward trend of natural gas prices causes downward pressure on power prices. Power prices are not always as stable as shown in the forecasts, they can shift up or down over time. The following chart compares the historical MidC power prices (2000-2011) to the forecasts starting with the 2005 Least Cost Plan to the current 2011 RFP. [Note: The forecast power prices shown starting with the 2007 Integrated Resource Plan and ending with the 2010 RFP include CO2 costs]

Figure 4. Comparison of Historical Annual Average Power Prices to Forecasted



Environmental Policies

PSE considers a variety of state, regional and environmental policies as part of its overall resource evaluation process. During the 2011 RFP analyses, two Washington state policies were particularly important to PSE's decisions: the Renewable Portfolio Standard and the Emissions Performance Standard.

Renewable Portfolio Standard ("RPS"). The Washington RPS, as defined by The Energy Independence Act, Chapter 19.285 RCW, requires PSE to acquire qualifying renewable resources to meet the following targets: 3 percent of load by 2012, 9 percent of load by 2016, and 15 percent of load by 2020. At the time the 2011 RFP was issued, PSE forecast that the company had acquired sufficient renewable resources to meet its compliance targets through 2019. Since that time, PSE has revised its renewable resource outlook to reflect updated load forecast and the potential to rely on REC banking. This updated outlook reaffirmed that PSE is well-positioned to meet its near-term compliance targets. The resource need discussion in Section 2 offers a closer look at PSE's renewable outlook and REC banking assumptions.

Emissions Performance Standard ("EPS"). Chapter 80.80 RCW imposes an emissions performance standard on baseload electric generation in the State of Washington.[6] Electric utilities may not enter into a long-term financial commitment[7] for baseload electric generation on or after July 1, 2008, unless the generating plant's emissions are the lower of:

- 1100 pounds of GHG per megawatt (MW)-hour; or
- the average available GHG emissions output as updated by the Department of Commerce.

Impact on Market PPAs. In effect, because PSE cannot demonstrate that a power contract sourced from unspecified resources ("Market PPA") meets the above criteria, PSE may only enter into Market PPAs with terms less than five years, or those that can designate a specific pool of EPS-compliant resources.

Transition coal update. On April 29, 2011, Governor Gregoire signed Engrossed Second Substitute Senate Bill 5769 (the "Coal Transition Energy Bill"), which provides certain exemptions to the emissions performance standard to encourage the early closure of coal-fired plants in Washington. The Coal Transition Energy Bill required Governor Gregoire to enter into a Memorandum of Agreement with owners of baseload electric generation facilities in Washington that produce coal transition power, such as TransAlta Centralia Generation LLC, by January 1, 2012, requiring specified emissions reductions.

The Coal Transition Energy Bill amended the emissions performance standard (i) to allow the Centralia plant to comply with GHG emissions performance standards by shutting down one of its two boilers by the end of 2020 and the other by the end of 2025 and (ii) limit the technology that the Centralia plant would be required to implement for nitrogen oxides controls. The Coal Transition Energy Bill also removed the limitations that had previously been imposed on the facility limiting the duration of new financial commitments for the output from the facility.

Appendix G contains brief descriptions of a variety of additional existing and potential environmental policies.

Permitting

Development of new gas fired combustion turbine facilities in PSE's western Washington service territory is becoming more and more challenging due to a number of siting difficulties. One of the most basic hurdles is finding suitable industrial locations. Western Washington has become heavily developed with residential and commercial establishments and many of the industrial centers have receded in the face of it. When one looks for locations with reasonable proximity to both gas pipeline and transmission lines, the number of locations that one could reasonably

6 Baseload electric generation means electric generation from a power plant that is designed and intended to provide electricity at an annualized plant capacity factor of at least 60 percent.
7 Long-term financial commitment means (1) either a new ownership interest in baseload electric generation or an upgrade to a baseload electric generation facility; or (2) a new or renewed contract for baseload electric generation with a term of five or more years for the provision of retail power or wholesale power to end-use customers in this state.

expect to site new gas fired facilities is very small. Beyond siting, the most prominent development challenge is the restrictions related to the airshed. The Puget Sound region currently has one non-attainment area, the greater Tacoma area, that is in non-attainment for PM 2.5. Given the lack of a developed offset market for this region, it would be nearly impossible to site a new, Major Source, facility in that immediate area. The entire Puget Sound region is also flirting with potential non-attainment designation for Ozone. In 2011, President Obama delayed the installation of more stringent Ozone attainment requirements until 2013 which in turn, delayed any designation for Western Washington. However, the potential still remains.

Outlook

Regional outlook (load-resource balance)

Today, the Pacific Northwest finds itself highly interconnected by transmission to Canada in the north and California in the south. These three regions are interdependent both physically and in market terms. Accordingly, planning, markets, and system operations must be carefully coordinated. The Pacific Northwest is "long" on generation resources for both energy and capacity – provided sufficient transmission exists to deliver that electricity into and out of the region and to the ultimate load. Constraints to PSE's ability to access this regional surplus is an important aspect of PSE's capacity resource need reflected in resource planning analysis.

The conclusion that the region is long on resources is based on analytical findings of the Pacific Northwest Regional Resource Adequacy Forum ("Resource Adequacy Forum"). Created in 2005 by the Northwest Power and Conservation Council ("NPCC") and BPA, the Resource Adequacy Forum's express purpose is "developing a framework to provide a means of assessing whether the region has sufficient deliverable resources to meet its electricity demands reliably." Their assessment is based on forecasts of loads, existing (not planned) generation, and conservation consistent with the NPCC's 6th Power Plan; it looks five years into the future. Their analysis concludes that the region has sufficient energy and capacity to meet adequacy metrics, provided such resources can be delivered to loads.[8] PSE is an active participant in the Forum's work, and we find their detailed examination of the sufficiency of market resources extremely useful to the resource planning process.

Transmission outlook

Transmission to PSE's system is constrained. Although PSE holds transmission rights on the Bonneville Power Administration ("BPA") system that are not tied to specific resources, these rights are earmarked for PSE's programmatic hedging program and for meeting winter capacity need on a short-term basis. Until BPA completes upgrades on critical constrained paths, PSE is unlikely to obtain additional firm transmission to the PSE system for new resources. To qualify as a capacity resource, PSE asked RFP bidders proposing resources on the BPA system to identify available long-term firm transmission to PSE's system or demonstrate that BPA would grant such transmission rights. Therefore, BPAs network open season ("NOS") process was of particular interest during the 2011 RFP.

In response to increased electric generation resource development in the Northwest, which has been largely driven by wind developers, BPA implemented the NOS process to help the agency

8 See *http://www.nw.council.org/energy/resource/Default.asp*

identify and prioritize needed transmission system upgrades. The NOS process eliminated the outdated requests by clearing the existing queue, requiring parties seeking transmission service to submit new requests through NOS, and obligating all NOS participants to accept the transmission they request if BPA implements an upgrade. Thus, the NOS process allowed BPA to prioritize and plan transmission upgrades based on a committed need.

One of the most critical paths for delivering energy to PSE load centers from resources located east of the Cascade Mountains is the Cross Cascades North (CCN) flowgate. In March 2012, a regional planning entity called ColumbiaGrid released the final report created by the CCN study team, indicating that the best alternative for increasing the transmission capacity on the CCN flowgate is through a new 500kV BPA transmission line, estimated to cost over $1B. The report did not specify exactly when a new transmission line is needed to be built, and BPA currently does not have such a project in its 10 year plan. There are a few smaller transmission upgrades that will increase the transmission capacity on the CCN flowgate in the near-term; however, PSE expects to have difficulty obtaining new transmission capacity on the CCN flowgate within the next 10 years.

PSE outlook

Supply and demand uncertainties. PSE continues to face a number of supply and demand uncertainties that affect the way PSE considers long-term resource decisions. Uncertainty about the speed and timing of economic recovery in Washington and the region presents challenges to load forecasting. Factors such as increased energy efficiency and load uncertainties could potentially reduce demand in the future. Alternatively, variables such as the uncertain impact of future environmental regulations or increased demand to serve electric vehicles could increase PSE's need for new resources.

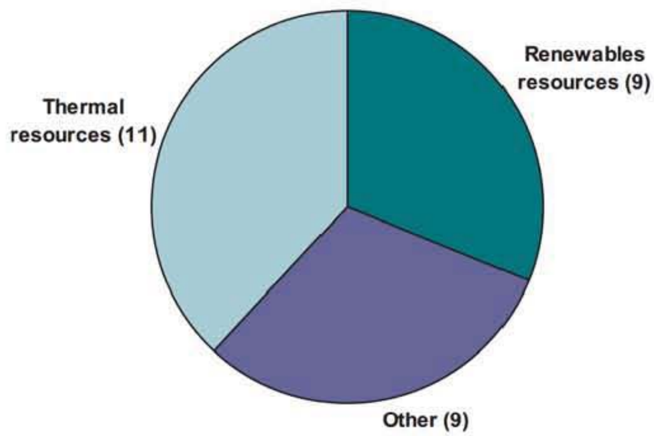
Prices have come down since the last RFP. Falling prices have created an opportunity for PSE to meet our near-term resource needs, while helping to mitigate long-term volatility and escalating costs by locking in a portion of our long-term resource needs at today's lower prices.

4 Proposals Received

PSE received a total of 27 proposals for resources in response to the 2011 All Source RFP ("RFP"). Some proposals included multiple offers from one or more generating sources. Additionally, PSE received two unsolicited proposals. Of the 29 proposals, 11 are from operating projects while 18 are development projects. See Appendix A for a list of the 2011 RFP proposals.

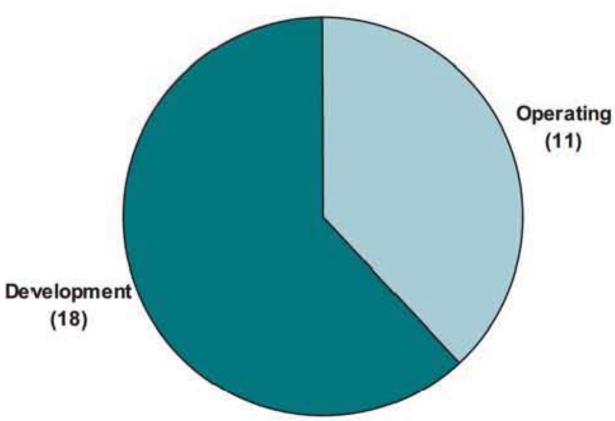
Figure 5 below summarizes the overall resource mix and number of megawatts proposed.

	Proposals	MW
Renewable resources	**9**	**454**
Wind	4	369
Biomass	3	61
Solar-PV*	2	24
Thermal resources	**11**	**3,124**
Coal	1	500
Natural gas - CCGT	6	2,006
Natural gas - SCGT	1	179
Natural gas - CHP	1	29
Natural gas - Recip	1	110
Natural gas - GT	1	300
Other resources	**9**	**2,631**
Market PPA	4	400
Hydro	1	77
Cold fusion	1	1,880
Energy storage	2	251
Waste-to-energy*	1	23
Total*	**29**	**6,209**



*The table above includes one unsolicited waste-to-energy offer and one unsolicited solar offer that were screened and compared with the RFP proposals during Phase 1 of the RFP evaluation process. No unsolicited offers were selected for further evaluation during Phase 2.

Figure 6 depicts operating and development resources by resource type.



Legend
Operating (11)
Wind (1)
Coal (1)
Natural gas - CCGT (4)
Market PPAs (4)
Waste-to-energy (1)
Development (18)
Wind (3)
Biomass (3)
Solar - PV (2)
Natural gas - CCGT (2)
Natural gas - SCGT (1)
Natural gas - CHP (1)
Natural gas - Recip (1)
Natural gas - GT (1)
Hydro (1)
Energy storage (2)
Cold fusion (1)

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Operating versus development resources.

PSE received a total of 11 proposals for operating resources and 18 proposals for development resources. All but one of the renewable offers proposed development resources. The capacity proposals were evenly split, with 10 proposals for existing resources and 10 for development resources.

Operating status became a key factor in PSE's screening decisions, because, in general, operating resources tend to be lower cost with less risk than development resources.

Market PPAs and the impact of Washington's EPS.

As described in Section 3, Washington's Emissions Performance Standard ("EPS") limits power contracts sourced from unspecified resources ("Market PPA") to less than five years. PSE may still consider long-term PPAs sourced from either a specific resource or a specified pool of resources that comply with the EPS greenhouse gas emissions limits.

Not all of the Market PPA offers submitted in response to PSE's 2011 RFP appeared to be EPS compliant as proposed. PSE contacted the potentially non compliant bidders to discuss the terms of their offers. Some bidders proposed adjustments to their offers; however, they did not provide adequate information to determine whether the projects were truly EPS compliant.

Ultimately, because Market PPA products must be short-term in order to comply with the EPS, PSE determined that these products may be better evaluated and negotiated by our portfolio hedging group. The hedging group is focused on short-term resources over the next 3 years. As a result, their analysis is more aligned with short-term forward market prices and PSE's operational needs in the non-winter seasons.

Figure 7 below depicts proposed resource types by location.

[redacted]

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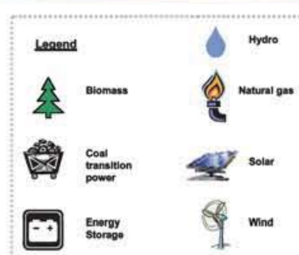

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As shown in Figure 7, most of the biomass and natural gas-fired generation proposals are located along the I-5 corridor. Wind projects are grouped east of the Cascade Mountains in Washington, along the Mid-Columbia river in northeast Oregon, and in Montana. Please note that Figure 7 does not include an energy storage system and a fusion power project to be sited at unspecified locations within Washington state, and four Market PPA proposals from unspecified resources.[9]

The 2011 RFP produced roughly half as many responses as the 2010 RFP and a similar number of proposals received in response to the 2008 RFP. In total, PSE received 31 proposals in response to the 2008 RFP, 64 proposals in response to the 2010 RFP, and 29 proposals in response to the 2011 RFP. Figure 8 below compares the proposals received in response to the 2008, 2010, and 2011 RFPs.

Figure 8. RFP proposals received, 2008-2011

	2008 Proposals	2010 Proposals	2011 Proposals
Biomass	0	9	3
Coal	1	0	1
Demand response	0	1	0
Hydro	3	2	1
Market PPAs	9	10	4
Nat Gas	10	18	10
RECs	0	2	0
Solar	0	1	2
Wind	8	21	4
Cold Fusion	0	0	1
Energy Storage	0	0	2
Waste-to-Energy	0	0	1
Total	31	64	29

PSE screened several unsolicited renewable proposals and potential self-build opportunities during the RFP evaluation process.

To ensure selection of the most cost effective and risk-mitigating options available to PSE, the RFP evaluation team screened two unsolicited resource proposals and two potential self-build opportunities.

Unsolicited proposals.

PSE received two additional proposals outside the RFP process ("unsolicited proposals), which were screened alongside the RFP proposals in the 2011 RFP. The first proposal offered a 20-year PPA for roughly 12 MW sourced from a [redacted] facility is scheduled to be online in Q1 2013. The second proposal offered a 5-year

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[redacted]

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PSE 2011 RFP Document

PPA for 23 MW sourced from generation produced by an existing [redacted] facility. A complete list of all RFP and unsolicited proposals is provided as Appendix A.

Self-build Opportunities.

PSE staff considered two self-build opportunities based on two simple-cycle combustion turbine peaking technologies, a frame model ("frame peaker") and an aero-derivative model ("aero derivative peaker"). Either option could be online in time to meet winter capacity need in 2015 and are assumed to be sited in Skagit County, Washington. The frame peaker configuration would be capable of producing 197 MW and the aero derivative peaker would be capable of producing 200 MW of power at ISO conditions. The assumptions associated with these self-build opportunities are described in Appendix F.

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5 Evaluation Process

PSE's resource evaluation process is designed to be consistent with guidance set forth in the Washington Administrative Code ("WAC") and the Revised Code of Washington ("RCW"), which encourages utilities to seek resources that provide clean, safe and reliable power to meet their needs using lowest reasonable cost as a criterion. RCW 19.280.020 defines "lowest reasonable cost" as "the lowest cost mix of generating resources and conservation analysis of a wide range of commercially available resources." Further, WAC 480-107-035 provides guidance regarding the minimum criteria that must be considered when evaluating and comparing resources:

At a minimum, the ranking criteria must recognize resource cost, market-volatility risks, demand-side resource uncertainties, resource dispatchability, resource effect on system operation, credit and financial risks to the utility, the risks imposed on ratepayers, public policies regarding resource preference adopted by Washington state or the federal government and environmental effects including those associated with resources that emit carbon dioxide. The ranking criteria must recognize differences in relative amounts of risk inherent among different technologies, fuel sources, financing arrangements, and contract provisions. The ranking process must complement power acquisition goals identified in the utility's integrated resource plan.

PSE's 2011 RFP process involves a two-phased approach designed to quickly identify the most promising proposals for a thorough combination of quantitative and qualitative evaluation. This approach allows PSE to efficiently organize its efforts and target the most promising proposals with thorough scrutiny. The following is a description of the process PSE follows to evaluate and select resources in accordance with Washington's laws.

Phase 1: Screening

PSE's evaluation began with an initial screening, sometimes referred to as a "fatal flaw" screening (a "Phase I screening"), in which PSE's Resource Acquisition department guides a cross-functional evaluation team in screening and eliminating proposals with high costs, unacceptable risks, or feasibility constraints. Working groups screened each proposal according to the evaluation criteria set forth in PSE's 2011 RFP document. PSE reviewed both the qualitative and quantitative attributes of a proposal, including price, development and construction status, commercial terms, environmental impacts, permitting issues, technical considerations, operating characteristics, transmission and interconnection, and project-specific economic analysis. Phase I included asking data requests of the bidders to clarify PSE's understanding of the proposals.

In general, PSE prefers offers that benefit customers by complementing PSE's resource and timing needs, minimizing cost, minimizing risk, providing strategic and financial benefits, and providing additional public benefits. Each of these evaluation criteria contains a set of sub-criteria or guidelines that specify PSE's preferences for a successful proposal.

Please see Appendix B for a description of PSE's evaluation criteria.

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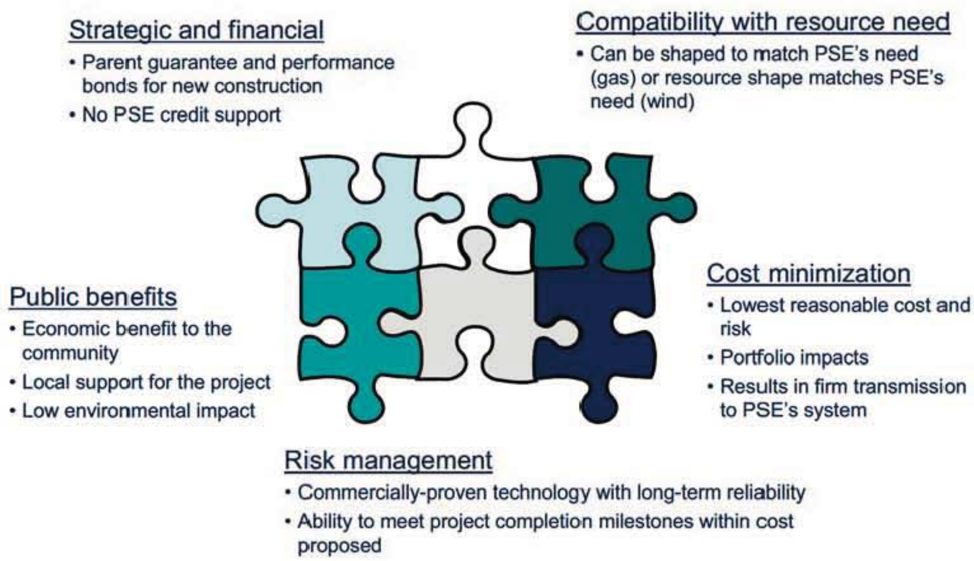
Figure 9. Summary of primary evaluation criteria



The screening process also included a deterministic quantitative analysis using its Portfolio Screening Model I (the "Screening Model") to identify proposals with prohibitive costs. The Screening Model identifies PSE's long-term revenue requirements for the incremental generic portfolio developed based on the 2011 IRP resource strategy and a current outlook on capacity, renewable, and energy need. Then, the Screening Model simulates the impact on portfolio economics by replacing "generic" resources with a specific proposal from the 2011 RFP.

The Screening Model calculates five metrics used by PSE to assess the economic viability of individual proposals: levelized cost, portfolio benefit, portfolio benefit ratio, net cost per unit of contribution to need, and levelized portfolio benefit per unit of contribution to need. A definition for each of these metrics is included in Appendix E, which describes the Screening Model, and in Section 7 where the Phase 2 quantitative results are presented. Each metric offers a slightly different perspective on the economic benefits associated with each proposal. All five metrics should be considered when comparing resources.

Throughout the screening process, the working groups met to discuss the risks and merits of the proposals. Following the review meetings, working groups submitted data requests to bidders seeking answers to outstanding questions or concerns related to proposals that were not eliminated during our initial screening. Examples of the types of information sought in these data requests include, but are not limited to: clarification of deal terms, clarification of cost assumptions included in the proposal, development status update, and information related to transmission and integration of the resource.

In addition to formal data requests, working groups contacted respondents directly to ask questions or request clarification of proposal materials. The working groups reported back to the RFP evaluation team describing their findings, with particular attention paid to the merits and risks of the proposal and any outstanding questions or areas of concern.

Upon completing the initial screening, the evaluation team identified a "candidate short list" of the most promising resources for further quantitative analysis and targeted qualitative evaluation. Selected proposals were generally those identified as having a lower cost and less risk than other alternatives.

Phase 2: Optimization and Due Diligence

Proposals selected for the candidate short list were subjected to more rigorous examination during the Phase 2 review (often called a "due diligence" phase). Phase 2 is typified by greater interaction with selected candidates and additional quantitative analysis, designed to support a deeper understanding of the proposals and their potential performance within PSE's portfolio. Members of the evaluation team had an opportunity to submit additional data requests and to contact selected candidates regarding outstanding or unclear data request responses, potential commercial terms and other open issues. Team members also began to discuss and set expectations for potential deal terms.

The Phase 2 quantitative process re-examined PSE's load forecast and its impact on resource selections, and current and long-term natural gas prices. These updated assumptions and information were incorporated into the analysis. The Phase 2 analysis incorporates the PSM III model (the "Optimization Model") that creates optimal, integrated portfolios for each scenario and sensitivity considered. Integrating PSE's AURORA, optimization, and stochastic models allows PSE to evaluate costs and risks of different portfolio selections while varying peaks, load, hydro generation, wind generation, natural gas prices, and power prices. Additionally, the team created new relative rankings of resource options in the Base with New Gas scenario that reflect the most current assumptions for PSE demand, power prices, and gas prices.

The analysis allows the company to quantify how sensitive the portfolios and resources are to its planning assumptions, and provides insights into how PSE ratepayers' costs are affected by adding different types of generation. The following are some of the critical questions posed as part of this analysis:

- How might economic conditions and load growth affect resource decisions?
- What are the key decision points and most important uncertainties in the long-term planning horizon, and when should we make those decisions?
- What impact might very different levels of natural gas prices have on resource decisions?
- How might future carbon regulation affect the relative value of resource alternatives?

PSE's 2011 IRP in Chapter 5 describes generally the process to create optimal portfolios and evaluate costs and risks. Appendix I of the 2011 IRP provides more in depth descriptions of the AURORA model, Stochastic Model, and the PSM III Optimization Model.

Figure 10 summarizes the Phase 2 analysis assumptions associated with each scenario and sensitivity. See Appendix D for a description of the specific assumptions associated with each of the scenarios and sensitivities.

Figure 10. Optimization Model scenario assumptions

	INPUT ASSUMPTIONS				
SCENARIOS	PSE Demand	Gas Price	AURORA Electric Price	Generic Resource Costs	Emissions Price
Base	Base	Base	Base	Base	None
Base + CO2	Base	Base	Base + CO2	Base	EPAAPA Analysis
Base w/ New Gas[1]	Base	Base + New Gas	Base + New Gas	Base	None
High Prices	Base	High	High	Base	None
Low Growth	Low Structural[2]	Low	Low	Base	None
SENSITIVITY Low Price w/ Base Load	Base	Low	Low	Base	None

Notes:
(1) "Base w/ New Gas": New Wood Mackenzie gas prices as of late April 2012
(2) Lower regional population growth

PSE held periodic meetings with the evaluation team during the due diligence phase to provide a forum for discussing key findings and updates to open issues. PSE held a final team meeting to review findings and confirm a recommended short list on May 14, 2012. Selected proposals are defined as those with the lowest reasonable cost and risk that best complement PSE's resource and timing needs.

To summarize the key findings of PSE's evaluation team, the Resource Acquisition group prepared an executive summary of findings that outlines key qualitative risks and advantages, quantitative metrics, as well as each proposal's selection status and the rationale for that selection status. Please see Appendix C for the executive summary of findings.

Throughout the process, PSE officers were kept apprised of our progress and decisions. The Resource Acquisition team presented formal updates to the Energy Management Committee, and other updates through informal internal discussions, presentations and reports. PSE also delivered periodic updates to the WUTC. Appendix H contains presentations made to the Energy Management Committee and to WUTC Staff.

Sections 6 through 8 below describe the evaluation team's findings and recommendations. Recommendations were presented to the Energy Management Committee at the end of the evaluation on June 12, 2012. PSE notified bidders of their selection status in June.

6 Screening and Results ("Phase 1")

More than 2,200 megawatts ("MW") of operating capacity from 11 proposals[10] evaluated in the 2011 RFP screening analysis provided positive portfolio benefits to meet PSE's near-term capacity need. Development resources were not cost competitive and have multiple qualitative risks. Approximately, 2,000 MW of the operating capacity offered may provide capacity for 10 years or longer, while only approximately 675 MW might provide long-term capacity of 15 years or longer. Not all of the operating capacity proposed has a definitive long-term transmission solution.

PSE eliminated 18 proposals (including the two unsolicited proposals) after completing the Phase 1 screening because of quantitative and/or qualitative flaws. Examples of such flaws included:

- Project is not viable as proposed.
- Unacceptable risk associated with counterparty, commercial terms, development schedule, technology, permitting, etc.
- No transmission or interconnection proposed and no clear solution available to ensure commercial operation date ("COD") by date needed.
- Project costs are high relative to other alternatives.

The quantitative Phase 1 screening relied upon a long-term natural gas price forecast and power price forecast from April 2011. See Appendix D for more detailed descriptions of scenario assumptions. Although PSE recognized that gas prices were falling from prior forecasts, this difference would not change the resources selected for Phase 2 evaluation because the costs and risks of development resources were significantly higher than those of existing resources, and PSE received an abundance of viable existing resource offers in response to its RFP.

The executive summary in Appendix C describes both the qualitative and quantitative findings for each project. Appendix C also shows the quantitative screening results by resource type.

Of the 18 proposals eliminated during Phase 1, 17 were development resources with higher costs and more significant qualitative risks than existing alternatives. Only one existing resource was eliminated during Phase 1: the [redacted] (Unsolicited PPA). This offer was submitted to PSE prior to the RFP process, and was evaluated alongside our RFP alternatives. PSE's screening analysis determined that pricing for this offer was not as competitive as other existing resource offers, and the proposal was ultimately withdrawn by the bidder prior to the end of Phase 1.

Nearly all of the proposed renewable resources were eliminated from consideration during the screening process for two reasons. First, all but one of the renewable offers were for development resources, which were generally higher cost and risk options than existing alternatives. Second, as described in Section 2, PSE's renewable outlook predicts that the company has sufficient renewable resources to meet its RPS targets until approximately 2023

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[10] Note that the [redacted] proposal, which contained offers from both a combined cycle resource and a peaking resource, is considered two proposals for the purposes of evaluation.

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when all RECs produced from existing resources are banked. Because of this, renewable resource proposals in the 2011 RFP were competing with lower cost and risk existing resources to help fill PSE's capacity need. PSE selected the two most favorable renewable resource offers from Phase 1 to compare with existing capacity alternatives in Phase 2, the [redacted] (#11116) biomass development project, and the [redacted] (#11113) wind project, the only operating wind project.

Upon completion of the Phase 1 screening, PSE selected a candidate list comprised of twelve proposals for further evaluation. The selected proposals represent the most attractive offers from all resource types when both qualitative and quantitative factors are considered together.

Figure 11 summarizes the selected resources. The executive summary of findings included as Appendix C summarizes the risks and benefits associated with each selected and non-selected proposal, and describes the rationale for PSE's selection decisions. In general, proposals with positive economic benefits and no fatal flaws identified during the screening process advanced to Phase 2 for further qualitative and quantitative review.

Figure 11. Proposals selected for Phase 2 evaluation

Counterparty and Project Name	Operating vs. Development	Offer	Term (yrs)	MW
[redacted] (#11112)	n/a	Firm energy	4	[redacted]
[redacted] 11124)	Existing	Firm energy	10	[redacted]
[redacted] (#11117)	Existing	PPA Extension	5	[redacted]
[redacted] #11110)	n/a	Firm energy	4	[redacted]
[redacted] (#11126)	n/a	Firm / Peak / Exchange	10	[redacted]
[redacted] #11116)	Development	Project PPA	25	[redacted]
[redacted] (#11117)	Existing	Tolling	5 / 10	up to [redacted]
Centralia Transition Coal TransAlta (#11102)	Existing	PPA	14	up to 500
[redacted] (#11118)	Existing	Tolling	10	[redacted]
[redacted] #11103)	Existing	Own / Tolling	15	[redacted]
[redacted] (#11127)	n/a	Firm / Peak / Call / Exchange	5 / 10	[redacted]
[redacted] #11113)	Existing	Own / PPA	15 / 20 / 25	[redacted]

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7 Optimization and Due Diligence, and Results ("Phase 2")

As PSE transitioned to the second phase of its evaluation of the most promising resources, it was important to consider not only the individual merits of each proposal, but also the portfolio impacts of potential resource combinations. To ensure that modeling assumptions would be as current as possible for the Phase 2 analysis, the team delayed completion of its evaluation and resource selection to be able to incorporate a new lower natural gas price scenario and PSE's new F2012 load forecast

The RFP evaluation team met periodically during Phase 2 to discuss proposal updates, findings and revisions. Throughout Phase 2 the evaluation team continued to carefully consider the potential risks and benefits of each proposal that could not be quantified, such as the likelihood of obtaining firm transmission to PSE's service territory in time for delivery, the impact of Washington's Emission Performance Standards ("EPS") on Market PPAs[11], what potential contract terms might look like, and other critical components. To do this PSE continued to submit formal data requests and spoke directly with bidders to better understand proposal offers, terms and conditions. These data requests and discussions led to term sheet revisions and updated pricing for the following resources:

- [redacted] **(#11124)** - lowered offer price and extended the contract term
- **Coal Transition PPA (#11102)** - lowered the offer price and updated volumes to ramp in more closely to resource need and slowly ramp down as project nears shutdown
- [redacted] **(#11117)** - updated pricing due to error in the initial offer structures resulting in some higher and some lower offers and adjusted contract start to provide more time to put a transmission solution in place
- [redacted] **(#11126)** - update start date of contract to allow more time to identify pool of resources and lowered volume to ensure pool of resources meets the EPS.

Consideration of data responses, discussions with bidders and other ongoing qualitative review also led the team to eliminate four proposals (containing multiple offers) prior to the final Phase 2 quantitative analyses due to serious risks or fatal flaws. In addition to the four eliminated proposals, the [redacted] (#11103) and the [redacted] were also eliminated due to serious risks. PSE continued to evaluate the [redacted] option (#11103) and the [redacted] Centralia 14-year PPA option (#11102) throughout Phase 2.

Figure 12 lists the proposals and offers eliminated prior to completing the Phase 2 analyses and summarizes the key risks that led to these decisions. For additional description of the benefits and risks of these offers, refer to the executive summary of findings provided as Appendix C.

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[11] In effect, because PSE cannot demonstrate that a power contract sourced from unspecified resources ("Market PPA") meets the criteria imposed by the EPS (as described in Section 3 of this document), PSE may only enter into Market PPAs with terms less than five years, or those that can designate a specific pool of EPS-compliant resources.

Figure 12. Phase 2 proposals eliminated prior to completing quantitative analysis

Proposal	Rationale
[redacted] (#11117)	Uncertain transmission solution; change in control risk [redacted] limits flexibility; as proposed the project economics are less favorable than other RFP alternatives
[redacted] (#11112)	No transmission solution (fatal flaw)
[redacted] (#11113)	PSE currently has no near-term renewable need; project continues to face community issues from earlier development efforts; Existing facility currently operating [redacted] This should create an opportunity for PSE [redacted] at a later date.
[redacted] (#11116)	PSE currently has no near-term renewable need; development risk; counterparty risk
[redacted] #11103)	[redacted] REDACTED VERSION [redacted] Tolling agreement is higher cost than the ownership offer; potential amendment to the Emissions Performance Standard would impact the costs or limit the sale of power to less than 5 years

In addition to the above offers, the [redacted] (#11127) proposal was not included in the quantitative analyses. [redacted] #11127) withdrew its proposal during Phase 2. This left PSE with 7 proposals (containing multiple offers) remaining for further consideration in Phase 2.

As described in the RFP process section, the Phase 2 quantitative evaluation was designed to create optimal, integrated portfolios for each scenario and sensitivity considered and to evaluate the costs and risks of different portfolio selections while varying peaks, load, hydro generation, wind generation, natural gas prices, and power prices. Additionally, the proposal offers were ranked in the scenario that best reflects the most current assumptions for PSE's peak demand, power prices, and gas prices.

Figure 13 provides the optimization results for the five scenarios considered in the 2012 RFP. As shown, the Coal Transition PPA (#11102) is selected in 4 of 5 scenarios. However, each scenario is not equally weighted. The Base w/ New Gas price scenario represents the most current forecast of natural gas and power prices.

Figure 13. Scenario Optimization Results

	Scenario					
	Base	Base + CO2	Base w/ New Gas	High Prices	Low Growth	Selected in X of 5 Scenarios
[redacted](#11103)						0
PSE Self Build Peaker					X	1
[redacted](#11124)		X		X	X	3
[redacted](#11110)	X	X	X			3
Coal Transition (Centralia) PPA	X	X	X	X		4
[redacted](#11123)				X		1
[redacted](#11123)					X	1
[redacted](#11123)	X		X			2
[redacted](#11118)					X	1
[redacted](#11117)	X	X	X	X		4
Portfolio Cost ($000)	10,151,274	13,491,908	9,858,326	11,097,217	7,966,006	

Notes:
(1) Selection in more scenarios is considered favorable; however, scenarios are not equally weighted
(2) "Base w/ New Gas" scenario reflects most current gas price forecast; proposed Base scenario for 2013 IRP
(3) In "Base + CO2" scenario, Centralia PPA (#11102) is tested with a higher PPA price to reflect the increase in market prices between "Base" and "Base + CO2" (see slide [x] for details)
(4) Transition Coal (Centralia) PPA (#11102) analysis includes equity component based on PSE's self build peaker

While the scenario analysis tells us which resources are selected, it does not indicate how close one resource decision is compared to another decision.

To better understand the optimization results, the quantitative evaluation team considered sensitivity analyses. The following were questions posed in that analysis:

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1. [redacted]
2. *Would a [redacted](#11118)[redacted]reduction change selections?*
3. *Would a [redacted](#11124) price reduction change selections?*
4. *Would a [redacted](#11103) offer price reduction change selections?*

To answer these questions, PSE staff studied one change at a time in its analysis. In the first sensitivity, [redacted] In the second, the [redacted](#11118) price was reduced until it was selected in each scenario. Similarly, PSE tested sensitivities in which the offer prices for the [redacted] (#11124) and the [redacted] *(#11103) offers were reduced*. The result shown in Figure 14 is the highest increase in the Coal Transition PPA price where the PPA is still selected.

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Figure 14. Coal Transition PPA Price Sensitivity

	Scenario: Base	Base w/ New Gas	Base + CO2	Low Growth	High Prices	Selected in X of 5 Scenarios
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	5
[redacted] (#11103)						0
PSE Self Build Peaker						0
[redacted] (#11124)			X		X	2
[redacted] (#11110)	X	X	X			3
Coal Transition (Centralia) PPA	X	X	X	X	X	5
[redacted] (#11123)					X	1
[redacted] (#11123)						0
[redacted] (#11123)	X	X				2
[redacted] (#11118)						0
[redacted] (#11117)	X	X	X	X	X	5

Portfolio Cost ($000)

	Base	Base w/ New Gas	Base + CO2	Low Growth	High Prices
w/ Centralia price adjustment	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
w/ Centralia price as offered	10,151,274	9,858,326	13,491,908	7,966,006	11,097,217
Increase (Reduction) in portfolio cost with sensitivity	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Figure 15 shows the price decrease necessary for the [redacted] toll (#11118) to be selected.

Figure 15. [redacted] Price Sensitivity

	Scenario: Base	Base w/ New Gas	Base + CO2	Low Growth	High Prices	Selected in X of 5 Scenarios
What % does PPA price need to be reduced to be selected?	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	5
[redacted] (#11103)						0
PSE Self Build Peaker		X		X		2
[redacted] (#11124)		X	X	X	X	4
[redacted] (#11110)		X	X			2
Coal Transition (Centralia) PPA	X		X		X	3
[redacted] (#11123)					X	1
[redacted] (#11123)		X		X		2
[redacted] (#11123)						0
[redacted] (#11118)	X	X	X	X	X	5
[redacted] (#11117)	X	X	X		X	4

Portfolio Cost ($000)

	Base	Base w/ New Gas	Base + CO2	Low Growth	High Prices
w/ [redacted] price reduction	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
w/ [redacted] price as offered	10,151,274	9,858,326	13,491,908	7,966,006	11,097,217
Increase (Reduction) in portfolio cost with sensitivity	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

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Figure 16 shows the price decrease necessary for the [redacted] (#11124) to be selected.

Figure 16. [redacted] Price Sensitivity

	Scenario: Base	Base w/ New Gas	Base + CO2	Low Growth	High Prices	Selected in X of 5 Scenarios
What % does PPA price need to be reduced to be selected?	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	5
[redacted] (#11103)						0
PSE Self Build Peaker		X		X		2
[redacted] (#11124)	X	X	X	X	X	5
[redacted] (#11110)	X	X	X			3
Coal Transition (Centralia) PPA	X		X		X	3
[redacted] (#11123)					X	1
[redacted] (#11123)		X		X		2
[redacted] (#11123)						0
[redacted] (#11118)		X		X		2
[redacted] (#11117)	X	X	X		X	4

Portfolio Cost ($000)	Base	Base w/ New Gas	Base + CO2	Low Growth	High Prices
w/ [redacted] price reduction	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
w/ [redacted] price as offered	10,151,274	9,858,326	13,491,908	7,966,006	11,097,217
Increase (Reduction) in portfolio cost with sensitivity	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Figure 17 shows the price decrease necessary for the [redacted] *(#11103)* offer to be selected.

Figure 17. [redacted] Price Sensitivity

	Scenario: Base	Base w/ New Gas	Base + CO2	Low Growth	High Prices	Selected in X of 5 Scenarios
What % does Purchase price need to be reduced to be selected?	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	5
[redacted] (#11103)	X	X	X	X	X	5
PSE Self Build Peaker						0
[redacted] (#11124)	X		X		X	3
[redacted] (#11110)			X			1
Coal Transition (Centralia) PPA					X	1
[redacted] (#11123)					X	1
[redacted] (#11123)						0
[redacted] (#11123)		X		X		2
[redacted] (#11118)	X	X	X	X		4
[redacted] (#11117)						0

Portfolio Cost ($000)	Base	Base w/ New Gas	Base + CO2	Low Growth	High Prices
w/ [redacted] price reduction	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
w/ [redacted] price as offered	10,151,274	9,858,326	13,491,924	7,966,006	11,097,217
Increase (Reduction) in portfolio cost with sensitivity	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

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In each analysis, the Coal Transition PPA (#11102) includes an equity return based on PSE's self-build peaker. The table rows labeled w/ Centralia (#11102) price as offered, w/ [redacted] (#11118) price as offered, w/ [redacted] (#11124) price as offered, and w/ [redacted] (#11103) price as offered are the Portfolio costs in $000s of the original optimization shown in Figure 13.

The conclusions of this sensitivity analysis are as follows:

Coal Transition PPA (#11102) price sensitivity

- Coal Transition PPA (#11102) would be selected in 4 scenarios even at higher contract prices than offered
- In the "Low Growth" scenario it is not as attractive as other RFP alternatives.

[redacted] PPA (#11118) price sensitivity

- [redacted] (#11118) [redacted] would need to be reduced by [redacted] for selection in 3 of 5 scenarios
- In one of those 3 scenarios it is being selected with Coal Transition PPA (#11102)

[redacted] (#11124) price sensitivity

- [redacted] (#11124) price would need to be reduced by [redacted] for selection in 5 of 5 scenarios
- In 3 scenarios the [redacted] (#11124) is being selected with Coal Transition PPA (#11102)
- In the "Base w/ New Gas" scenario the combination of [redacted] (#11124), [redacted] (#11118), and PSE's self build peaker displaces Coal Transition PPA (#11102), but the cost is essentially the same

[redacted] (#11103) price sensitivity

- In order for the [redacted] purchase option to be selected in three scenarios the purchase price would need to decline by approximately [redacted] from the original price offered.
- Furthermore, in order for [redacted] purchase option to be selected in the remaining 2 scenarios, Base and High Prices, the purchase price would need to fall by just over [redacted]
- When adjusting the [redacted] purchase price for selection, the option was chosen along with the Coal Transition PPA in only the High price scenario. In the remaining 4 scenarios, the Coal Transition PPA was excluded.

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Generally, PSE's quantitative analysis demonstrates that the valuation of resource alternatives is close. Small changes to price, volume, timing, or PSE's capacity need impact the combination of resources that are being selected.

Another sensitivity analysis was conducted to better understand whether PSE could rely on short-term market purchases until 2015[12]. In this analysis, PSE relaxed the model constraint that required us to meet the 15.7% planning reserve margin in 2013 and 2014. This sensitivity assumes that current contract opportunities are lost unless selected at the contract terms proposed. Figure 18 shows the result of this analysis. Centralia (#11102) is selected in 3 of 5 scenarios.

Figure 18. Sensitivity analysis of relying on market in the near-term

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		Scenario					
	Start	Base	Base + CO2	Base w/ New Gas	High Prices	Low Growth	Selected in X of 5 Scenarios
[redacted] (#11103)	2014		X				1
PSE Self Build Peaker	2015					X	1
[redacted] (#11124)	2012		X		X		2
[redacted] (#11110)	2013	X	X				2
Coal Transition (Centralia) PPA	2012	X		X	X		3
[redacted] (#11123)	2014				X		1
[redacted] (#11123)	2014			X		X	2
[redacted] (#11123)	2016	X	X				2
[redacted] (#11118)	2012						0
[redacted] (#11117)	2013	X	X	X	X	X	5

Portfolio Cost ($000) [redacted]

To better understand the risk of selecting the Coal transition PPA, PSE performed another analysis to compare a portfolio with and without the Coal Transition PPA (#11102). To create a portfolio without the Coal Transition PPA (#11102) that would provide an equal level of service to customers as the portfolio created under the Base w/ New Gas scenario ("with Centralia"), a sensitivity was created in the Optimization Model (Low Growth with Base Load) where the gas and power prices in the Low Growth scenario were used in place of the prices in the Base scenario. This portfolio is referred to as "No Centralia". Figure 19 compares the performance of each portfolio in the five scenarios. The Centralia PPA (#11102) provides the biggest portfolio benefits when gas and power prices are higher.

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Figure 19. Evaluation of Portfolios with and without the Coal Transition PPA

	With Centralia	No Centralia
[redacted](#11103)		
PSE Self Build Peaker		X
[redacted](#11124)		X
[redacted]#11110)	X	X
Coal Transition (Centralia) PPA	X	
[redacted](#11123)		
[redacted](#11123)		X
[redacted](#11123)	X	
[redacted](#11118)		X
[redacted](#11117)	X	

Portfolio Cost ($000's)	Scenarios				
	Base	Base + CO2	Base w/ New Gas	High Prices	Low Growth
No Centralia	[redacted]				
With Centralia					
(Benefit)/Cost Portfolio with Centralia					

For these same portfolios with Centralia and No Centralia, PSE performed risk analysis consistent with the approach in the 2011 IRP. PSE analyzed the range of the portfolio costs varying natural gas prices, power prices, hydro generation, wind generation, and peak and energy loads to assess the cost and risk of the 2011 RFP resource alternatives. Figure 20 demonstrates that the portfolio with Centralia reduces both costs as well as risk measured by TVar90. While the No Centralia portfolio captures better the benefits of lower market prices, overall the range of portfolio costs is narrower with Centralia in the portfolio.

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WAC 480-07-160

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How do I interpret PSE's quantitative risk metrics?

- **TVar90 ($):** Lower is better.

  TVar90 is a risk measure to analyze bad outcomes, calculated as the mean of the worst 10% of possible outcomes.

- **Cost at Risk ($):** Lower is better.

  Cost at Risk is the TVar90 less the expected cost and measures the distribution between the expected cost and the high cost outcomes.

- **Volatility (%):** Lower is better

  Volatility is a measure of year-to-year variability in costs. It is an indicator of portfolios that would result in more or less stable rates over time. Volatility is estimated as the mean standard deviation of percentage changes in year-to year costs across the 1,000 Monte Carlo simulations.

- **TVar10 ($):** Lower is better. (this is not a measure of risk, rather a measure of upside potential)

  TVar10 measures the mean of the best 10% of possible outcomes.

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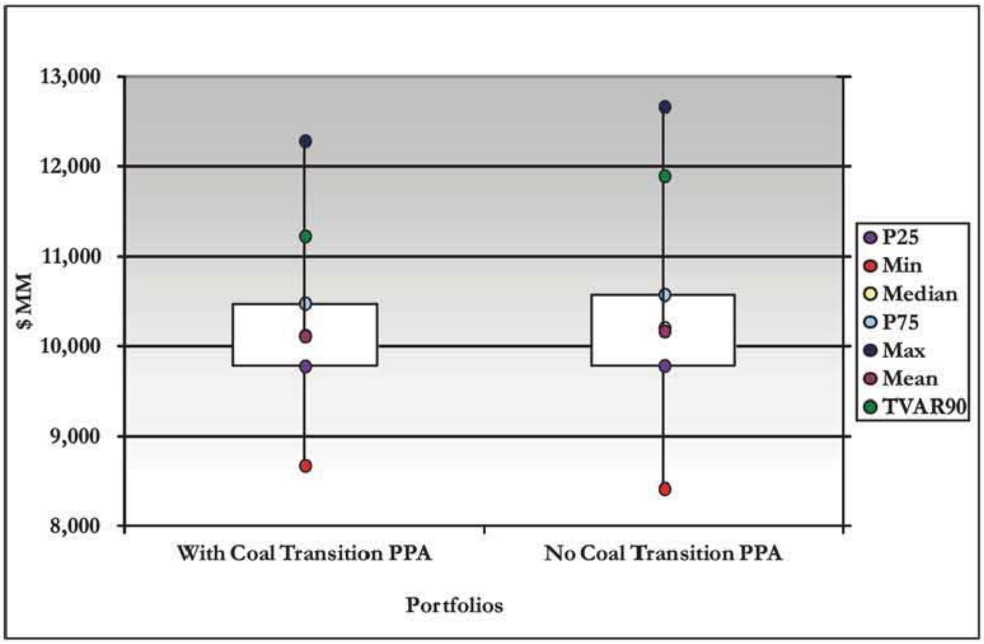
Figure 20. Stochastic Risk Analysis



Portfolio Cost (Revenue Requirement) $MM

	With Coal Transition PPA	No Coal Transition PPA
Max	[redacted]	[redacted]
TVAR90	[redacted]	[redacted]
P75	[redacted]	[redacted]
Median	[redacted]	[redacted]
Mean	[redacted]	[redacted]
P25	[redacted]	[redacted]
TVAR10	[redacted]	[redacted]
Min	[redacted]	[redacted]

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In order to test the robustness of the choice of portfolios with and without Centralia, portfolio optimization was performed for each of the 250 draws of power prices, gas prices, hydro generation, wind generation, and peak/energy loads created by the Stochastic model. This provides for more combinations of portfolios with and without the Coal Transition PPA since it can be argued that the Coal Transition PPA can be combined with other proposed resources. The Coal Transition PPA was picked in about 56% of the 250 optimal portfolio selections, in combination with other resource acquisitions or generic resources.

Figure 21 shows the plot of expected revenue requirements on the horizontal axis and TVar90 on the vertical axis. It shows that most portfolios with the Coal Transition PPA have lower TVar90s compared to portfolios without Coal Transition PPA. The same scatter plot (Figure 22) for the Cost at Risk in the vertical axis shows that the Cost at Risk for portfolios with Centralia is lower than those without Centralia. As indicated in the chart, portfolios in the lower left corner are lower cost and risk. Portfolios in the upper right corner are higher cost and risk.

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Figure 21. Expected vs. TVar90

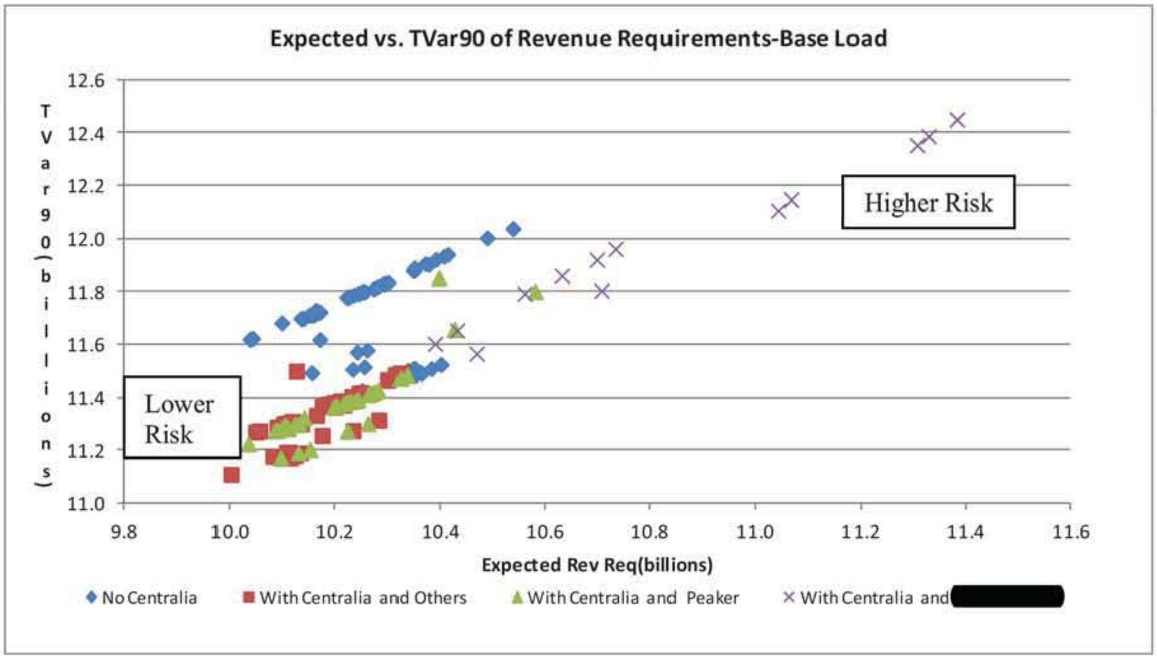

Figure 22. Expected vs. Cost at risk

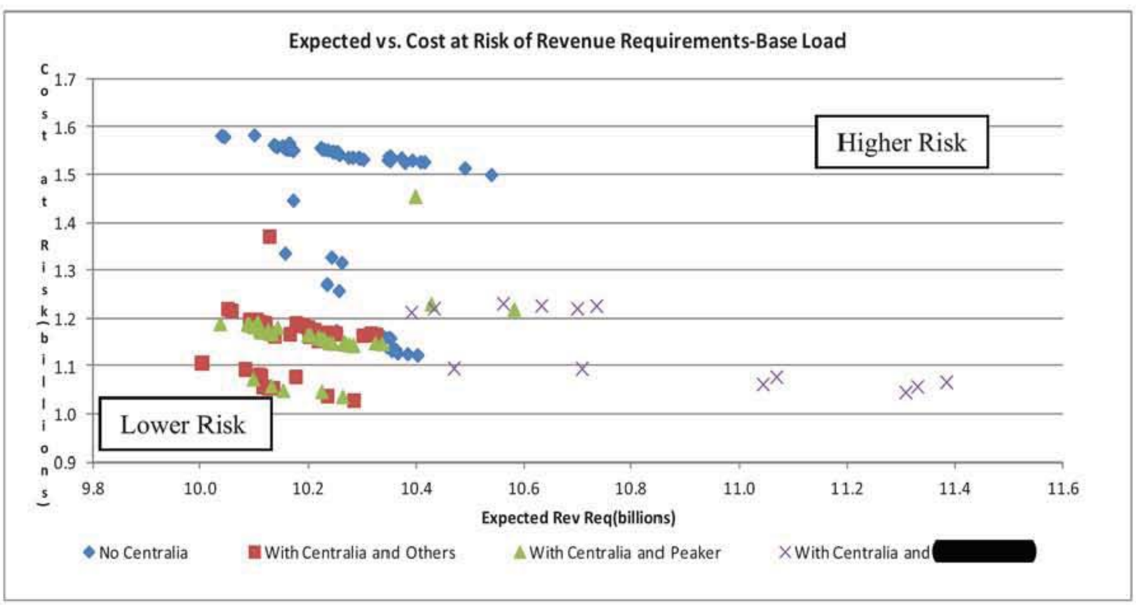

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Figure 23 on the next page shows the Phase 2 relative project rankings from the PSM I screening model in the Base with New Gas price scenario. These results have been updated since the EMC meeting on June 12, 2012 to correct an overstatement of market purchase costs which includes the doubling up of transmission costs. This change does not change the selection of resources in Phase 2, since PSE relied upon the qualitative review and the optimization results. Figure 23 includes proposals eliminated during Phase 2 before PSE conducted its optimization and risk analysis.

The following key provides a guideline for interpreting the five quantitative metrics PSE uses to rank proposals for comparison.

How do I interpret PSE's quantitative metrics?

- **Portfolio Benefit ($):** Higher is better. This metric is useful for comparing projects with the same winter capacity value.

  Portfolio benefit is the difference between the net present value portfolio revenue requirement with the proposed project in the portfolio replacing an equivalent amount of generic resource, and the net present value portfolio revenue requirement of the all generic portfolio.

- **Levelized Cost ($/MWh):** Lower is better. This metric is useful for comparing projects that have the same or similar operating characteristics.

  Levelized cost is the net present value of the proposed project's revenue requirement divided by the net present value of the proposed project's generation.

- **Portfolio Benefit Ratio:** Higher is better. This metric is useful for comparing projects that have the same or similar operating characteristics.

  Portfolio benefit ratio is the portfolio benefit divided by the net present value of the proposed project's revenue requirement.

- **Levelized net cost per unit of contribution to need ($/kW or $/REC):** Lower is better. This metric is useful for comparing across technologies and size.

  Levelized net cost per unit of contribution to need is the difference between the net present value project revenue requirement and the net present value market revenue of the project's generation divided by the net present value of the project's capacity contribution. If a renewable project is being considered, then the numerator is divided by the net present value of the project's contribution to PSE's renewable energy target.

- **Levelized *portfolio benefit* per unit of contribution to need ($PB/kW or $PB/REC):** Higher is better. This metric is useful for comparing across technologies and size.

  Levelized portfolio benefit per unit of contribution to need is a project's portfolio benefit divided by the present value of the project's capacity contribution. If a renewable project is being considered, If a renewable project is being considered, then the numerator is divided by the net present value of the project's contribution to PSE's renewable energy target.

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Figure 23. Phase 2 Relative Project Rankings

Capacity Proposals	PPA or Ownership	Project Start	Book Life / Contract Term	Levelized Cost $/MWh	Portfolio Benefit $000	Levelized PB / kW	Levelized PB / kW Ranking	Portfolio Benefit Ratio	Levelized Net Cost / kW	Levelized Net Cost / kW Ranking
[redacted] (#11117)	Tolling	2016	6	[redacted]	$ 29,878	[redacted] kW	1	2.48	[redacted] kW	1
[redacted] (#11123)	Index Price	2016	11	[redacted]	$ 16,787	[redacted] kW	2	0.32	[redacted] kW	4
[redacted] (#11123)	Index Price	2014	11	[redacted]	$ 13,852	[redacted] kW	3	0.25	[redacted] kW	3
Coal Transition (Centralia) PPA	Fixed Price	2012	14	[redacted]	$ 86,666	[redacted] kW	4	0.06	[redacted] kW	7
[redacted] (#11117)	Tolling	2013	6	[redacted]	$ 14,034	[redacted] kW	5	0.12	[redacted] kW	2
[redacted] (#11118)	[redacted]	[redacted]	[redacted]	[redacted]	$ 26,999	[redacted] kW	6	0.16	[redacted] kW	5
[redacted] #11117)	Tolling	2013	11	[redacted]	$ 17,164	[redacted] kW	7	0.07	[redacted] kW	6
PSE Self Build Peaker (Frame Tech.)	Ownership	2015	35	[redacted]	$ 13,580	[redacted] kW	8	0.05	[redacted] kW	11
[redacted] (#11103) Original	Ownership	2014	29	[redacted]	$ 8,829	[redacted] kW	9	0.00	[redacted] kW	13
[redacted] (#11124)	Fixed Price	2013	10	[redacted]	$ (1,485)	[redacted] kW	10	(0.01)	[redacted] kW	8
[redacted] (#11123)	Fixed Price	2014	5	[redacted]	$ (1,486)	[redacted] kW	11	(0.03)	[redacted] kW	10
[redacted] (#11110)	Fixed Price	2013	5	[redacted]	$ (2,518)	[redacted] kW	12	(0.03)	[redacted] kW	9
[redacted] #11103)	Tolling	2014	15	[redacted]	$ (86,787)	[redacted] kW	13	(0.06)	[redacted] kW	12
[redacted] (#11116)	Fixed Price	2014	25	[redacted]	$ (19,022)	[redacted] kW	14	(0.13)	[redacted] kW	14
[redacted] (#11112)	Fatal Flaw									

Renewable Proposals	PPA or Ownership	Project Start	Book Life / Contract Term	Levelized Cost $/MWh	Portfolio Benefit	Levelized PB / REC	Levelized PB / REC Ranking	Portfolio Benefit Ratio	Levelized Net Cost / REC	Levelized Net Cost / REC Ranking
[redacted] (#11116)	Fixed Price	2014	25	[redacted]	$ 15,694	$ [redacted] / REC	1	0.11	$ [redacted] / REC	2
[redacted] (#11113)	Fixed Price	2013	25	[redacted]	$ 52,606	$ [redacted] REC	2	0.22	$ [redacted] / REC	1

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The quantitative analysis demonstrates that resources are relatively close in terms of economics. Small changes to price, size, timing, or PSE's capacity need impact the combination of resources that are being selected. Ultimately, it is a combination of the quantitative results *and* the qualitative findings that determine PSE's resource strategy.

Figure 23 summarizes the primary qualitative and quantitative findings that led to PSE's short list selection decisions at the end of Phase 2. Additional details about the risks and benefits of all of the RFP proposals are provided in the executive summary attached as Appendix C.

Figure 23. Summary of Phase 2 Qualitative and Quantitative Findings

Status	Proposal	Quantitative summary	Qualitative summary
Selected	**Coal Transition PPA** TransAlta (#11102) Start: 2012 Term: 13-yrs Size: ramps up to 498 MW	• Least cost in 4 of 5 scenarios • Lowers risk of higher portfolio costs • Positive economic benefits; competitive levelized cost; reasonable portfolio benefit/kW • Benefits of long-term physical fixed price increases with rising power costs • Best match to PSE's growing capacity need	• Provides long-term physical firm energy in addition to capacity • Firm power backed by physical asset, [redacted] • 100 MW of long-term firm transmission secured with BPA for contract term after exercising renewal rights in 2016; PSE holds 398 MW of long-term firm transmission (to be confirmed with BPA) • Counterparty accepts [redacted] • Strong counterparty (BBB S&P credit rating) with long history of international owner/operator performance • Consistent with and supportive of state policy goals and is supported by public • Opportunity may be lost if not pursued now considering the MOA between the state and TransAlta
Selected	[redacted]	• Least cost in 4 of 5 scenarios • Top ranked proposal based on screening model results • Attractively priced winter-only "heat rate call option" • Fits into future capacity need	• Strong counterparty relationship; [redacted] requires transmission contract [redacted] for term of [redacted] • Timing allows ability to continue to monitor [redacted]

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Status	Proposal	Quantitative summary	Qualitative summary
Selected	[redacted]	• Least cost in 3 of 5 scenarios • Competitive levelized cost • Benefits of long-term physical fixed price increases with rising power costs • Creates capacity surplus for [redacted] years	• Strong counterparty relationship with low risks • Provides grid system benefits associated with location • [redacted] may create opportunity to negotiate better terms
Not selected	[redacted]	• [redacted]	• [redacted]
Not selected	[redacted]	• Least cost in no scenarios • Other RFP alternatives have more favorable economics • Size would produce substantial surplus until [redacted]	• Existing facility will likely face uncertainty [redacted]
Not selected	[redacted] (#11123) [redacted]	• Least cost in 2 of 5 scenarios • Positive economic benefits; however, additional analysis is required to evaluate appropriate market premium of energy exchange (offered at a [redacted] premium; PSE Trade Floor indicates premiums are closer to [redacted] for short term deals)	• 10-yr deal is complicated by the Emissions Performance Standard • Transmission solution uncertain due to competing requests at [redacted] • More competitive pricing could be sought through PSE's portfolio hedging group with lower transaction costs and risks
Not selected	[redacted] (#11110) [redacted]	• Least cost in 3 of 5 scenarios • Economic benefits are negative; short-term PPAs may be better evaluated through hedging program	• Since PPA is required to be less than 5-yrs due to Emissions Performance Standard, the short term trade desk may be able to obtain a more competitive offer with lower transaction costs and risks

8 Bringing It All Together

Figure 24 presents the selected 2011 RFP short list and its impact on PSE's load-resource balance outlook, if all of the selected resources are acquired. The final short list was presented to PSE's Energy Management Committee on June 12, 2012.

Figure 24. RFP Short List Outlook

Comparison of Need with RFP Short List[1]	2012	2013	2014	2015	2016	2017	2018	2019	2020
Capacity (Deficit) / Surplus in MW[2]	(129)	(226)	(430)	(517)	(681)	(809)	(824)	(846)	(841)
Coal Transition PPA	[redacted]								
[redacted] (#11124)									
[redacted] (#11117)									
Remaining Capacity (Deficit) / Surplus in MW									

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Notes:
(1) This chart demonstrates how the RFP short list fits into PSE's need and does not suggest that PSE will contract for all proposed resources.
(2) Capacity need does not reflect need for additional operating reserves when new resources are on PSE's system (see chart on page 3 for capacity need that includes operating reserves).
(3) [redacted] capacity as shown is reduced by PSE's operating reserve requirement for this resource addition.
(4) Under the F2012 "low load" forecast, the need for 500 MW of capacity shifts from 2015 to 2016.

Next steps

Short list. PSE's evaluation indicates that the Coal Transition PPA (#11102) should be pursued first and immediately because the opportunity to pursue this resource may be lost if delayed. This is because Senate Bill 5769 (the "Coal Transition Energy Bill") requires at least 500 MW of coal transition power to be placed under long-term contract by December 2012, or the MOA may be terminated.[13] To be effective, the Coal Transition PPA (#11102) requires pre-approval from the Washington Utilities and Transportation Commission ("UTC"), which is a 180-day process.

PSE's analysis indicates that other short list resources should not be executed until the outcome of the Coal Transition PPA (#11102) pre-approval process is known. Because short list selection is largely based upon the best combination of resources to produce a portfolio that is lowest cost and risk compared to other alternative resource portfolios, if the Coal Transition PPA (#11102) is not approved by the UTC, the remaining resources on the RFP short list may change.

13 The Coal Transition Energy Bill provides certain exemptions to the Washington state Emissions Performance Standard (introduced in Section 3) to encourage the early closure of coal-fired plants in Washington.

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Market PPAs. As described in Section 3, Market PPAs from unspecified resources are limited by the Washington state Emission Performance Standard (RCW 80.80) to term lengths less than five years. While PSE's RFP team takes a long-term view of resource acquisition, looking to minimize cost and risk by locking in stable, attractively priced long-term resources, PSE's hedging group is focused on acquiring short-term resources to meet the company's near-term needs. The hedging group's evaluation process is closely aligned with short-term forward market prices and PSE's operational needs in the non-winter seasons. As a result, the hedging group may be better-positioned to evaluate and negotiate short-term market products.

Cost of market purchases. PSE's portfolio analysis of the RFP bids includes market purchases when hourly demand is greater than the dispatch of the portfolio of resources being studied. The PSM I screening model includes transmission costs for market purchases while the PSM III optimization model does not. The PSM III model does not easily incorporate the transmission cost of market purchases into the resource decision because it does not separate market purchases and sales. While PSE believes it is reasonable and important to reflect these transmission costs, the optimization analysis as presented in this document does not include these costs. A solution is currently being developed that will provide the impact of the of the added transmission costs. Once this is completed PSE will run the added transmission costs though the optimization model scenarios to confirm that the results do not appreciably change with the added transmission costs. Adding transmission costs to market purchases in the optimization analysis would increase the overall costs for all portfolios. Coal transition power would benefit from the change because it is replacing the increased costs of market power. Our expectation is that the selection of coal transition power will not change as a result of this improvement in the optimization model.

Appendix A

Proposal List

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2011 RFP Proposal List

Note: Some proposals contained multiple offer options and many of the bidders larified or updated information in their proposals after the RFP evaluation process began. Not all offer iterations and updates are reflected in the list below.

Project ID	Resource type	Project name	RFP counterparty	City	County	State / Province	Status	COD	Term Start Date	Term End Date	Commercial Structure	Offer Capacity	Facility Capacity	Generation Technology	Tx Provider	Tx Interconnection	Tx Delivery Point	Capacity Factor	Heat Rate
11101	NatG-Recip	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	[redacted]	11/1/15	10/31/35	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
11104	Wind	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	[redacted]	n/a	n/a	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
11105	Biom-manure	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	[redacted]	10/1/12	9/30/24	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
11106	NatG-CCCT	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	[redacted]	12/1/15	11/30/45	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
11107	NatG-SCCT	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	n/a	[redacted]	n/a	n/a	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
11108	NatG-CHP	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	[redacted]	3/1/14	3/1/34	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
11109	Hydro	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	[redacted]	n/a	n/a	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
11110	PPA-Market	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	n/a	[redacted]	1/1/13	3/31/17	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
11111	Wind	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	[redacted]	12/31/13	12/31/33	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
11112	PPA-Market	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	n/a	[redacted]	11/1/12	12/31/16	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
11114	Wind	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	[redacted]	10/31/14	10/31/34	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
11116	Biom-paper	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	[redacted]	12/1/13	12/1/38	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
11119	Energy Storage	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	n/a	[redacted]	n/a	n/a	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
11120	Biomass	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	[redacted]	1/1/14	12/31/38	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
11121	NatG-SCCT	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	[redacted]	n/a	n/a	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
11122	Solar - PV	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	[redacted]	12/31/15	12/31/35	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
11124	NatG-CCCT	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Operating	[redacted]	1/1/12	12/31/16	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
11125	Fusion	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	[redacted]	n/a	n/a	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
11102-a	Coal	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Operating	[redacted]	1/1/12	n/a	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
11102-b	Coal	Centralia Coal Facility PPA	TransAlta Centralia Generation, LLC	Centralia	Lewis	WA	Operating	1971	1/1/12	12/31/25	14-year Project PPA	385-500	1,340	2 -670MW Siemens-Westinghouse turbine-generator units	BPA	CW Paul Substatoin	CW Paul Substatoin	n/a	10600
11102-c	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Operating	[redacted]	1/1/12	12/31/25	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
11103-a	NatG-CCCT	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Operating	[redacted]	9/30/12	n/a	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
11103-b	NatG-CCCT	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Operating	[redacted]	1/1/14	12/31/28	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
11113-a	Wind	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Operating	[redacted]	1/1/13	1/1/28	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
11113-b	Wind	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Operating	[redacted]	1/1/13	1/1/33	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
11113-c	Wind	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Operating	[redacted]	1/1/13	1/1/38	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
11113-d	Wind	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Operating	[redacted]	n/a	n/a	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
11115-a	NatG-CCCT	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	[redacted]	n/a	n/a	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
11115-b	NatG-CCCT	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	[redacted]	12/31/15	12/31/35	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
11117-a	NatG-SCCT	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Operating	[redacted]	11/1/16	various	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

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2011 RFP Proposal List

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Project ID	Resource type	[redacted]				State / [redacted]	Status	COD	Term Start Date	Term End Date	Commercial Structure	Offer Capacity (MW)	Facility Capacity (MW)	Generation Technology (make, model & # units)	Tx Provider	Tx Interconnection	Tx Delivery Point	Capacity Factor (%)	Heat Rate Btu/kWh
11117-b	NatG-CCCT	[redacted]					Operating	[redacted]	11/1/12	various	[redacted]								
11117-c	NatG-CCCT						Operating		11/1/12	various									
11117-d	NatG-CCCT						Operating		11/1/12	various									
11117-e	NatG-CCCT						Operating		11/1/12	various									
11123-a	Energy Storage						Development		11/1/14	10/31/34									
11123-b	Energy Storage						Development		11/1/15	10/31/35									
11126-a	PPA-Market						n/a		7/1/13	2/28/18									
11126-b	PPA-Market						n/a		1/1/13	12/31/17									
11126-c	PPA-Market						n/a		1/1/13	12/31/17									
11126-d	PPA-Market						n/a		7/1/13	2/28/23									
11126-e	PPA-Market						n/a		1/1/13	12/31/22									
11126-f	PPA-Market						n/a		1/1/13	12/31/22									
11126-g	PPA-Market						n/a		7/1/15	2/28/25									
11126-h	PPA-Market						n/a		1/1/15	12/31/24									
11126-i	PPA-Market						n/a		1/1/15	12/31/24									
11127-a	PPA-Market						n/a		Jan. Yr TBD	Flexible									
11127-b	PPA-Market						n/a		Jan. Yr TBD	Flexible									

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Unsolicited Proposals List

Note: Some proposals contained multiple offer options and many of the bidders clarified or updated information in their proposals after the RFP evaluation process began. Not all offer iterations and updates are reflected in the list below.

Date Received	Resource type	Project name	RFP counterparty	City	County	State	Status	COD	Term Start Date	Term End Date	Commercial Structure	Offer Capacity (MW)	Facility Capacity (MW)	Generation Technology (make, model & # units)	Tx Provider	Tx Interconnection	Tx Delivery Point	Capacity Factor (%)	Heat Rate Btu/kWh
10/14/11	Solar-PV	[redacted]					Development	3/31/2013	4/1/13	3/31/33	[redacted]								
9/28/11	WTE						Operating	online	1/1/12	9/30/16									

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Appendix B

Evaluation Criteria

(as published in the 2011 RFP for All Generation Sources)

Evaluation Criteria

1 Compatibility with Resource Need

Evaluation Criteria	Description
1. Timing	PSE prefers proposals that offer: • energy and/or capacity in a time frame consistent with PSE's needs • substantial assurance of being commercially available according to the schedule proposed • flexibility in development schedule and/or contract start date to accommodate PSE's timing needs
2. Match to need through ownership	Proposals that offer generation from an underlying asset that closely matches PSE's annual capacity requirements, or that offer output which can be controlled by PSE are preferred to those that rely on shaping through short- or long-term arrangements.
3. Match to need through contract	PSE prefers proposals that provide a fixed annual price and closely match PSE's annual capacity requirements. PSE also prefers proposals that provide fixed transmission capacity from BPA's system to PSE's system and closely match PSE's annual capacity requirements.
4. RPS requirement	Proposals in which qualified renewable generation or RECs are closely aligned with PSE's renewable need as mandated by the Energy Independence Act, Chapter 19.285 RCW.

Evaluation Criteria	Description
5. Operational flexibility	PSE prefers proposals that offer control of project output whereby the Company may respond to seasonal and real-time fluctuations in load/resource balance and system reliability events. This includes, for example, dispatch or displacement of the project in real time and, for jointly-owned projects, the ability for PSE to elect to use generation output that would otherwise have been displaced by the other owner for reliability purposes. Additionally, PSE prefers proposals that provide the ability to carry operating reserves.
6. Performance within existing PSE generation portfolio	Analyses will include such factors as: • impact on system reliability • system dispatch and displacement • location with respect to the regional transmission system and PSE's electric system • impacts on system reserves, load following, integration costs and other factors
7. Resource mix / diversity	The diversity of resource technology and fuel types will be considered in a manner consistent with PSE's Integrated Resource Plan. Specific considerations shall include: • technology type • fuel supply type • fuel supply source • fuel supply reliability, including control and deliverability

2 Cost Minimization

Evaluation Criteria	Description
1. Resource cost	PSE prefers proposals that provide the lowest reasonable cost throughout the project life, taking into account the price of the proposal and other factors that impact PSE's overall cost. Such factors include, but are not limited to: • capital cost • financing cost • operation and maintenance cost • fuel and fuel transportation cost • fixed and variable power purchase agreement cost • transmission cost • ancillary services • integration costs • transmission system upgrades • cost to rebalance debt/equity ratio for imputed debt and consolidated debt • cost of credit facilities • transaction costs and other management costs, etc. • cost to meet environmental compliance, including capital improvements and/or capacity limitations and restrictions • renewable energy credits

Evaluation Criteria	Description
2. Transmission	PSE prefers long-term firm delivery of energy to its service area. In the absence of the assurance of firm delivery at the time of proposal, PSE prefers proposals that provide a high likelihood of acquiring adequate transmission rights. Proposals that do not include long-term firm transmission to PSE's service area, that would produce congestion or that would increase PSE's transmission costs will be compared unfavorably with other proposals and/or will be assessed the additional cost to PSE as part of the evaluation process.
3. Portfolio cost impact	PSE prefers proposals and combinations of proposals that result in the lowest impact on PSE's revenue requirements and rates when included in PSE's existing generation resource portfolio.

3 Risk Management

Evaluation Criteria	Description
1. Status and schedule	All other things being equal, PSE prefers operating projects first, projects under construction second, and development projects third. With respect to development projects, PSE prefers proposals which demonstrate that the respondent has the experience and financial resources to complete the project and has made significant progress in securing necessary permits, property rights, equipment, regulatory approvals, water rights, wastewater and disposal rights, project agreements and all other rights or arrangements necessary for a completely commercially operational project within the time frame proposed for commercial operation.
2. Price volatility	Proposals that provide significant long-term control of fixed and variable costs are preferred.
3. Resource flexibility and stability	PSE prefers proposals that provide flexibility for expansion to meet PSE's growing needs as required. Proposals that include project agreements and all other rights and arrangements coterminous with power purchase delivery periods or project life are preferred.
4. Resource technology	Proposals that are based on commercially-proven technology with demonstrated long-term reliability and performance history are preferred. Proposals that are based on technologies whose output may be controlled are preferred.

Evaluation Criteria	Description
5. Long-term flexibility	PSE prefers proposals that offer the Company the flexibility to adjust its position in a resource long term, up to and including termination.
6. Project risk	Proposals that involve minimal risk for timely plant completion within cost projections are preferred. Proposals that minimize exposure to environmental risk or other potential liability, including expected or potential carbon control or mitigation costs, are preferred.
7. Impact on PSE's overall risk position	Proposals and combinations of proposals will be evaluated to determine the impact of the proposal(s) on PSE's overall risk position with respect to PSE's generation portfolio. Risk scenarios will include such factors as hydroelectric production variation, wind generation variability, fuel price volatility, carbon control costs, and power market price volatility. Additional risk scenarios will examine the correlation between fuel prices and power market prices, and alternative market price scenarios. Other considerations will include exposure to transmission congestion and costs. All other factors being equal, PSE prefers proposals that result in lower generation portfolio performance risk.

Evaluation Criteria	Description
8. Environmental and permitting risk	PSE's evaluation process will include an assessment of the following criteria: • status in acquiring needed permits • risk associated with future environmental regulation and taxes, including greenhouse gas emissions • compliance with regional RPS • compliance with regional generator performance standards and import standards
9. Respondent risk	PSE will consider information received in response to Part II of the RFP document and Exhibit B in determining risk associated with the financial condition and performance of a respondent and any third parties relied upon by the respondent. Lower-risk respondents are preferred.
10. Ability to deliver as proposed	An important consideration in judging a respondent's ability to provide a commercially operable project in the time frame proposed is the experience and qualifications of the entire project team. PSE will use the information provided in response to Exhibit B to evaluate the respondent team for this criterion. PSE prefers providers with proven track records. Information submitted in response to Exhibit B, which addresses project development status and schedule, will also be used to evaluate the respondent's ability to meet the proposed commercial operation date.

Evaluation Criteria	Description
11. Status of transmission rights	The ability to transmit power from the project site to one or more points on PSE's electric system is a requirement (particularly to points on its system at which the deliveries may be used to serve load with limited or no transmission congestion). PSE will use information provided in Exhibit B and, if necessary, the PowerWorld software tools, to assess whether and to what extent the required transmission will be available, and whether and to what extent the necessary transmission paths are constrained.
12. Managerial control	PSE prefers proposals that provide control of key elements of the value chain.
13. Security and control	Proposals that supply firm, fixed price fuel supply are preferred. Proposals that offer other methods of managing price volatility will be favorably considered. Proposals that supply firm energy and capacity are preferred.
14. Federal regulatory approvals	Proposals will be evaluated to determine the effect of any federal regulatory approvals that would result from accepting the proposal, including, but not limited to, requirements under Sections 203 and 205 of the Federal Power Act. Proposals that eliminate or minimize the effect of any such federal regulatory approval are preferred.

4 Public Benefits

Evaluation Criteria	Description
1. Environmental impacts	Proposals with lower environmental impacts are preferred. Environmental impacts refer to the full range of issues evaluated in an environmental impact statement (EIS) or environmental assessment (EA). PSE will consider information supplied in response to Exhibit B in its evaluation of the environmental impacts of a proposed acquisition.
2. Resource location	Proposed resources located such that they provide benefits to the regional and PSE transmission systems, or require minimal or no transmission upgrades are preferred. Proposals that are not dependent upon constrained transmission or fuel transportation paths are preferred. Proposed resources located within PSE's service territory are preferred.
3. Community impacts	Proposals that demonstrate support from public, local, state and federal government entities and Native American nations, if applicable, as well as other stakeholders, are preferred.

5 Strategic and Financial

Evaluation Criteria	Description
1. Capital structure impacts	PSE's quantitative analysis will impute the anticipated equity cost needed to offset any adverse effects on its capital structure associated with accounting requirements (e.g., FASB ASC 810) that may require PSE to consolidate the respondent's balance sheet. All else being equal, PSE prefers proposals that avoid risks associated with a requirement to consolidate a respondent's financials with PSE's financials (e.g., pursuant to FASB ASC 810). All else being equal, proposals are preferred that would not increase PSE's exposure to adverse impacts on its financial position (e.g., by requiring PSE to impute debt, to account for the transaction as a capital lease (e.g., under FASB ASC 840), to account for or report the transaction as a financial derivative transaction (e.g., pursuant to FASB ASC 815), by otherwise adversely affecting PSE's financial leverage, operating leverage, credit rating, cash flow, income statement or balance sheet, or by imposing credit requirements or increasing liquidity risk).
2. Future exposure to environmental regulations and/or taxes	Proposals for resources with lower potential exposure to future environmental regulations and/or taxes are preferred.

Evaluation Criteria	Description
3. Guarantees and security	PSE will consider information provided in response to Exhibit B to determine whether it will require any additional guarantees or credit support pursuant to Part II, Section 6 of the RFP document. PSE's credit risk department may require the seller to provide performance assurance. With few exceptions, PSE will expect sellers with subinvestment-grade credit ratings (or being of similar creditworthiness) to provide performance assurance acceptable to the Company. PSE will not accept collateral thresholds, credit ratings triggers, general adequate assurances language or similar language that might require the Company to provide performance assurance.

Appendix C

RFP Results:

1. Executive Summary of Findings

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2011 RFP – HIGHLY CONFIDENTIAL
June 19, 2012

PUGET SOUND ENERGY

2011 RFP – Executive Summary*

Proposals evaluated during Phase 2 optimization and due diligence

(Short list resources appear first, followed by remaining Phase 2 proposals organized alphabetically by project name.)

Quantitative results shown below are the product of analysis performed in PSM I version 15.0 and PSM III version 17.2. The results were presented at the EMC meeting on June 12, 2012.

Project	Quantitative Results**	Qualitative Advantages (+)	Qualitative Risks (-)	Selection recommendation & Rationale
11102 **Centralia** TransAlta *14-yr PPA, Operating Transition Coal Up to 500 MW COD: 1971 Term: 1/1/12-12/31/25*	Levelized cost: [redacted] / MWh* Portfolio benefit: $86,666 MM PB [redacted] [redacted] Portfolio benefit ratio: 0.06 Selected in 4 of 5 scenarios tested. The [redacted] offer was eliminated from consideration during Phase 2 due to qualitative risks. Not included in Phase 2 quantitative analysis. * Includes equity component.	• PPA economic benefits are positive • Physical, long-term flat firm power PPA delivered to PSE's system • Fixed price structure provides a hedge against rising power costs and stability compared to variability and uncertainty of natural gas tolling resource alternatives • Firm power backed by physical asset, but unit outages does not affect obligations of power deliveries • Existing resource with demonstrated reliable operating history avoids development risk and operational performance of new resources • Capacity quantity ramps up over the term to match PSE's updated capacity need (in addition, capacity quantity begins to ramp down at end of term to allow PSE to better manage replacement of capacity • 498 MW of long-term firm transmission is held by PSE for contract term; 398 MW directly interconnected to PSE's system, which avoids 3rd party transmission costs, and 100 MW BPA firm point-to-point transmission from C.W. Paul; in addition, [redacted] • [redacted] • New state law recognizes coal transition power as a public policy resource preference, which allows and provides incentives for long-term contracts	• If market power prices drop over the long term compared to current market power price forecasts, then the PPA economics are not as attractive • If load over the long term is lower than current forecast, then PPA capacity quantities may be in excess of PSE's capacity need [redacted] • Only 248 MW of transmission available in 2012 due to competing requests; however, only 125 MW is needed in 2012 • [redacted] • If the WUTC does not approve PPA petition filing, then PPA does not become effective and terminates	**Short list** The economic benefits are positive and entering into the PPA promotes and pursues state policy goals, provides community benefits, and is well-supported by the public. Opportunity may be lost if not pursued now, due to timelines imposed by the Memorandum of Agreement executed by the State of Washington and the counterparty. Recommend selection of PPA to final short list and consummate agreement immediately. Provides long-term physical firm energy, in addition to capacity.

*This matrix is designed to be a summary of key risks and advantages, intended to stimulate working group discussion. Additional discussion may be found in the individual project memos.
**Some proposals contain multiple offers. The quantitative results shown in the table represent the best offer from each proposal.

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PUGET SOUND ENERGY

Project	Quantitative Results**	Qualitative Advantages (+)	Qualitative Risks (-)	Selection recommendation & Rationale
		• Entering into PPA helps the State of Washington to achieve it's greenhouse gas emission reduction goals • Entering into PPA helps provide financial assistance to host communities • Coal transition power has strong public, local community, environmental groups and government support • Strong counterparty (BBB S&P credit rating) with long history of international owner/operator performance • PPA requires pre-approval by WUTC before it becomes effective • PSE is allowed to earn its authorized rate of return on the PPA but avoids putting capital at risk		
11117 [redacted] *5-yr. Winter PPA* [redacted] *Term: 11/1/16-2/28/21 (Nov-Feb)*	Levelized cost: [redacted] Portfolio benefit: $29,878 MM [redacted] Portfolio benefit ratio: 2.48 Least cost in 4 of 5 scenarios tested.	• PPA economic benefits are positive • Existing resource avoids development risk. • [redacted] • [redacted] offer appears to have a transmission solution. Delivered to BPA [redacted] assumes PSE could secure [redacted] transmission. • Counterparty is well-known; successfully executed [redacted] other transactions with counterparty. • Risks of pass-through gas costs and transportation minimized by abundant supply and pipeline rate settlement.	• [redacted] • Potential change in control of asset	**Short list** Economic benefits are positive and counterparty experience has been positive. Timing allows PSE to continue to monitor performance of existing PPA and market conditions.
11124 [redacted]	Levelized cost: [redacted] / MWh Portfolio benefit: $(1,485) MM [redacted] Portfolio benefit ratio: 0.01 Least cost in 3 of 5 scenarios tested.	• Existing resource avoids new development risk • Least cost in 3 of 5 scenarios • PSE is familiar with this facility and its operations; [redacted] • [redacted] currently provides grid system benefits associated with location • Firm gas transport on [redacted] through 2016, but can be renewed. Firm gas transport on [redacted] for 100% through 2012, and 53% through 2016. Replacement may be possible until pipeline expansion undertaken. • [redacted] revised offer to a 10-year term. • Known counterparty and low risk • Potential for call option on the 20 MW [redacted] that would increase the amount of available capacity • Fixed price structure provides a hedge against rising power costs	• As proposed, [redacted] would have sole discretion of plant operation. ○ Only 80 MW must run all the time to produce steam ○ Remaining 20 MW dispatched at [redacted] discretion • Commercial terms indicate replacement power due to unplanned outages will be supplied at Mid-C requiring PSE to use existing transmission capacity to deliver to PSE's system. (Further negotiations would be required to mitigate cost or risk) • Firm transportation on [redacted] for 47% of plant uncertain after 12/31/2012 and 100% after 12/31/2016.	**Short list** Least cost in 3 scenarios and qualitative risks are low. PSE has a strong relationship with counterparty. Provides grid system benefits associated with location. Must-run facility and direct interconnection to PSE transmission system may create opportunity to negotiate better terms. Provides long-term firm energy in addition to capacity.

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Project	Quantitative Results**	Qualitative Advantages (+)	Qualitative Risks (-)	Selection recommendation & Rationale
[redacted]	Not applicable. Project was eliminated from consideration during Phase 2 due to qualitative risks. Not included in Phase 2 quantitative analysis. [redacted]	[redacted]	[redacted]	[redacted]
11112 [redacted] 4-yr Market PPA [redacted] Term: 11/1/12-12/31/16	Not applicable. Project was eliminated from consideration during Phase 2 due to qualitative risks. Not included in Phase 2 quantitative analysis.	• Capacity in-line with current market price forecasts • Winter on-peak deals offering flexibility: timing and month optionality; flexible sizing in 25 MW increments • PPA economic benefits in Phase 1 were positive; however, economic analysis assumes that the offer is a delivered price to PSE's system without incremental transmission cost for long-term firm transmission	• [redacted] intends to use short-term firm transmission for deliveries to PSE's system. New long-term firm BPA transmission unlikely to be acquired for start date due to limitations on [redacted]. Given the heavily loaded nature of the [redacted] during winter peak periods and the possibility of transmission curtailments, short-term transmission is not acceptable to PSE for firm capacity resources. • Short-term PPAs, although shown to provide economic benefits in the model, may expose PSE to higher costs after PPA expires • Short-term trade desk may be able to secure similar power supply with better terms and economics	**Not selected** Based on updated information since Phase 1, it has been determined that [redacted] cannot secure long-term firm transmission to deliver energy to PSE's system. Therefore, [redacted] PPA contains a fatal flaw and will no longer be considered for further analysis.
11118 [redacted]	Levelized cost: $[redacted]/ MWh Portfolio benefit: $26,999 MM [redacted]	[redacted]		

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PUGET SOUND ENERGY

Project	Quantitative Results**	Qualitative Advantages (+)	Qualitative Risks (-)	Selection recommendation & Rationale
	Portfolio benefit ratio: 0.16 Least cost in 1 of 5 scenarios tested.	[redacted]		
11103 [redacted] *Own or 15-yr Tolling Agmt* [redacted] *Term: 1/1/14-12/31/28* *Proposed start:2012* *Modeled start: 2014*	[redacted] **Ownership:** Levelized cost: $[redacted]/ MWh Portfolio benefit: $8,829 MM [redacted] Portfolio benefit ratio: 0.00 Least cost in 0 of 5 scenarios tested. [redacted] **Toll:** Levelized cost: $[redacted]/ MWh Portfolio benefit: $(86,787) MM PB/kW: $[redacted]/ kW (#13) Net Cost / kW: $[redacted]/ kW (#12) Portfolio benefit ratio: (0.06) The tolling offer was not included in the Phase 2 optimization and risk analysis because it is higher cost than the ownership offer.	• Existing resource avoids development risk • Facility uses efficient [redacted] gas turbines with AGC • [redacted] • Duct firing and turndown capability to [redacted] improves dispatch flexibility • Ownership provides PSE with control and offers stability in secured capacity; asset life is [redacted] years reducing the need for PSE to return to the marketplace [redacted] • Economic benefits of ownership offer are positive and are better than tolling PPA offer.	• Project is not offered with firm transmission to PSE's system, but there does appear to be a strategy to obtain BPA long-term firm transmission. Proposed delivery from [redacted] point-of-receipt could then be delivered to several different points in PSE's [redacted] system, which would have little impact on BPA network flowgates • PSE can supply gas from gas book 2013-2015; however, after 2015, would require a pipeline expansion. There is some risk that an expansion by 2016 may be more expensive than contemplated, due to a lack of other participants. • Condition of major equipment (including turbines, HRSGs and piping) may have been adversely affected by [redacted] • Site visit conducted by PSE prior to this RFP indicated plant had been built with an emphasis on economy; minimal weather protection and limited personnel access to equipment • Costs to bring plant up to PSE's operating standards are rough estimates but are on the order of magnitude of $30 MM • [redacted] • Current off-take contracts on the facility do not expire until end of [redacted] • The State of Washington is working to amend and lower the Emissions Performance Standard from 1,100 lbs CO_2e/MWh to between 700 to 900 lbs CO_2e/MWh. Lowering the standard would impact the costs or limit the sale of power to less than 5 years; efficiency upgrades constituting major modifications is the only alternative available to keep the facility compliant and operational. • Offer as proposed is conditioned on closing Dec. 2012	**Not selected** The price offered by [redacted] did not compete well against other offerings moved to Phase 2 of the RFP analysis. Ultimately, other existing resources are available at a better value than the [redacted] facility. Existing facility will face much uncertainty [redacted]

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**Some proposals contain multiple offers. The quantitative results shown in the table represent the best offer from each proposal.

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Project	Quantitative Results**	Qualitative Advantages (+)	Qualitative Risks (-)	Selection recommendation & Rationale
11113 [redacted] *Asset purchase, or 15, 20 or 25-yr Project PPA* [redacted] *Term: 1/1/13-1/1/38*	Levelized cost: [redacted]/ MWh Portfolio benefit: $52,606 MM PB/REC: [redacted]/ REC (# n/a) Net Cost / REC: [redacted]/ REC (# n/a) Portfolio benefit ratio: 0.22 Project was eliminated from consideration during Phase 2 due to qualitative risks. Not included in optimization and risk analysis.	• Existing resource avoids development risk. • Appears to have a transmission solution; however, some uncertainties associated with redirect capabilities remain: (1) Price includes delivery to MidC under 50 MW of LTF PTP • [redacted] could redirect more LTF PTP capacity to MidC equivalent (2) [redacted] also has 100 MW of LTF PTP service under PTSA which is expected to start in 2013 and has a POD in Seattle area (BPAT. SCL). This is NOS transmission. Seller may automatically redirect POD one time before April 2013. • POD could be redirected to BPAT.PSEI. POR would need to be moved from [redacted] to [redacted] Road. • Even with redirect, appears to be a constraint on WOCN. As discussed above, Party holds 50 MW transmission to MidC so, there may be some way to negotiate to obtain LTF transmission with BPA.	• Questions remain about community reaction to this project. • PSE has met near-term renewable requirements under the Washington RPS.	**Not selected** PSE does not have an RPS-driven renewable need for the next several years. Project faces community opposition.
11117 [redacted] *5/10-yr. Winter/Annual Tolling PPA* [redacted] *Term: 2/1/13-3/31/22 (Nov-Mar)*	**5-year Winter Toll:** Levelized cost: [redacted]/ MWh Portfolio benefit: $14,034 MM PB/kW: [redacted]/ kW (#5) Net Cost /[redacted]/ kW (#2) Portfolio benefit ratio: 0.12 **10-year Winter Toll:** Levelized cost: [redacted]/ MWh Portfolio benefit: $17,164 MM PB/kW: [redacted]/ kW (#7) Net Cost / kW: [redacted]/ kW (#6) Portfolio benefit ratio: 0.07	• PPA economic benefits are positive • Existing resource avoids development risk. • Counterparty is well-known; successfully executed [redacted] other transactions with counterparty. • Risks of tolled gas costs and transportation minimized by abundant supply and pipeline rate settlement.	• [redacted] offers do not include clear transmission solution; current proposal assumes 134 MW of transmission can be secured • It is unclear what the minimum dispatch capacity is for the contract. Contract and pricing may be at risk if PSE takes only 134 MW • Potential change in control of asset	**Not selected** Uncertain transmission solution. It is unclear when this contract would be able to start. Short-term PPA evaluated better in both phases. PSE's preference is for longer term contracts.

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***Some proposals contain multiple offers. The quantitative results shown in the table represent the best offer from each proposal.*

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Project	Quantitative Results**	Qualitative Advantages (+)	Qualitative Risks (-)	Selection recommendation & Rationale
	Both [redacted] offers were eliminated from consideration during Phase 2 due to qualitative risks. Not included in optimization and risk analysis.			
11126 [redacted] *5/10-yr Market PPAs* [redacted]	[redacted] Levelized cost: [redacted]/ MWh Portfolio benefit: $13,852 MM PB/kW: [redacted]/ kW (#3) Net Cost / kW: [redacted]/ kW (#3) Portfolio benefit ratio: 0.25 Least cost in 1 of 5 scenarios tested. [redacted] Levelized cost: [redacted]/ MWh Portfolio benefit: $16,787 MM PB/kW: [redacted]/ kW (#2) Net Cost / kW: [redacted]/ kW (#4) Portfolio benefit ratio: 0.32 Least cost in 2 of 5 scenarios tested. [redacted] Levelized cost: [redacted]/ MWh Portfolio benefit: $(1,486) MM PB/kW: $[redacted]/ kW (#11)	• Exchange PPA economic benefits are positive • Price risk is assumed by [redacted] • [redacted] has offered a variety of products with 5- and 10-year terms. • Winter on-peak product may fit need better than annual or round-the-clock products, but pricing is less attractive than alternatives	• Proposed 10-year PPA options are not unit contingent. Unable to pursue PPAs or exchanges with lengths of 5 or more years that are not unit contingent (due to WA emission standard); however: ○ 10-year PPA products may meet requirements if pool resources are identified. [redacted] reduced offer from 100 MW to 50 MW and changed the start of the proposals to one year later to meet this requirement. ○ Products with lengths less than 5 years are not subject to the emissions requirement. • PSE's portfolio hedging group may be better positioned to evaluate the competitiveness of shorter-term resources, because they are more aligned with short-term forward market prices. • The return energy from the exchange product is at [redacted] discretion at an unconstrained point on the BPA or PSE system. • Transmission solution uncertain. There are parties with pending transmission service requests on the [redacted] path that could prevent PPA from securing transmission. • Proposed volume of MWhs delivered to [redacted] is 40% higher than what would be delivered to PSE	**Not selected** Economic benefits of the exchange offers are positive; however, additional analysis is required to evaluate appropriate market premium of energy exchange (Current offers are at a [redacted] premium. PSE's trade floor has indicated that premiums for short-term deals are closer to [redacted]). Transmission solution is uncertain due to competing requests at [redacted] Further investigation would be required to determine ability to secure firm transmission and benefits of flexibility. Of the products offered, the 10-year exchange provides the greatest economic benefit. However, the 10-year deal is complicated by the state's Emissions Performance Standard, which would limit a PPA that is not unit contingent to less than 5 years. PSE's short-term trade desk may be better able to obtain a more competitive short-term offer with lower transaction costs and risks.

This matrix is designed to be a summary of key risks and advantages, intended to stimulate working group discussion. Additional discussion may be found in the individual project memos.
***Some proposals contain multiple offers. The quantitative results shown in the table represent the best offer from each proposal.*

Exhibit No. ___(CB-3HC)
Page 66 of 315

Project	Quantitative Results**	Qualitative Advantages (+)	Qualitative Risks (-)	Selection recommendation & Rationale
	Net Cost / kW: $[redacted]/ kW (#10) Portfolio benefit ratio: (0.03) Least cost in 1 of 5 scenarios tested.			
11116 [redacted] *25-yr Project PPA* [redacted] *Term: 12/1/13-12/1/38*	[redacted] Levelized cost: $[redacted]/ MWh Portfolio benefit: $(19,022) MM PB/kW: $[redacted]/ kW (#14) Net Cost / kW: $[redacted]/ kW (#14) Portfolio benefit ratio: (0.13) [redacted] Levelized cost: $[redacted]/ MWh Portfolio benefit: $15,694 MM PB/REC: $[redacted]/ REC (# n/a) Net Cost / REC: $[redacted]/ REC (# n/a) Portfolio benefit ratio: 0.11 Offers were eliminated from consideration during Phase 2 due to qualitative risks. Not included in optimization and risk analysis.	• Fixed price PPA and a separate REC option • The [redacted] and substantial infrastructure already exists and already burns biomass for process steam in the [redacted] process. • Air permit issued and wastewater to be treated under existing permit. Most construction permits issued. • Appears to have a transmission solution; impacts are de minimis from BPA point of receipt [redacted] to PSE's system. • PPA economic benefits are positive	• Counterparty has many projects in development but few actually built with contracts. • It is unclear whether the project will qualify for the Treasury Grant or PTCs; if incentives are not secured, there is some risk that the PPA price or overall contract could be at risk. • Fuel cost variability passed on to PSE. Biomass fuel prices can be difficult to predict and volatile. More information is needed about biomass index proposed for fuel cost adjustments. • Risk associated with renewable designation. Output [redacted] would not qualify as a renewable resource. • Potential credit risk. Low credit support offer ($100/kW of nameplate capacity).	**Not selected** Renewable resource that offers capacity benefits. Significant qualitative risks associated with execution, fuel cost, qualification as a renewable resource under Washington RPS and other risks. PSE does not have an RPS-driven renewable need for the next several years.

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Project	Quantitative Results**	Qualitative Advantages (+)	Qualitative Risks (-)	Selection recommendation & Rationale
11127 [redacted] *Up to 5/10-yr. Market PPA Firm / Peak / Call / Exch.* [redacted] *Term: Flex start 2013/2014*	Unable to evaluate quantitatively. Offer withdrawn.			**Offer withdrawn** No price proposed. Offer withdrawn.
11110 [redacted] *4-yr Market PPA* [redacted] *Term: 1/1/13-3/31/17*	Levelized cost: $[redacted]/ MWh Portfolio benefit: $(2,518) MM PB/kW: $[redacted]/ kW (#12) Net Cost / kW: $[redacted]/ kW (#9) Portfolio benefit ratio: (0.03) Least cost in 3 of 5 scenarios tested.	• PSE and [redacted] were in advanced stages of negotiation during the last RFP; proposed terms are very similar to previously negotiated terms • Straight-forward fixed price PPA • Firm transmission to PSE's system; 50 MW existing transmission to PSE and 50 MW network open season ("NOS") transmission to Mid-C; [redacted] NOS contract includes the ability to redirect point of delivery until April 2013 • Counterparty known and low risk	• Short-term PPA exposes PSE to higher costs after PPA expires • PPA economic benefits are negative in Phase 2 screening • PSE's portfolio hedging group may be better positioned to evaluate the competitiveness of shorter-term resources, because they are more aligned with short-term forward market prices.	**Not selected** Economic benefits are negative. Short-term PPA exposes PSE to higher prices starting in winter of 2016-2017. Since PPA is required to be less than 5 years due to Emissions Performance Standard, PSE's short term trade desk may be able to obtain a more competitive offer with lower transaction costs and risks.

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Resources eliminated during the Phase 1 screening (organized alphabetically by project name)

Quantitative results shown below are the product of analysis performed in PSM I version 14.9. These results were presented at the EMC meeting on March 15, 2012.

Project	Quantitative Results** (As presented at 3-15-12 EMC meeting)	Qualitative Advantages (+)	Qualitative Risks (-)	Selection recommendation & Rationale
11123 [redacted] *20-yr Tolling Agreement* [redacted]	Levelized cost [redacted] Portfolio benefit: $(238.117) MM PB/kW: $[redacted]/ kW Net Cost / kW: $[redacted]/ kW Portfolio benefit ratio: (0.36)	• [redacted] offer for firm capacity for a peaking event. Offered as a PPA with counterparty retaining ownership of project. Counterparty would retain much of the risk. • May be used to firm wind or to maximize efficiency of other resources (hydro, gas, etc.). May also provide ancillary services, such as spinning reserves, frequency regulation up and down to full nameplate capacity (unlike gas turbine). Potential benefits require further consideration to determine best application for PSE. • [redacted] is a large, established and respected company with substantial [redacted] experience: 88 MW installed or under construction, and another 1,000 MW in development.	• Ranks low quantitatively. Higher cost. • Building such large projects using a relatively new technology application imposes substantial technology risk.	**Not selected** Higher cost resource. Economic benefits are negative and qualitative risks are higher than existing capacity alternatives. PSE staff recommends that the potential benefits of [redacted] be further considered outside the RFP.
11114 [redacted] *20-yr Project PPA* [redacted]	Levelized cost: $[redacted]/ MWh Portfolio benefit: $(12.408) MM PB/kW: $[redacted]/ REC Net Cost / kW: $[redacted]/ REC Portfolio benefit ratio: (0.05)		• Project ranks low quantitatively. Higher cost renewable project. • Development risk because of community opposition. • Partial transmission solution. Interconnection at BPA [redacted] Counterparty secured 37 MW from [redacted] to Mid-C (which could be redirected to PSE's system). Another 75 MW secured from [redacted] to [redacted] PSE responsible for securing transmission to PSE's system and there may not be a near-term solution for firm transmission. • Questions remain whether the cost of the project includes the apprentice labor credit • PSE does not have an RPS-driven renewable need for the next several years.	**Not selected** Project ranks low economically, holds substantial development risk and PSE does not have an RPS-driven renewable need in the near term.

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Project	Quantitative Results** (As presented at 3-15-12 EMC meeting)	Qualitative Advantages (+)	Qualitative Risks (-)	Selection recommendation & Rationale
11107 [redacted] *Sale* [redacted]	Levelized cost: [redacted] Portfolio benefit: $(55.414) MM PB/kW: $[redacted] / kW Net Cost / kW: $[redacted] / kW Portfolio benefit ratio: (0.11)	• [redacted] to be sold at [redacted] discount. [redacted] went directly from factory to layup. • [redacted] has been maintaining the [redacted] so, the warranty should still apply.	• Ranks low quantitatively when considered as part of a self-build development project. Higher cost than other alternatives. • Proposed site, Fredonia, could only accommodate one of the units. It is unclear if counterparty would sell the unit separately. • [redacted] • Unit may trigger requirements for new permitting even at the Fredonia site. • The units are [redacted] PSE's self-build by contrast is a newer vintage units with greater capacity value and no significant incremental cost.	**Not selected** This proposal ranks low quantitatively and only represents a portion of a complete generation project. PSE would have to procure the [redacted] and then take the risk of actually finding and permitting a location to use them.
[redacted]				
11125 [redacted] *Asset purchase* [redacted]	Unable to evaluate quantitatively.		• Proposal is conceptual, based on new, unproven theoretical physics. • There is currently no commercial product or application for this technology. • PSE is unable to realistically evaluate the costs and risks associated with this proposal.	**Not selected** Conceptual, commercially unavailable technology. Cost unknown, risk unknowable.

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Project	Quantitative Results** (As presented at 3-15-12 EMC meeting)	Qualitative Advantages (+)	Qualitative Risks (-)	Selection recommendation & Rationale
11115 [redacted] *Asset purchase, or 20-yr Tolling Agreement* [redacted]	Levelized cost: $[redacted]/ MWh Portfolio benefit: $(110.872) MM PB/kW: $[redacted]/ kW Net Cost / kW: $[redacted]/ kW Portfolio benefit ratio: (0.06)	• Early stage development may provide PSE opportunity for development input • Development risks shifted to 3rd party developer, but PSE may have little control over development of project • Developer has extensive experience • [redacted] seems willing to take on development (and potentially construction) risk • Project interconnects to PSE avoiding 3rd party transmission costs	• Early stage development with little or no certainty of pricing and successful execution • Ranks lower than existing natural gas resource options both quantitatively and qualitatively: o Higher cost o Development risk • Proposed interconnection point is [redacted] substation. Project would trigger new transmission upgrades between [redacted] and [redacted] substations (~$22M). Interconnection construction timeline would be tight, but not necessarily insurmountable. • Site has not been secured • Project development may not be successful (known issues are community, airport, and air permitting constraints) • Other project costs are uncertain and/or may be unknown at this point • Pricing does not include changes in environmental law • Contractual commitment deadlines for PSE are unclear (pre-development, post development, or pre-construction)	**Not selected** Economic benefits are negative and qualitative risks are higher than existing alternatives.
11121 [redacted] *Asset purchase* [redacted]	Levelized cost: $[redacted]/ MWh Portfolio benefit: $(131.802) MM PB/kW: $[redacted]/ kW Net Cost / kW: $[redacted]/ kW Portfolio benefit ratio: (0.32)		• Ranks lower than existing natural gas resource options both quantitatively and qualitatively: o Higher cost o Development risk • Transmission uncertain. Proposed interconnection to [redacted] line may be a good location. Developer claims 450 MW could be installed in this area with overloads, although the study may have used inaccurate assumptions.	**Not selected** Project is economically uncompetitive and holds substantial development risk.
11105 [redacted] *12-yr Project PPA* [redacted]	Levelized cost: $[redacted]/ MWh Portfolio benefit: $(0.202) MM PB/kW: $[redacted]/ kW Net Cost / kW: $[redacted]/ kW Portfolio benefit ratio: 0.05	• PSE has experience with this developer • Appears to have a transmission solution. Small project output impact on transmission system from [redacted] to PSE's system is de minimis.	• Schedule may be aggressive, in light of transmission, interconnection and permitting timelines. • High cost; proposed price is roughly $20 higher than new Schedule 91 pricing (scheduled to begin Jan. 2012) • Too small to offset the need to acquire another resource (and yet, does not qualify for Schedule 91 because it is not located in PSE's service territory). • PSE does not have an RPS-driven renewable need in the near term.	**Not selected** Economic benefits are negative and PSE does not have an RPS-driven renewable need in the near term.

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Project	Quantitative Results** (As presented at 3-15-12 EMC meeting)	Qualitative Advantages (+)	Qualitative Risks (-)	Selection recommendation & Rationale
11122 [redacted] 20-yr Project PPA [redacted]	Levelized cost: $[redacted]/ MWh Portfolio benefit: $(14.983) MM PB/kW: $[redacted]/ REC Net Cost / kW: $[redacted]/ REC Portfolio benefit ratio: (0.41)	• Proven developer with a track record of developing and operating projects	• Ranks low quantitatively. Higher cost. • No permitting, transmission requests, etc. Proposal anticipates PSE would perform this work. • PSE does not have a RPS-driven renewable need for the next several years.	**Not selected** Economic benefits are negative and PSE does not have an RPS-driven renewable need in the near term.
11101 [redacted] 20-yr Tolling Agreement [redacted]	Levelized cost:[redacted] Portfolio benefit: $(146.685) MM PB/kW: $[redacted]/ kW Net Cost / kW: $[redacted]/ kW Portfolio benefit ratio: (0.53)		• Ranks lower than existing natural gas resource options both quantitatively and qualitatively: ○ Higher cost ○ Development risk • No transmission solution. Located on PSE system, but no interconnection request submitted. According to PSE Transmission, upgrades would be required. Unclear if upgrades could be completed in time to meet development schedule.	**Not selected** Project is economically uncompetitive and holds substantial development risk.
11106 [redacted] 30-yr Tolling Agreement [redacted]	Levelized cost: $[redacted]/ MWh Portfolio benefit: $(340.910) MM PB/kW: $[redacted]/ kW Net Cost / kW: $[redacted]/ kW Portfolio benefit ratio: 0.27		• Ranks lower than existing natural gas resource options both quantitatively and qualitatively: ○ Higher cost ○ Development risk • No transmission request in the queue. Counterparty is relying upon upcoming network open season process, which will likely be an 18-24 month cycle.	**Not selected** Project is economically uncompetitive and holds substantial development risk.

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Project	Quantitative Results** (As presented at 3-15-12 EMC meeting)	Qualitative Advantages (+)	Qualitative Risks (-)	Selection recommendation & Rationale
11111 [redacted] 20-yr Project PPA, energy, [redacted]	Levelized cost: $[redacted]/ MWh Portfolio benefit: $(45.232) / MM PB/kW: $[redacted]/ kW Net Cost / kW: $[redacted]/ kW Portfolio benefit ratio: 0.23	• Counterparty offers combinations of RECs-only, energy-only, renewable energy, and energy storage • Counterparty states that their terms are in "general agreement with PSE's prototype PPA"	• Project ranks low quantitatively relative to other renewable offers. Energy-only offer is not competitive • Development risk: ○ Very limited information provided about development progress: no transmission information, no permitting information, no indication that developer has secured land rights/leases • Very little information provided about battery storage element of proposal; unable to evaluate • No transmission solution due to constraints on BPA's system. Project would likely require two transmission wheels on Avista's and BPA's systems. • PSE does not have an RPS-driven renewable need for the next several years. • Counterparty has limited development experience • Execution risk high	**Not selected** Economic benefits are not significant and in most options negative, qualitative risks are high and PSE does not have an RPS-driven renewable need in the near term.
11104 [redacted] Asset purchase [redacted]	Levelized cost: $[redacted]/ MWh Portfolio benefit: $26.601 MM PB/kW: $[redacted]/ REC Net Cost / kW: $[redacted]/ REC Portfolio benefit ratio: 0.07	• Winter shape with [redacted] • Site seems to be secured through one large land lease with timber company; however, lease may only be an option at this time	• Ranks low quantitatively. Higher cost. No price included for turn-key offer. • Development / execution risk: ○ Very little information provided regarding development status ○ Proposal poorly executed – numerous errors throughout, including price • Wind resource data is limited, creating uncertainty in quantifying generation and daily/seasonal profile. Only one met tower placed at three sites over a two-year period. • No transmission solution due to constraints on BPA's system. May require two transmission wheels on [redacted] and BPA's systems. May require 13-mile upgrade to [redacted] • Located on harvested timber land. Risk of forest [redacted] on wind resource. • PSE does not have an RPS-driven renewable need for the next several years.	**Not selected** Project is less competitive quantitatively than other renewable options selected for Phase 2 evaluation and qualitative risks are high. PSE does not have an RPS-driven renewable need in the near term

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Project	Quantitative Results** (As presented at 3-15-12 EMC meeting)	Qualitative Advantages (+)	Qualitative Risks (-)	Selection recommendation & Rationale
11120 [redacted] *25-yr Project PPA* [redacted]	Levelized cost: $[redacted]/ MWh Portfolio benefit: $(23.534) MM PB/kW: n/a Net Cost / kW: n/a Portfolio benefit ratio: (0.08)	• Most advanced permitting and development of all of the biomass proposals received in response to the RFP (30% engineering design, permits approved, etc.). • Plentiful fuel supply available (roughly 3x what they need); no pass-through of fuel price variability	• Counterparty defaulted on previous contract with PSE; risk of future default • If purchase option is elected, after 20 years of commercial operation, PSE must return asset to the [redacted] No details of the return are specified. • No transmission solution. Requires a double wheel of transmission [redacted] and BPA) to get to PSE's system. [redacted] portion of transmission is likely to be obtained; however, firm BPA transmission from [redacted] point of receipt to PSE's system is unavailable. • Project development may cease due to company closure.	**Not selected** Economic benefits are negative and qualitative risks are high. (Counterparty may rescind proposal due to company closure.)
Unsolicited [redacted] *20-yr Project PPA* [redacted]	Levelized cost: $[redacted]/ MWh Portfolio benefit: $(17.555) MM PB/kW: $[redacted]/ REC Net Cost / kW: $86.77 / REC Portfolio benefit ratio: 0.42	• Development progress is further along than alternative [redacted] land secured, non-appealable CUP obtained, etc. • Oregon state incentives make the project more economically viable than Washington state based alternatives. • Seasoned project development team with ability to execute a project of this size/scope.	• Ranks low quantitatively. Higher cost. • No transmission from Oregon due to constraints on BPA's system. Proposal indicates this would be left to PSE. • PSE does not have an RPS-driven renewable need for the next several years.	**Not selected** Economic benefits are negative and PSE does not have an RPS-driven renewable need in the near term
11108 [redacted] *20-yr Project PPA* [redacted]	Levelized cost: $[redacted]/ MWh Portfolio benefit: $(51.213) MM PB/kW: $[redacted]/ kW Net Cost / kW: $[redacted]/ kW Portfolio benefit ratio: (0.33)	• DOE grant may be able to lower overall project costs, but economics analysis will determine if PPA pricing is competitive	• Ranks lower than existing natural gas resource options both quantitatively and qualitatively: ○ Higher cost ○ Development risk • Interconnected to [redacted] substation at [redacted] Would wheel power to Talbot Hill or Covington. Loss rate would be determined when transmission study is performed. Unclear if interconnection studies have been performed. • Complicated PPA structure designed to optimize [redacted] operations and steam demand • Project developer is unknown and project agreement with [redacted] is uncertain • Successful project execution is uncertain • Project economics are uncertain	**Not selected** Economics benefits are negative and qualitative risks are high.

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Project	Quantitative Results** (As presented at 3-15-12 EMC meeting)	Qualitative Advantages (+)	Qualitative Risks (-)	Selection recommendation & Rationale
11109 [redacted] *Asset purchase* [redacted]	Levelized cost: $[redacted]/ MWh Portfolio benefit: $(95.885) MM PB/kW: $[redacted]/ kW Net Cost / kW: $831 / kW Portfolio benefit ratio: (0.38)	• Counterparty shows history of successful completion of small hydro projects. • Hydro storage project provides some flexibility benefits	• Ranks low quantitatively. Higher cost. • Development risk. Some permitting is in place; however, there are major development hurdles to overcome: ○ Needs ten-mile[redacted]to transmit power to[redacted]line to bring power south ○ Permitting path through[redacted]is unclear, etc. • Project is scheduled for completion in 2020, which is well beyond the purview of this RFP. • Project is relatively small, although it has some storage. Offers summer energy at all hours, but winter energy only on peak through storage capability. • No transmission rights with[redacted]to deliver power south • Project on public lands; requires land use permit from US Forest Service and requires approval of Secretary of Agriculture for Roadless Area Rule • Project was being developed through a joint venture agreement, but in March 2011 project partner declared to be in default.	**Not selected** Economic benefits negative and qualitative risks are high. Development schedule is well beyond RFP timing.
Unsolicited [redacted] *5-yr Project PPA* [redacted]	Levelized cost: $[redacted]/ MWh Portfolio benefit: $(4.062) MM PB/kW: $[redacted]/ kW Net Cost / kW: $[redacted]/ kW Portfolio benefit ratio: (0.12)	• Known counterparty and operations; exsiting PPA expired [redacted]	• [redacted]has notified PSE that they are moving ahead with negotiations to sell this power to[redacted] ○ [redacted] ○ Price negotiated with[redacted]was not competitive with PSE's other options so, PSE elected not to exercise this right • Ranks low quantitatively when compared with other resource options. Higher cost. • Proposal does not include delivery to PSE's system (delivered at project busbar); PSE would be required to use existing transmission contracts which would not be considered an incremental addition to meet PSE's capacity need	**Not selected** [redacted]required a decision before the RFP was completed; however, pricing was not as competitive as other options and resource does not provide incremental capacity.
11119 [redacted] *Sale*[redacted]	Levelized cost:[redacted] Portfolio benefit: $(120.596) MM PB/kW: $[redacted]/ kW Net Cost / kW: $[redacted]/ kW Portfolio benefit ratio: (0.77)	• [redacted]purchase offer designed to provide firm capacity for a peaking event. • May be used to firm wind or to maximize efficiency of other resources (hydro, gas, etc.).May also provide ancillary services, such as spinning reserves, frequency regulation up and down to full nameplate capacity (unlike gas turbine). Potential benefits require further consideration to determine best application for PSE.	• Ranks low quantitatively. Higher cost, particularly for resource with limited peak run times (17 MW for four hours, or 25 MW for two hours). • [redacted]has developed only a few projects and none as large as the proposed system. Most projects to date are directly used for renewables integration on rigid grids. Largest project installed to date is roughly 10-15 MW. • Comparatively large footprint for relatively small output • The[redacted]substation is near capacity so, from a transmission perspective, this is not a good location for this project.	**Not selected** Higher cost, particularly for a resource with limited peak run times. Economic benefits are negative and qualitative risks are higher than other existing capacity alternatives. PSE staff recommends that the potential benefits of battery storage be further considered outside the RFP.

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Appendix C

RFP Results:

2. Phase 1 Screening Results

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2011 RFP Phase 1 Screening Results

Capacity Proposals

Project Name	PPA or Ownership	Project Start	[redacted]	Portfolio Benefit ($000's)	Portfolio Benefit Ratio	Levelized PB / kW ($/kW)	Levelized PB / kW Ranking	[redacted]	Levelized Net Cost / kW Ranking	Status
[redacted] (#11112)	Fixed Price	2013	[redacted]	42,979	0.36	[redacted]	1	[redacted]	1	Operating
[redacted] (#11124)	Fixed Price	2012	[redacted]	49,986	0.20	[redacted]	2	[redacted]	7	Operating
[redacted] (#11117)	Tolling	2016	[redacted]	25,707	2.17	[redacted]	3	[redacted]	4	Operating
[redacted] (#11110)	Fixed Price	2013	[redacted]	25,329	0.18	[redacted]	4	[redacted]	11	Operating
[redacted] (#11112)	Fixed Price	2012	[redacted]	19,514	0.59	[redacted]	5	[redacted]	3	Operating
[redacted] (#11112)	Fixed Price	2012	[redacted]	18,881	0.69	[redacted]	6	[redacted]	2	Operating
[redacted] (#11126)	Fixed Price	2015	[redacted]	31,678	0.87	[redacted]	7	[redacted]	9	Operating
[redacted] (#11116)	Fixed Price	2014	[redacted]	10,510	0.08	[redacted]	8	[redacted]	23	Development
[redacted] (#11102)	[redacted]	[redacted]	[redacted]	184,714	0.10	[redacted]	9	[redacted]	15	[redacted]
[redacted] (#11117)	Tolling	2013	[redacted]	14,377	0.30	[redacted]	10	[redacted]	5	Operating
[redacted] (#11126)	Fixed Price	2013	[redacted]	24,595	0.17	[redacted]	11	[redacted]	8	Operating
[redacted] (#11117)	Tolling	2013	[redacted]	18,957	0.17	[redacted]	12	[redacted]	13	Operating
[redacted] (#11126)	Fixed Price	2013	[redacted]	10,007	0.08	[redacted]	13	[redacted]	14	Operating
TransAlta PPA 14 year PPA (#11102)	Fixed Price	2012	[redacted]	65,310	0.05	[redacted]	14	[redacted]	17	Operating
[redacted] (#11118)	[redacted]	[redacted]	[redacted]	44,462	0.26	[redacted]	15	[redacted]	10	[redacted]
[redacted] (#11103)	Ownership	2014	[redacted]	129,569	0.05	[redacted]	16	[redacted]	22	Operating
[redacted] (#11126)	Fixed Price	2013	[redacted]	7,310	0.04	[redacted]	17	[redacted]	18	Operating
[redacted] (#11126)	Fixed Price	2013	[redacted]	8,016	0.10	[redacted]	18	[redacted]	6	Operating
[redacted] (#11103)	Tolling	2014	[redacted]	75,036	0.05	[redacted]	19	[redacted]	20	Operating
[redacted] (#11117)	Tolling	2013	[redacted]	5,942	0.08	[redacted]	20	[redacted]	12	Operating
[redacted] (#11126)	Fixed Price	2015	[redacted]	(292)	(0.00)	[redacted]	21	[redacted]	26	Operating
[redacted] (#11126)	Fixed Price	2013	[redacted]	(4,089)	(0.02)	[redacted]	22	[redacted]	24	Operating
[redacted] (#11107)	Ownership	2015	[redacted]	(55,414)	(0.11)	[redacted]	23	[redacted]	25	N/A
[redacted] (#11117)	Tolling	2013	[redacted]	(15,318)	(0.09)	[redacted]	24	[redacted]	19	Operating
[redacted] (#11105)	Fixed Price	2012	[redacted]	(202)	(0.05)	[redacted]	25	[redacted]	21	Development
[redacted] (#11126)	Fixed Price	2015	[redacted]	(17,506)	(0.05)	[redacted]	26	[redacted]	30	Operating
[redacted] (#11126)	Fixed Price	2013	[redacted]	(24,611)	(0.06)	[redacted]	27	[redacted]	27	Operating
[redacted] (#11115)	Ownership	2016	[redacted]	(110,872)	(0.06)	[redacted]	28	[redacted]	29	Development
[redacted] (Unsolicited)	Fixed Price	2012	[redacted]	(4,062)	(0.12)	[redacted]	29	[redacted]	16	Operating
[redacted] 200 MW) (#11123)	Tolling	2015	[redacted]	(238,117)	(0.36)	[redacted]	30	[redacted]	28	Development
[redacted] (#11121)	Ownership	2016	[redacted]	(131,802)	(0.32)	[redacted]	31	[redacted]	31	Development
[redacted] (#11115)	Tolling	2016	[redacted]	(247,634)	(0.20)	[redacted]	32	[redacted]	32	Development
[redacted] (#11106)	Tolling	2016	[redacted]	(340,910)	(0.27)	[redacted]	33	[redacted]	33	Development
[redacted] (#11101)	Tolling	2015	[redacted]	(146,685)	(0.53)	[redacted]	34	[redacted]	34	Development
[redacted] #11108)	Tolling	2014	[redacted]	(51,213)	(0.33)	[redacted]	35	[redacted]	35	Development
[redacted] (#11111)	Fixed Price	2014	[redacted]	(45,232)	(0.23)	[redacted]	36	[redacted]	38	Development
[redacted] (#11123)	Tolling	2014	[redacted]	(142,039)	(0.72)	[redacted]	37	[redacted]	36	Development
[redacted] (#11119)	Ownership	2014	[redacted]	(120,596)	(0.77)	[redacted]	38	[redacted]	37	Development
[redacted] (#11109)	Ownership	2020	[redacted]	(95,885)	(0.38)	[redacted]	39	[redacted]	39	Development

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WAC 480-07-160

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WAC 480-07-160

2011 RFP Phase 1 Screening Results

Renewable Proposals

Project Name	PPA or Ownership	Project Start	Book Life / Contract Term	[redacted]	Portfolio Benefit	Portfolio Benefit Ratio	Levelized PB / REC ($/REC)	PB / REC Ranking	[redacted]	Net Cost / REC Ranking	Status
[redacted] (#11113)	Renewable PPA	2013	25	[redacted]	37,755	0.16	[redacted]	1	[redacted]	5	Operating
[redacted] (#11113)	Renewable PPA	2013	20	[redacted]	28,871	0.14	[redacted]	2	[redacted]	4	Operating
[redacted] #11113)	Ownership	2013	23	[redacted]	28,487	0.12	[redacted]	3	[redacted]	6	Operating
[redacted] (#11104)	Ownership	2015	25	[redacted]	26,601	0.07	[redacted]	4	[redacted]	7	Development
[redacted] (#11113)	Renewable PPA	2013	15	[redacted]	16,042	0.10	[redacted]	5	[redacted]	3	Operating
[redacted] (#11120)	Fixed Price	2016	25	[redacted]	39,326	0.96	[redacted]	6	[redacted]	2	Development
[redacted] Option 1) (#11111)	Renewable PPA	2014	20	[redacted]	25,705	0.73	[redacted]	7	[redacted]	1	Development
[redacted] #11104)	Renewable PPA	2015	20	[redacted]	(12,408)	(0.05)	[redacted]	8	[redacted]	9	Development
[redacted] (Option 3) (#11111)	Renewable PPA	2014	20	[redacted]	(13,487)	(0.07)	[redacted]	9	[redacted]	8	Development
[redacted] (Unsolicited)	Renewable PPA	2013	21	[redacted]	(17,555)	(0.42)	[redacted]	10	[redacted]	10	Development
[redacted] #11122)	Ownership	2013	20	[redacted]	(14,983)	(0.41)	[redacted]	11	[redacted]	12	Development
[redacted] (#11122)	Renewable PPA	2013	20	[redacted]	(19,369)	(0.49)	[redacted]	12	[redacted]	11	Development

RPS Compliant Capacity Proposals

Project Name	PPA or Ownership	Project Start	Book Life / Contract Term	[redacted]	Portfolio Benefit	Portfolio Benefit Ratio	Benefit Ratio Ranking	Status
[redacted] (#11116)	Fixed Price	2014	25	[redacted]	68,886	0.45	1	Development
[redacted] (#11116)	Fixed Price	2014	25	[redacted]	39,007	0.27	2	Development
[redacted] (#11105)	Fixed Price	2012	13	[redacted]	4	0.00	3	Development
[redacted] (#11120)	Fixed Price	2014	25	[redacted]	(23,534)	(0.08)	4	Development
[redacted] #11111)	Fixed Price	2014	20	[redacted]	(27,371)	(0.11)	5	Development
[redacted] (#11120)	Ownership	2014	25	[redacted]	(47,274)	(0.15)	6	Development

The net cost per kW or REC, and the PB per kW or REC are less informative metrics when a project or PPA has both a REC contribution and Capacity contribution.

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Appendix D

Quantitative Evaluation

Table of Contents

1. Quantitative Evaluation

A. Process

Similar to PSE's 2011 IRP, the quantitative analysis for the 2011 RFP is a three-step process, as shown in Figure 5-11 of PSE's 2011 IRP.

Step 1: Identify Needs and Resources
Step 2: Create optimal, integrated portfolios for each scenario
Step 3: Evaluate costs and risks

In Step 1, PSE updates the calculation of need to reflect the most current PSE load forecast and resources available to meet need. Additionally PSE screens the RFP offers in the Portfolio Screening Model I (PSM I or "screening model") to help identify a candidate short list to conduct further due diligence. For Step 2, PSE uses its Portfolio Screening Model III (PSM III or "optimization model") that integrates dispatch from the AURORAxmp model to create optimal, integrated portfolios for each scenario. In this process, inputs assumptions and resource needs are reviewed to ensure that the most current data informs the decision process. Finally, for Step 3 PSE uses the combination of the stochastic, AURORAxmp, and PSM III models to identify costs and risk of portfolios.

B. Models

Each model, with the exception of the PSM I screening model, is described in detail within Appendix I of PSE's 2011 IRP. Additionally, an attachment to this document further describes the screening model. The screening model is an earlier generation of the Optimization model and relies upon the same financial model as the PSM III model. The key differences are the method of constructing portfolios and dispatching resources. See Appendix E for more information about the PSM I model.

C. Metrics

The screening model identifies PSE's long-term revenue requirements[1] for the incremental generic portfolio and compares the cost of the generic portfolio to a portfolio that contains the resource being evaluated, displacing an equivalent amount of generic resource.[2] The optimization model identifies PSE's long-term revenue requirements for the incremental portfolio under multiple scenarios and the risk of each portfolio.[3] Together, the quantitative metrics and qualitative review identify the lowest reasonable cost portfolio and resources.

Screening model metrics

The screening model calculates five metrics used by PSE to assess the economic competiveness of individual proposals: 1) portfolio benefit, 2) levelized net cost per kW or REC, 3) levelized portfolio benefit/ kW or REC, 4) levelized cost, and 5) portfolio benefit ratio. Each metric provides a slightly different perspective on the economic benefits associated with each proposal.

1. **Portfolio Benefit ($):** difference between the net present value portfolio revenue requirement with the proposed project in the portfolio replacing an equivalent amount of generic resource, and the net present value portfolio revenue requirement of the all generic portfolio. (Higher is better. Useful for comparing projects with the same winter capacity value or the same contribution to meeting PSE's renewable energy target.)
2. **Levelized Cost ($/MWh):** the net present value of the proposed project's revenue requirement divided by the net present value of the proposed project's generation. (Lower is better. Useful for comparing projects that have the same or similar operating characteristics.)
3. **Portfolio Benefit Ratio**: portfolio benefit divided by the net present value of the proposed project's revenue requirement. (Higher is better. Useful for

1 Revenue Requirement includes fixed and variable costs of new resources and variable costs for existing resources.

2 Appendix E provides an example of the construction of the portfolio with the RFP resource and how the change in portfolio cost is developed.

3 Revenue Requirement includes fixed and variable costs of new resources and variable costs for existing resources.

comparing projects that have the same or similar operating characteristics.)

4. **Levelized net cost per unit of contribution to need ($/kW or $/REC):** difference between the net present value project revenue requirement and the net present value market revenue of the project's generation divided by the net present value of the project's capacity contribution. If a renewable project is being considered, then the numerator is divided by the net present value of the project's contribution to PSE's renewable energy target. (Lower is better. Useful for comparing across technologies and size.)
5. **Levelized portfolio benefit per unit of contribution to need ($PB/kW or $PB/REC):** a project's portfolio benefit divided by the present value of the project's capacity contribution. If a renewable project is being considered, then the numerator is divided by the net present value of the project's contribution to PSE's renewable energy target. (Higher is better. Useful for comparing across technologies and size.)

Risk metrics

The metrics used to evaluate risk that are identified in the simulations in the optimization model are Tail Var90, Cost at Risk, and volatility.

1. **Tail Var 90 ("TVar90") ($):** Lower is better.

   TVar90 is a risk measure to analyze bad outcomes, calculated as the mean of the worst 10% of possible outcomes.
2. **Cost at Risk ($):** Lower is better.

   Cost at Risk is the TVar90 less the Expected Cost and measures the distribution between the expected cost and the high cost outcomes.
3. **Volatility (%):** Lower is better

   Volatility is a measure of year-to-year variability in costs. It is an indicator of portfolios that would result in more or less stable rates over time. Volatility is estimated as the mean standard deviation of percentage changes in year-to year costs across the 1,000 Monte Carlo simulations.

2. Key Assumptions

The range of forecasts reflects estimates and assumptions for the following key areas.

- Gas prices
- Demand
- CO_2 costs
- Power prices

Various scenarios are created using a combination of different assumptions for these variables. Scenarios are "pictures" of the future that reflect a set of integrated assumptions that could occur together. This enables us to test how portfolio costs and risks respond to changes in economic conditions, environmental legislation, natural gas prices, and energy policy. The scenarios developed for this RFP are listed below.

- Base
- Low Growth
- High Prices
- Base + CO_2
- Base + New Gas price

A. Key Inputs

Gas Prices

Trends in Gas Prices since the 2011 IRP Base Forecast
For resource planning and acquisition analyses, gas prices used are a combination of a 3 month average of the forward price marks and the Wood Mackenzie Long-Term View (LTV) forecasts. The forward price marks are typically available for about 5 years ahead (through 2015 as of July 2010 and through 2016 in April 2012). The Wood Mackenzie LTV is a 20 year forecast. The inputs used in the forecasts are:

- 2011 IRP Base: Forward marks as of 7/30/2010 + Wood Mackenzie April 2010 LTV
- RFP Phase I Base: Forward marks as of 4/12/2011 + Wood Mackenzie April 2011 LTV

- RFP Phase II Base: Forward marks as of 11/7/2011 + Wood Mackenzie Oct. 2011 LTV
- RFP Phase II w/ New Gas: Forward marks as of 4/19/2012 + Wood Mackenzie April
- 2012 LTV

As shown in Figure 2, below, gas prices have shown a decline since the 2011 IRP forecast was developed in July 2010. (Note that in the July 2010 forecast, Wood Mackenzie assumed that the Alaska pipeline project would reach the North American grid by 2023 resulting in the decline in prices in 2024. The Alaska gas pipeline was not assumed to be completed over the 20 year time horizon in the subsequent forecasts.) The levelized prices have fallen from $8.08/MMBtu in the 2011 IRP forecast to $5.43/MMBtu in the Phase II with new gas price forecast as shown in Figure 1.

In general, the declining prices are due to the continued and increasingly efficient development of shale gas resources and stagnant growth in demand. As the gas producers have gained more experience in drilling and developing shale gas resources, the cost of production has declined. This is especially noticeable in the short-term prices. The relatively slow economic recovery in the U.S. and uncertainty in world-wide growth prospects have also tended to reduce prices. Specifically for Sumas, slowing demand for WCSB gas in eastern markets due to penetration of Marcellus and Utica shale gas into eastern Canada and northeast US markets, along with delays in Alberta Oil Sands demand, has created a relative surplus of supply in western Canada.

Additionally, over the shorter term, the relatively warm 2011-12 winter in North America reduced gas demand, which tended to reduce prices during the heating season. Consequently, the surplus gas was diverted to storage which has tended to reduce prices for the summer and coming winter.

Figure 1. 2011 RFP Annual Average Sumas Price

	2011 RFP Annual Average Sumas Price (Nominal $/MMBtu)				
	Phase I Base	Phase II Base	Base w New Gas	Low	High
2012	[redacted]				
2013					
2014					
2015					
2016					
2017					
2018					
2019					
2020					
2021					
2022					
2023					
2024					
2025					
2026					
2027					
2028					
2029					
2030					
2031					
20-yr Levelized	6.64	6.05	5.43	4.30	7.59

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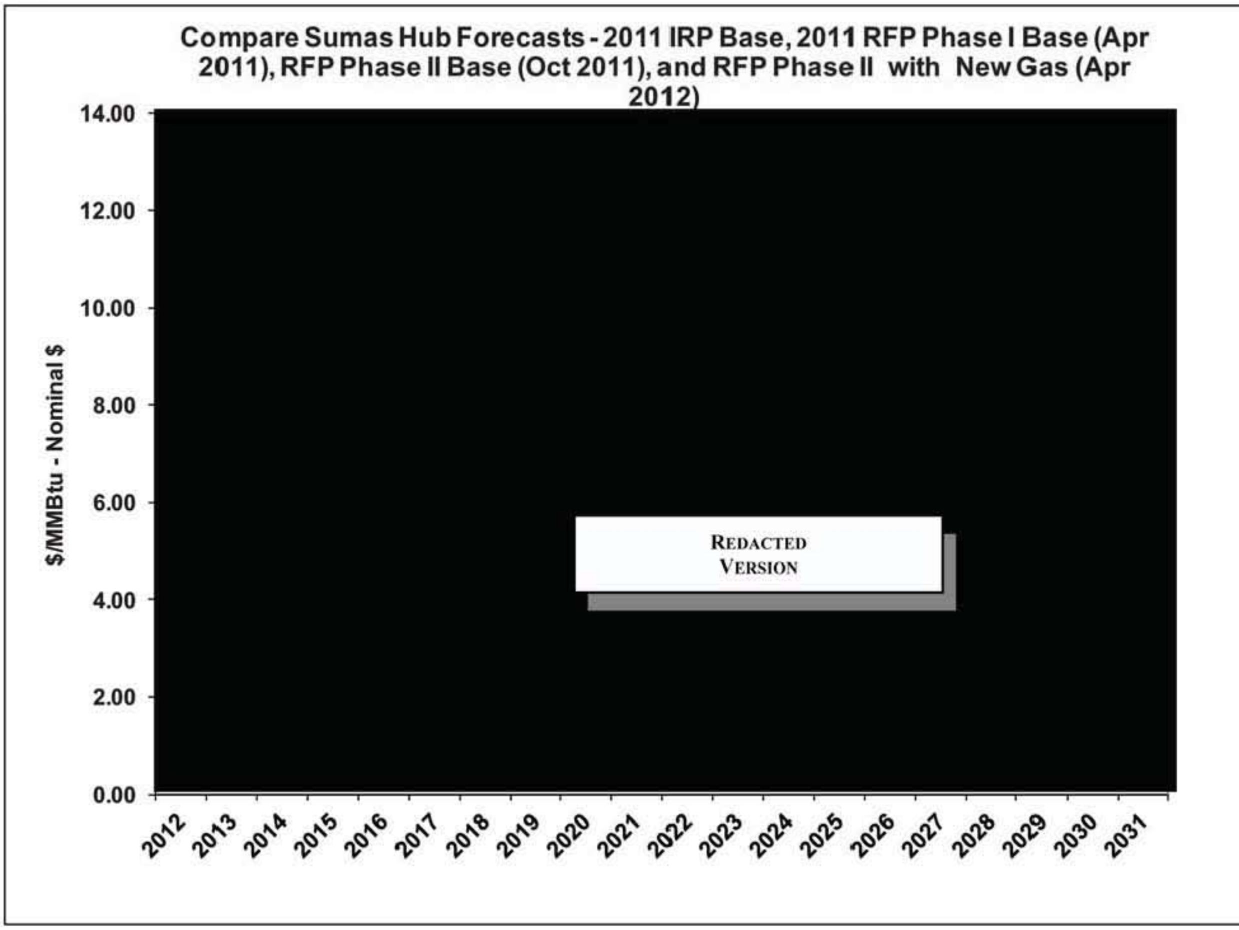
Figure 2. Comparison of Sumas Hub Gas Price Forecasts



[redacted]

2011 RFP High and Low Gas Price Forecasts

The high and low forecasts were developed using the base, high and low price forecasts from the 2011 IRP. Starting with the IRP forecasts, the respective percentage differences between the base forecast and the high and low price forecasts were calculated on a monthly basis. These monthly percentages are based on the rolling 8 year average prices. The rolling average prices were used in order to smooth out the price effects of the proposed Alaska Gas Pipeline which was assumed to be completed by 2024 in the April 2010 LTV forecasts. (Note that the Alaska Gas Pipeline was not included in the 2011 LTV forecast.) These percentages were then multiplied by the RFP screening base price

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forecast to the get the low and the high price forecasts. Figure 3 shows the gas price scenarios used in the 2011 RFP

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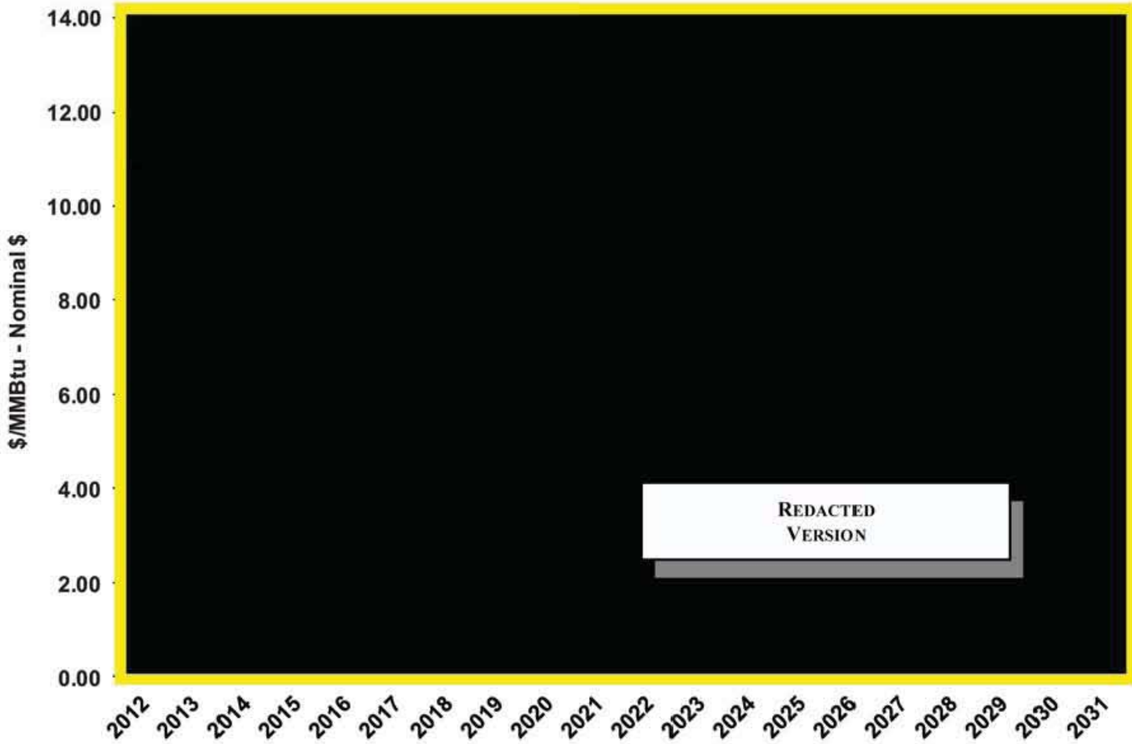
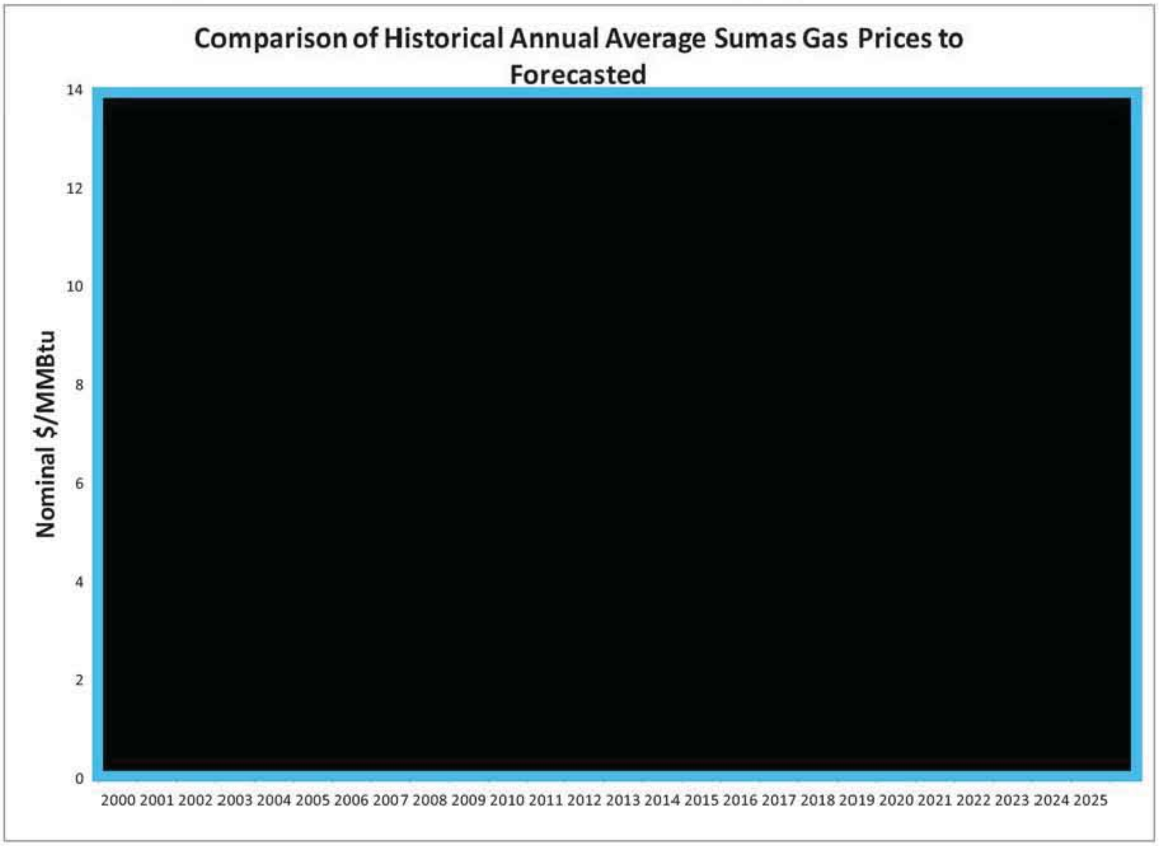
Figure 3. 2011 RFP Gas price scenarios compared to the 2011 IRP



[redacted]

Gas prices are not always as stable as shown in the forecasts; they can shift up or down over time. Below, Figure 4 shows the historical Sumas prices (2000-2011) compared to the forecasts starting with the 2005 LCP to the current 2011 RFP. Because of the general volatile and unpredictable nature of natural gas prices, we not only run a base case, but we also run a wide range of scenarios along with stochastic simulations in order to capture the uncertainty.

Figure 4. Comparison of historical and forecasted Sumas gas prices



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Demand Forecasts

Customer load is the main driver of need over the 20-year forecast. The demand forecast PSE develops for the RFP is an estimate of energy sales, customer counts, and peak demand over a 20-year period. Significant inputs include information about regional and national economic growth, demographic changes, weather, prices, seasonality, and other customer usage and behavior factors. Known large load additions or deletions are also included. Developing assumptions about national and regional economic trends has been particularly challenging due to continually changing conditions throughout the period.

Two different demand forecasts were used for portfolio analysis in this RFP:

1) Phase I of the RFP evaluation relied upon the F2011 Base load forecast and was included in the RFP Phase I Base scenario included in the PSM I model for screening.

2) Phase II of the RFP incorporated the more recent F2012 Base, Low, and High load forecasts. The High load forecast was used only in developing the distributions of load for the risk analysis. While the 2011 RFP Low Growth scenario uses the F2012 Low structural load forecast, the low load forecast was developed to be a pessimistic view of the macroeconomic variables identified in the base forecast.

PSE F2012 Load forecast

National Economic Outlook

The baseline load forecast is based on the February 2012 Moody's Analytics U.S. Macroeconomic Forecast. The February 2012 outlook showed a delayed, but continued, recovery with real GDP growth reaching near 4% by 2014. The unemployment rate also declined every year in the near-term, in lockstep with increasing total employment, which started to grow at a healthy pace by 2014. With manufacturing gaining strength and businesses beginning to hire more, there are some positive signs for an impending economic recovery.

However, risks to the outlook still exist. Economic problems in Europe, foreclosures preventing price stabilization in the U.S. housing market, job cuts by local governments, along with uncertain government action over the extension of programs such as payroll tax cuts and unemployment insurance programs, are all downside risks to the outlook.

Regional Economic Outlook

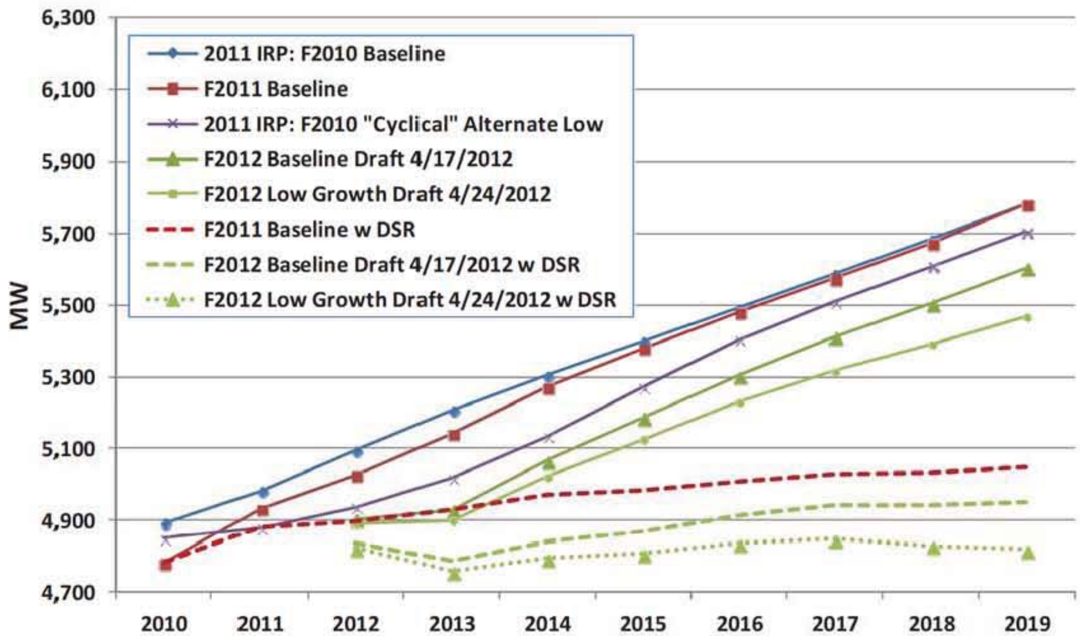
While PSE's service area does possess some distinctive characteristics, it is integrated with the broader national and global economies and its pattern of growth is highly correlated with that of the rest of the nation. Total employment growth in the service area shows recovery as the national economy recovers, and then moderates in the long term as hiring by the major employers in the area caps off. The Boeing Company helps the short term outlook due to strong growth and associated job creation, but job additions from the company are not likely to continue at the same level in the future.

Since PSE's service area is highly dependent on international trade, particularly in Asian markets, anticipated economic slowdown in China is a potential risk to the region. In addition, lackluster recovery in the construction sector and continued job cuts by government continue to pose threats to recovery in the area.

The current regional economic forecast shows worse results than the economic forecast underlying the F2011 Load Forecast but performs better than the economic forecast underlying the 2011 IRP Alternate Cyclical Low scenario. In most areas of the economy it falls in between the F2011 and the IRP Alternate Cyclical Low scenario, with housing recovery trending closer to the IRP Alternate Cyclical Low scenario in the short term through 2012. Housing recovery does come closer to the F2011 forecast levels through 2016 before slowing to near the Alternate Cyclical Low for the remainder of the forecast.

Figure 5 shows how the load forecasts have changed since the F2010 load forecast used in the 2011 IRP

Figure 5. Comparison of PSE load forecast (2011 IRP to current (F2012))



WUTC comments 2011 IRP acknowledgement letter: *"Due to the prolonged recession in the current economic cycle, we find the 2010-2016 period of the scenario [Low Cyclical forecast] plausible, and urge the Company to give adequate weight to this forecast as it acquires additional resources during this period of time."*

Note: F2012 baseline reflects loss of Jefferson County April 2013

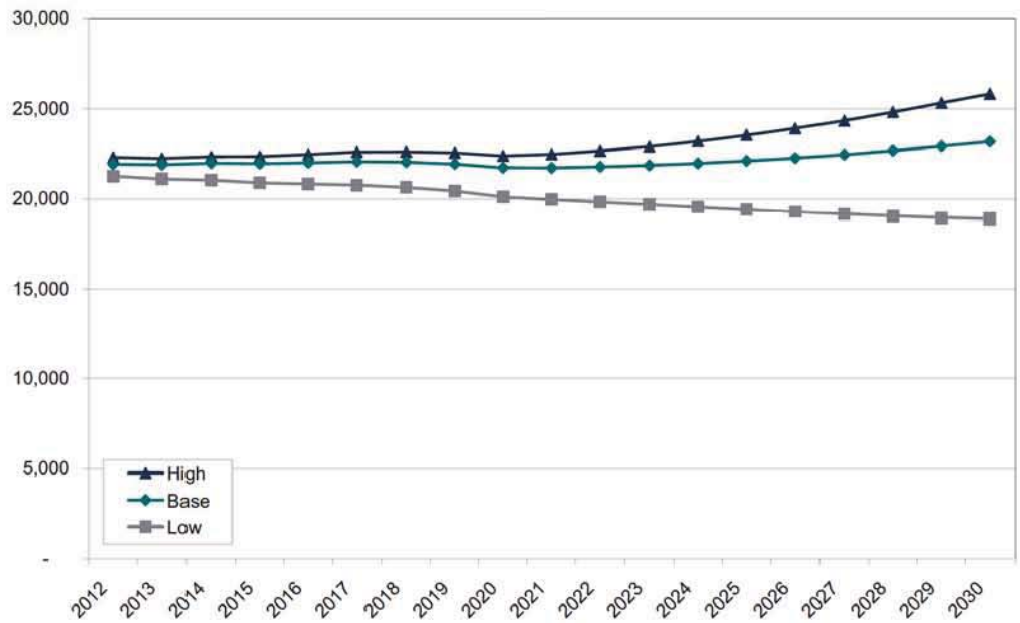
2011 RFP Process Document

Appendix D

Regional Load

To develop power prices, PSE must use a forecast of regional load. This RFP uses the Northwest Power and Conservation Council's regional forecast from the 6th Power Plan. Figure 6 below shows the regional forecast, as well as high and low variations.

Figure 6. NPCC Regional Forecast



CO_2 Prices

To evaluate CO_2 cost risk, PSE used the following estimate in a single scenario designed to look at the impact of CO_2 costs on the selection of resources. Given that the current legislative climate suggests comprehensive carbon legislation is not likely in the near future, it was not included in the base scenario. In the scenarios, PSE meets the current legal requirement in WA by including the cost of compliance in the capital costs for newly constructed resources.

Moderate CO_2 cost, $18 per ton in 2013 to $69 per ton in 2031 as shown in Figure 7.

This estimate was developed using the CO_2 prices modeled and published by the Environmental Protection Agency (EPA) in its analysis of the Kerry-Lieberman "American Power Act" cap-and-trade scheme. In this environment, CO_2 costs are reflected in gas prices and power prices. Moderate CO_2 cost was included in the Base + CO_2 scenario.

Figure 7. 2011 RFP CO_2 price forecast and price adder for Base + CO_2 analysis of the Coal transition PPA.

	Nominal $/tCO₂e		Mid C Power Price $/MWh	
	Base	Base + CO2	Base	Base + CO2
2012	0	0	33.04	33.04
2013	0	18	36.50	47.98
2014	0	20	38.78	50.96
2015	0	21	40.81	54.22
2016	0	23	41.40	55.24
2017	0	25	43.09	57.93
2018	0	27	46.52	62.12
2019	0	29	48.04	64.62
2020	0	31	47.12	64.78
2021	0	33	50.33	68.73
2022	0	36	54.82	74.57
2023	0	38	57.36	78.01
2024	0	41	57.25	80.14
2025	0	44	59.94	84.36
2026	0	48	64.33	89.36
2027	0	51	66.91	93.58
2028	0	55	69.58	98.01
2029	0	59	72.38	102.69
2030	0	64	73.56	106.46
2031	0	69	76.56	111.61

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B. Scenarios

The scenarios developed for this RFP enable PSE to test portfolio costs and risks in a wide variety of possible future conditions and isolate the effects of an individual variable.

PSE developed five scenarios for this RFP. (Note that subjective probabilities are not assigned to the likelihood of any particular scenario occurring).

The "Base Case" scenario provides a starting set of assumptions; other scenarios are described by how they differ from it. A full description of the Base Case follows these summaries. Modifications made in the other scenarios and sensitivities are deviations from the reference points established in the base case assumptions described below.

Base Case

Description:

This scenario reflects falling natural gas prices, electricity prices, and the abandoned federal legislative efforts for an economy-wide cap-and-trade program since the 2011 IRP.

Resource costs:

The estimated cost of generic resources for the 2011 RFP are consistent with the 2011 IRP applying a 2.5% annual inflation rate.

In general, cost assumptions represent the “all-in” cost to deliver a resource to customers, which includes plant, siting, and financing costs. PSE’s activity in the resource acquisition market during and in developing resources in the past five years informs the company’s cost assumptions. Also, our extensive discussions with developers, vendors of key project components, and firms that provide engineering, procurement, and construction services lead us to believe the estimates used here are appropriate and reasonable.

Heat rates:

Improvements on the heat rate assumptions for new plants are based on estimates by the Energy Information Administration (EIA) in the Annual Energy Outlook (AEO) Base Case scenario. New equipment heat rates are expected to improve slightly over time, as they have in the past.

Regional demand growth:

Regional demand growth is based on the forecast published in the 6th Power Plan by the Northwest Power and Conservation Council (NPCC).

PSE demand growth:

PSE-specific demand growth incorporates assumptions about regional demand growth, but also includes many factors specific to the service territory. Phase I analysis relied on F2011 forecast described in the 2011 IRP, while Phase II analysis was completed with the F2012 forecast. Attachment X describes the derivation of the F2012 load forecast which is lower than the F2011 load forecast.

Natural gas prices:

Gas price forecasts are a combination of forward marks in the near term and Wood Mackenzie forecasts for the longer term. Given the how influential the gas prices can be on Power prices, two base case scenarios were used:

Phase I – Screening:

- From 2012 through 2015, PSE used the three month average of forward marks for the period ending April 12, 2011. Forward marks reflect the price of gas being purchased at a given point in time for future delivery.
- Beyond 2015, PSE uses long-run, fundamentals-based gas price forecasts acquired from Wood Mackenzie in April 2011. Wood Mackenzie's modeling assumptions and resulting forecasts are first compared with other forecasts for reasonableness.

Phase II – Optimization and Risk:

- From 2012 through 2015, PSE used the three month average of forward marks for the period ending Nov 7, 2011. Forward marks reflect the price of gas being purchased at a given point in time for future delivery.
- Beyond 2015, PSE uses long-run, fundamentals-based gas price forecasts acquired from Wood Mackenzie in October 2011. Wood

Mackenzie's modeling assumptions and resulting forecasts are first compared with other forecasts for reasonableness.

Production tax credits, Investment tax credits, and Treasury Grant:
As with the 2011 IRP, this scenario does not include any extensions beyond current law.

Renewable portfolio standards:
Renewable portfolio standards (RPS) currently exist in 29 states and the District of Columbia, including most of the states in the WECC[4] and British Columbia. This scenario does not assume any changes in existing laws,

Build constraints:
PSE added constraints and retirements on coal technologies to the AURORA model in order to reflect current legislation.

Low Growth

Low Growth models weaker long-term economic growth than the Base Case.

- Demand for energy is lower in the region and in PSE's service territory.
- Natural gas prices are lower due to lower energy demand.
- The cost of energy resources is lower because demand for power plants is depressed by lower economic growth.

High Prices

The High Prices scenario models more robust long-term economic growth than the reference case.

- Demand for energy is higher in the region
- Natural gas prices are higher as a result of increased demand.

[4] *See* http://www.eere.energy.gov/states/maps/renewable_portfolio_states.cfm#chart, the U.S. Department of Energy website includes a summary of state RPS requirements with links to more detailed information.

Base + CO_2

The Base plus CO_2 scenario tests portfolio decisions in a world with moderate CO_2 costs.

- Power and gas prices reflect higher CO_2 costs than the Base Case.

Base with New Gas Price

Base with New Gas Price scenario models the April 2012 updated natural gas price.

C. Power Prices

One of the primary reasons for conducting scenario analysis is to develop the power prices used in the screening and optimization models.

The following table shows the power prices used for each of the scenarios:

Figure 8. Annual Average MidC Power Prices, by Scenario

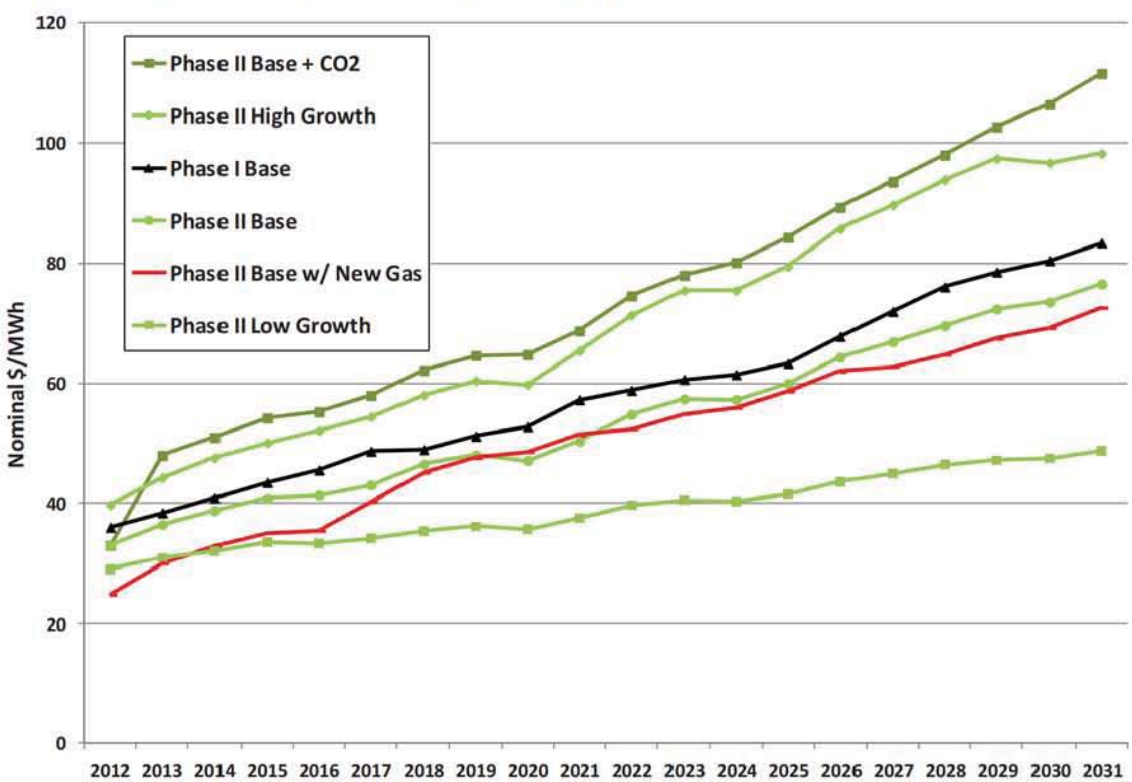


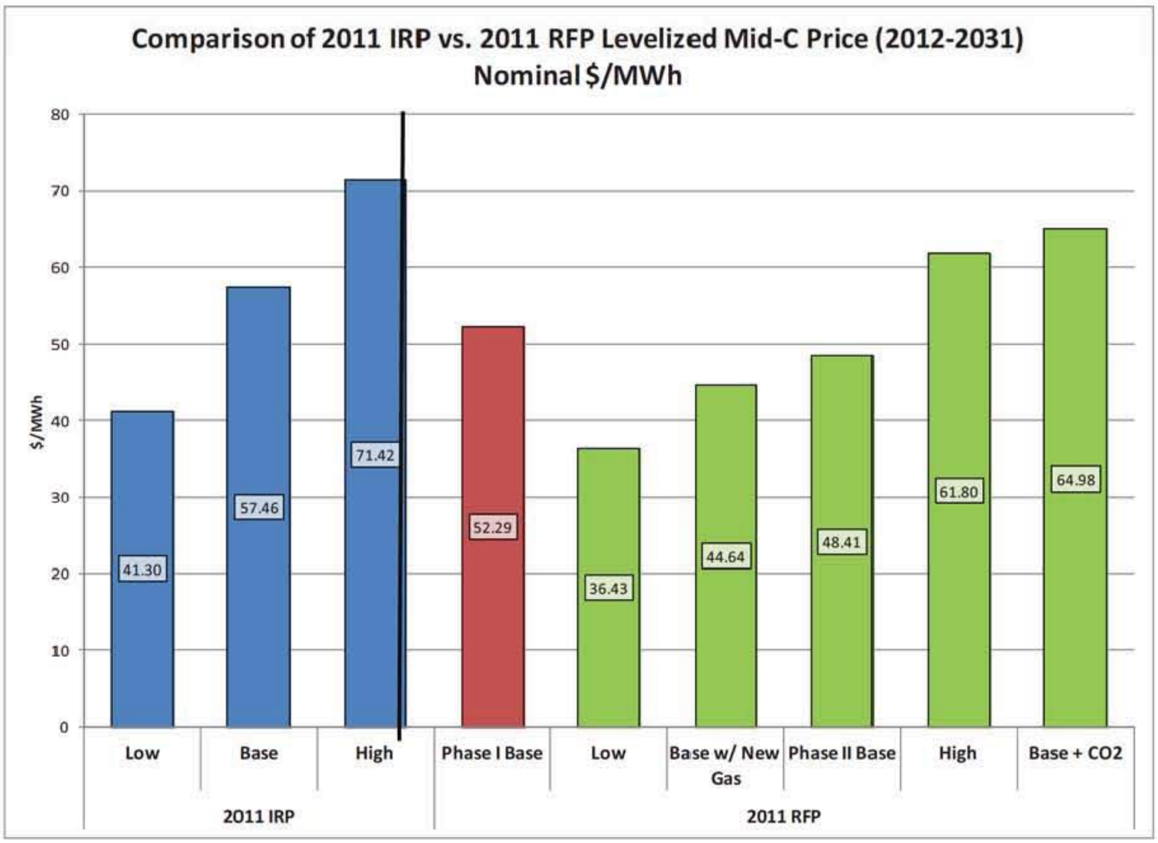
Figure 9. 2011 RFP Mid-C power price forecasts

	2011 RFP Annual Average Mid-C Power Price (Nominal $/MWh)					
	Phase I Base	Phase II Base	Base w New Gas	Low Growth	High Price	Base + CO2
2012	36.01	33.04	24.83	28.98	39.75	33.04
2013	38.43	36.50	30.00	30.94	44.31	47.98
2014	40.90	38.78	32.82	32.08	47.59	50.96
2015	43.49	40.81	35.08	33.59	50.05	54.22
2016	45.55	41.40	35.48	33.30	52.09	55.24
2017	48.68	43.09	40.30	34.16	54.43	57.93
2018	48.95	46.52	45.16	35.38	58.03	62.12
2019	51.17	48.04	47.58	36.18	60.42	64.62
2020	52.77	47.12	48.58	35.72	59.74	64.78
2021	57.24	50.33	51.38	37.56	65.41	68.73
2022	58.79	54.82	52.38	39.70	71.39	74.57
2023	60.60	57.36	54.93	40.55	75.46	78.01
2024	61.42	57.25	55.97	40.29	75.45	80.14
2025	63.28	59.94	58.64	41.58	79.46	84.36
2026	67.79	64.33	61.93	43.57	85.77	89.36
2027	71.96	66.91	62.74	44.96	89.74	93.58
2028	76.07	69.58	64.83	46.47	93.93	98.01
2029	78.56	72.38	67.46	47.18	97.40	102.69
2030	80.45	73.56	69.25	47.49	96.70	106.46
2031	83.41	76.56	72.60	48.76	98.26	111.61
20-yr Levelized	**52.29**	**48.41**	**44.64**	**36.43**	**61.80**	**64.98**

Below in Figure 10 is a comparison of the 2011 RFP levelized power prices to the 2011 IRP Levelized power prices. The 2011 IRP prices were based on the October 2010 release of gas prices and as you can see the general trend is declining. Due to the high correlation between power and gas prices, the downward pressure on the power prices is caused by the downward trend of natural gas prices (see discussion of natural gas prices for more details). In October 2010, the gas prices were $8.08/MMBtu and resulted in a Power price of $57/MW, then in April 2011 the gas price dropped to $6.64/MMBtu for Phase I of the RFP and resulted in a power price of $52.29/MW. The gas prices dropped again in October 2011 to $6.05/MMBtu and resulted in a power price of $48.41/MW, and in April 2012 the downward trend continued with a gas price of

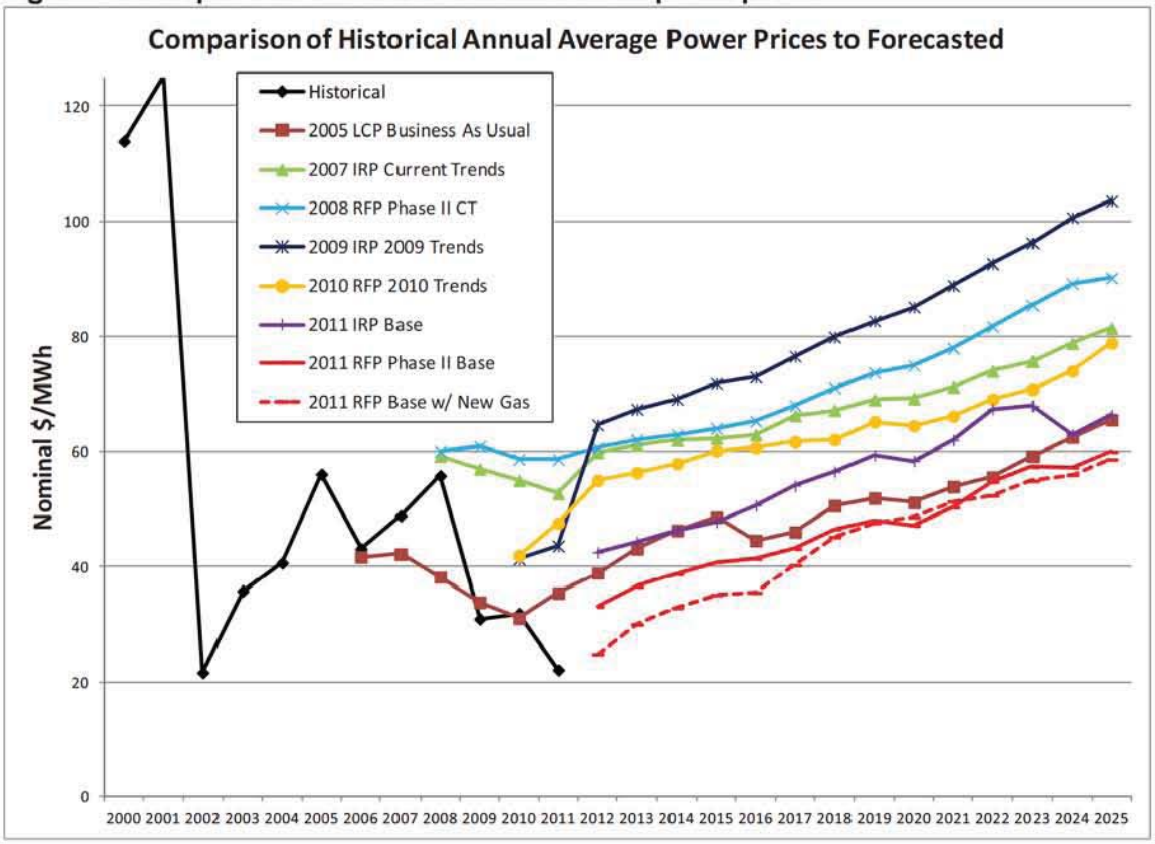
$5.43/MMBtu that resulted in a power price of $44.64/MW. The nearly $3/MMBtu decline in gas price since October 2010 has dropped power prices almost $13/MWh.

Figure 10. Mid C Power Prices, by Scenario



Power prices are not always as stable as shown in the forecasts, they can shift up or down over time. Below, Figure 11 shows the historical MidC power prices (2000-2011) compared to the forecasts starting with the 2005 LCP to the current 2011 RFP. (Note: The forecast power prices shown starting with the 2007 Integrated Resource Plan and ending with the 2010 RFP include CO2 costs)

Figure 11. Comparison of historical and forecasted power prices



Because of the general volatile and unpredictable nature of power prices, we not only run a base case, but we also run a wide range of scenarios along with stochastic simulations in order to capture the uncertainty.

D. Risk Analysis Inputs

Power and Gas Price distributions

The stochastic modeling process allows PSE to understand the risks to portfolio revenue requirement associated with individual portfolios by creating 250 Monte Carlo draws simulating Mid-C power price, Sumas gas price, PSE load, hydropower and wind generation. AURORAxmp simulated PSE's portfolio dispatch, and market purchases and sales based on the 250 draws.
The simulations take into account PSE's F2012 Load forecast, the RFP Phase II range of power and gas prices, and the historical variability of natural gas prices,

power prices, hydro generation, and wind generation. Figure 12 shows the annual Sumas price distributions for the 2011 RFP, while Figure 13 shows the annual Mid-C power price distribution. The purple line shows where the April 2012 Base w/ New gas price forecast appears in the distributions.

Figure 12. Annual Sumas Price Draws (250)

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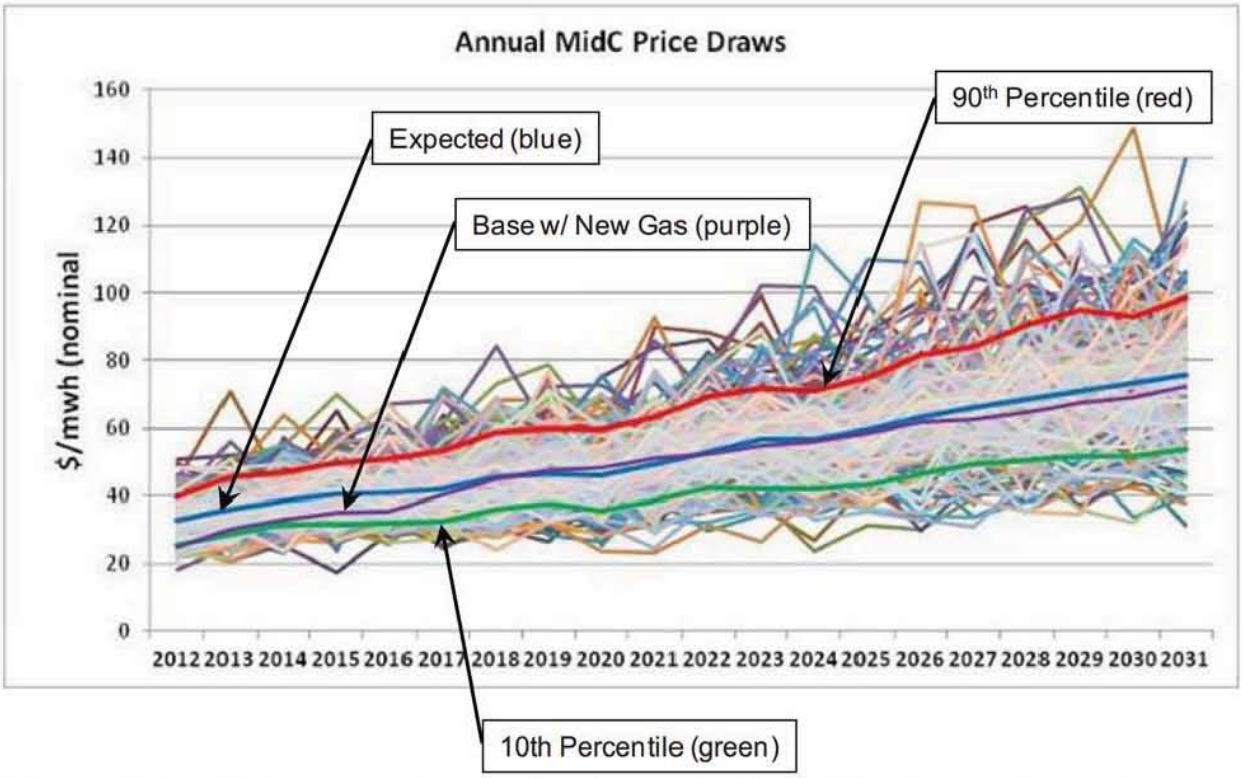
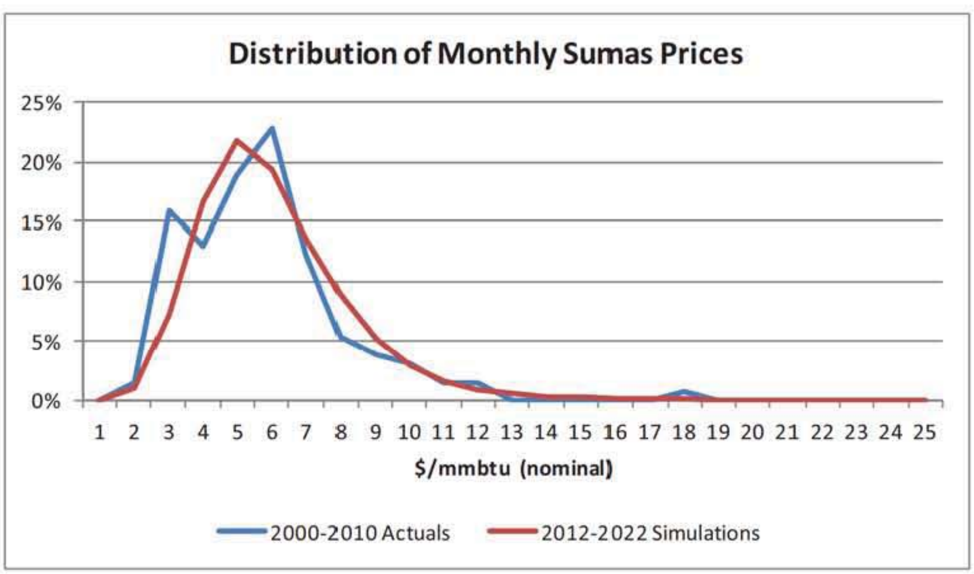
Figure 13. Annual Mid C Price Draws (250)



Figures 14 and 15 compare the simulated annual price distributions to historical price distributions between 2000 and 2010.

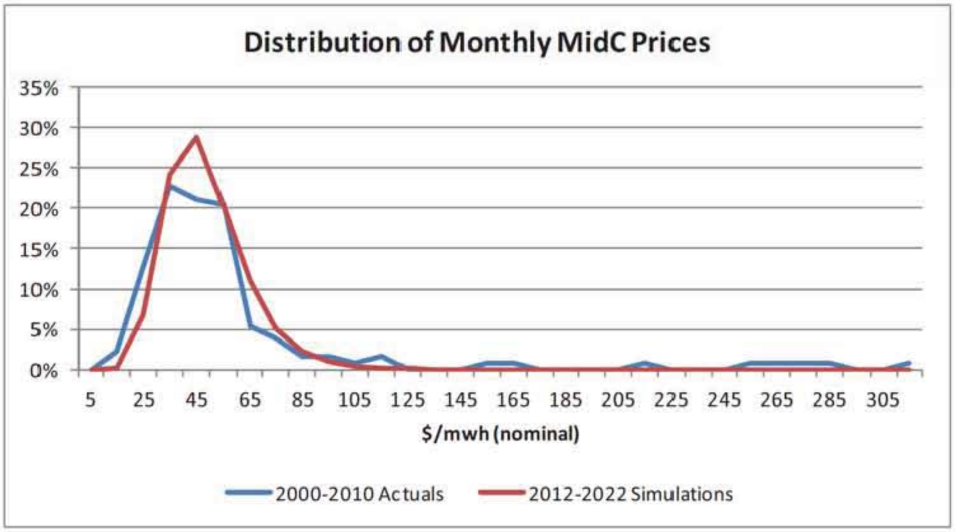
Figure 14. Distribution of Monthly Sumas Prices



2011 RFP Process Document

Appendix D

Figure 15. Distribution of Monthly MidC Prices



E. Generic Resources

Phase I

Phase I generic resource assumptions are the same as the 2011 IRP, but are shown in 2012 dollars in Figure 16.

Figure 16. 2011 RFP generic resource assumptions

Valuation Year	2012	CCCT						
	Units	Primary	Duct Fire	Primary+DF	Frame SCCT	Wind	Wood Biomass	Transmission
ISO Capacity	MW	295	30	325	197	100	25	500
Winter Capacity (avg Jan temp)	MW	304	30	334	213	100	25	500
Capital Cost (per kW Jan capacity)	$/kW	1,620	1,620	1,620	1,060	2,252	4,550	458
O&M - Fixed (ex. prop tax and ins., Jan cap)	$/kW-yr	25.20	0.00	22.94	16.80	28.90	200.00	16.03
O&M - Variable	$/MWh	0.47	0.47	0.46	0.44	3.68	3.60	
Capacity Credit	%	93%	93%	93%	93%	1.8%	100%	100%
Gas Transport - Fixed	$/kW-yr	35.07	0.00	31.92	0.00			
Gas Transport - Variable	$/MWh	2.40	3.17	2.50	5.85			
Electric Transmission - Fixed	$/kW-yr	0.00	0.00	0.00	0.00	36.00	18.92	
Electric Transmission - Variable	$/MWh	0.00	0.00	0.00	0.00	3.50	1.80	
First year Available		2014	2014	2014	2014	2014	2014	2017

Phase II

Three small updates were made to generic resource assumptions in Phase II of the RFP: 1) the start date for generic resources was moved from 2014 to 2015 to reflect the time it would take to construct a new plant, 2) the start date for generic transmission additions was moved to 2023,[5] and 3) the winter capacity value for the generic peakers was updated to reflect PSE's 23 degree F design peak temperature instead of average January temperature.

Figure 17. 2011 RFP Phase II generic resource assumptions

Valuation Year	2012	CCCT						
	Units	Primary	Duct Fire	Primary+DF	Frame SCCT	Wind	Wood Biomass	Transmission
ISO Capacity	MW	295	30	325	197	100	25	500
Winter Capacity (23 deg F)	MW	304	30	334	221	100	25	500
Capital Cost (per kW Winter capacity)	$/kW	1,620	1,620	1,620	1,020	2,252	4,550	458
O&M - Fixed (ex. prop tax and ins., Winter cap)	$/kW-yr	25.22	0.00	22.96	15.22	28.90	200.00	16.03
O&M - Variable	$/MWh	0.47	0.47	0.46	0.44	3.68	3.60	
Capacity Credit	%	93%	93%	93%	93%	1.8%	100%	100%
Gas Transport - Fixed	$/kW-yr	35.07	0.00	31.92	0.00			
Gas Transport - Variable	$/MWh	2.40	3.17	2.50	5.85			
Electric Transmission - Fixed	$/kW-yr	0.00	0.00	0.00	0.00	36.00	18.92	
Electric Transmission - Variable	$/MWh	0.00	0.00	0.00	0.00	3.50	1.80	
First year Available		2015	2015	2015	2015	2015	2015	2023

3. Key Model Updates since the 2011 IRP

Two key changes were made to the screening and optimization models for evaluation in the 2011 RFP. They include a change in logic for end effects and REC banking.

A. End Effects

For the 2011 RFP, PSE updated the end effects calculations that were used in PSM I and PSM III. Although the calculation was a reasonable approach to calculating end effects, two adjustments were made to the end effects calculation: 1) Extend the revenue requirement calculation for the life of the plant 2) Include replacement costs on an equivalent life basis for plants that retire during end effects to put all proposals on equal footing in terms of service level.

[5] The Columbia Grid and BPA have indicated that a Cross Cascades North transmission line would not be built within the next ten years, so the in service date is estimated in 2023.

Extension of revenue requirement

Previously, end effects were calculated based on a combination of the book value and operating cash flow. The operating cash flow (market value) is the market revenue from the output of the plant less operating expenses and current taxes for the remaining book life of the plant. If the operating cash flow was positive the end effect value would be book value less operating cash flow. If the operating cash flow was negative the end effect value would be the book value. To fully reflect the ongoing costs of the plant, the revenue requirement was extended over the remaining life of the plant.

The extension of the revenue requirement for end effects is based on the operational characteristics of the 20th year in the dispatch model. The revenue requirement calculation takes into account the return on ratebase, operating expenses, book depreciation and market value of the output from the plant. The operating expenses and market revenues are escalated at standard escalation rate.

Replacement costs on an equivalent life basis

Previously in PSM I and PSM III, RFP resources that retire during the first 20 years of the evaluation are replaced by generic resources so RPS and capacity constraints are met. However, when a resource is retired during the end effects period, it was not replaced by an equivalent plant. As an example, if the term of a resource ended in the 19th year of the model, that resource would be replaced and the portfolio would reflect the costs of a replacement plant that goes out 35 years. If the term of the resource instead ended in 20th year it would have no replacement costs. In this case the model would favor the proposal that ended in the 20th year since it has no replacement costs.

To account for the differences in lives of projects the model now includes a replacement cost at the end of the project life in the end effects period. The replacement cost of generic resources in end effects are added as if PSE was entering into a levelized tolling agreement based on a generic peaking plant. By adding replacements in end effects on a levelized cost basis, the model is creating equivalent lives for all the resource additions. The end effects period extends an additional 34 years beyond the 20 year base to capture the remaining 34 year plant added in year 20. With end effects the model goes out 54 years.

For a renewable project the end effects replacement cost is a levelized wind PPA agreement based on the cost of a generic wind plant.

B. REC Banking

PSE implemented a REC banking methodology in the PSM I and PSM III models to account for RECs produced in excess of compliance targets. REC banking was implemented for existing resources but not for "generic" or resources proposed in the 2011 RFP because the introduction of that logic created linearity issues for the optimization model. Existing renewable resources are not subject to this same constraint because they are part of PSE existing portfolio and are not a decision variable considered in the optimization.

REC banking assumed the following:

- estimated based on P50 generation—actual decisions to sell or bank consider REC generation variability
- RECs produced from apprentice labor multiplier credits are not bifurcated from underlying REC
- Non-REC eligible generation such as hydro efficiency upgrades are not banked
- RECs not used for compliance in the year they are created, or banked for future year's use are sold at voluntary market price.

The graph below, Figure 18, shows that banking of RECs produced from existing resources would delay PSE's REC need until 2023. The graph also illustrates how RPS targets could be met with banked RECs and RECs produced and used for compliance in the same year.

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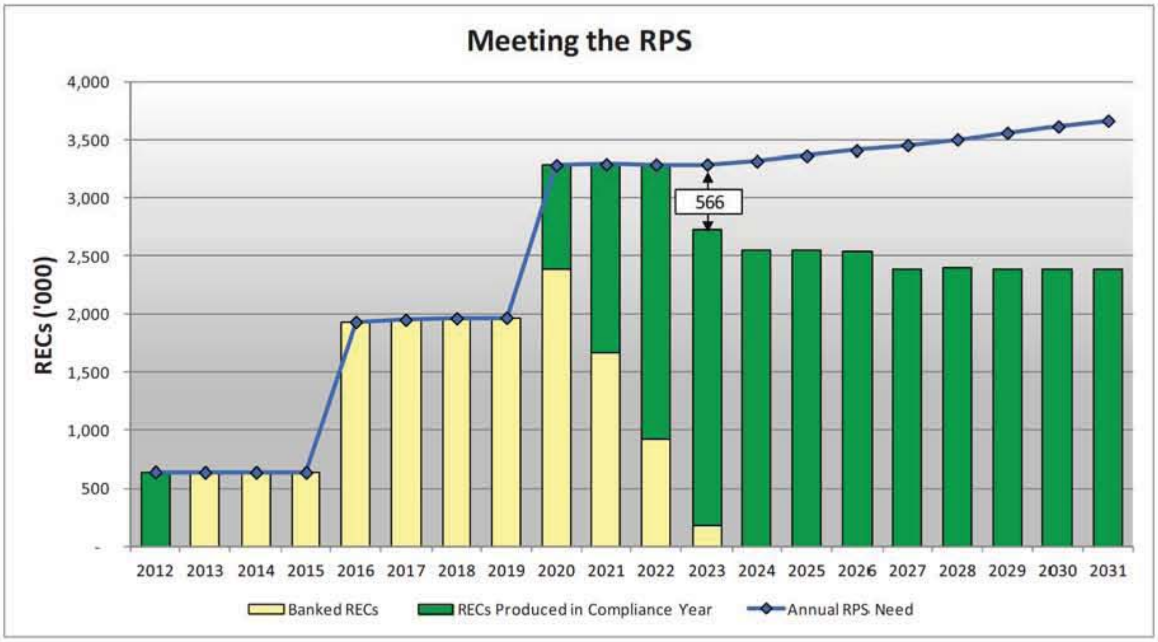
Appendix D

Figure 18. 2011 RFP Phase 2 resource need



It was assumed in the quantitative analysis that RECs not used for compliance in the year they were produced, or banked for future years' usage, were sold at a voluntary market price.

Appendix E

PSM I Screening Model

Portfolio Screening Model I

PSE used PSM I to perform the analysis during its initial resource screening and (Phase 1) as part of its final evaluation of the most promising renewable and capacity resources (Phase 2). PSM I is a Microsoft Excel-based hourly dispatch simulation model developed by PSE to evaluate incremental cost and risk for a wide variety of resource alternatives and portfolio strategies. The model calculates the incremental portfolio costs of resources required to serve load. Incremental cost includes: (i) the variable fuel cost and emissions for PSE's existing fleet, (ii) the variable cost of fuel emissions and operations and maintenance for new resources, (iii) the fixed depreciation and capital cost of investments in new resources, (iv) the market purchases or sales in hours when resources are deficient or surplus to PSE's need, and (v) end effects with replacement resources.

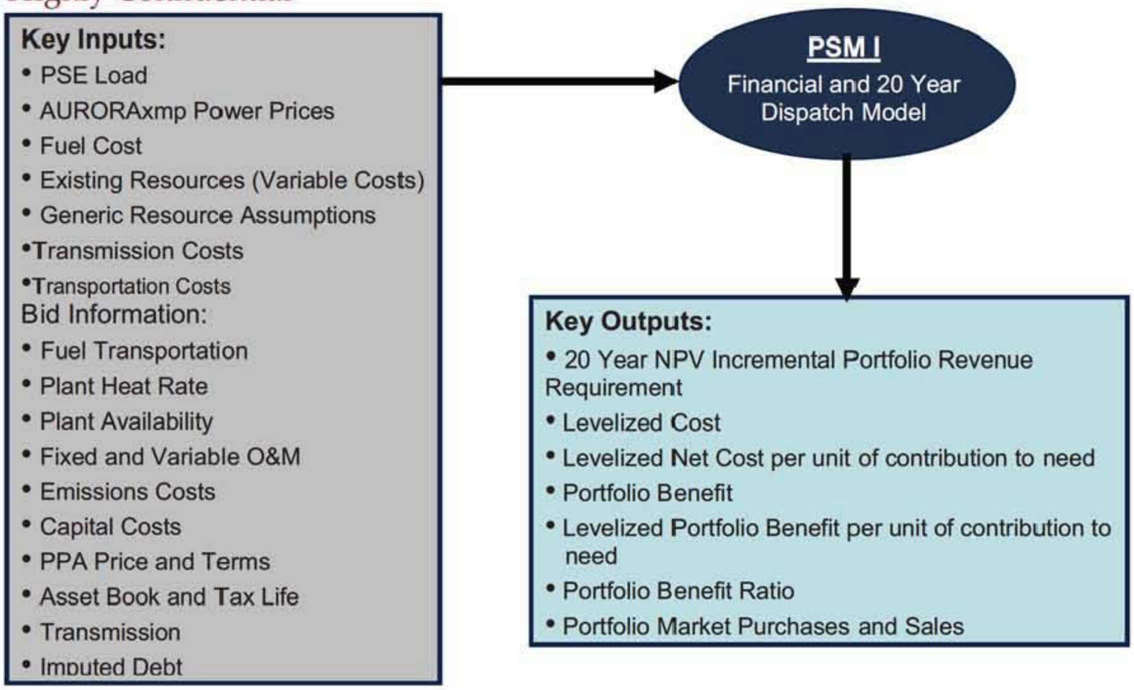
PSM is a modeling tool that can:

- evaluate and compare results quickly for a wide range of resource alternatives;
- calculate variable costs for all resources, including existing and new resources, as well as fixed costs for new resources;
- address other topics, such as end effects for resource alternatives that have varying lives.

The primary input assumptions to the PSM are:

- PSE's existing portfolio,
- projected gas and power prices,
- costs of generic resources,
- financial assumptions such as cost of capital and escalation rates, and
- a generic resource mix (from PSM III).

Below is a diagram depicting the inputs PSM I uses in its calculations and the outputs it produces. PSM I inputs and outputs will be discussed in further detail later in this appendix.



PSM I calculates project economics for individual RFP offers compared to the cost of a "generic" resource, which allows the quantitative team to evaluate offers relative to generics and each other. In this way, PSM I is an effective tool for screening proposals because it helps us identify the most attractive resources for further analysis.

In the model, PSE's existing and contracted resources are used to meet the company's future needs for capacity resources while its renewable resources are used to meet its RPS obligations. When there is a deficit in one of these two categories of need, generic resources are "built" to fill in the gaps. Generic resources represent PSE's most up-to-date assumptions about typical resources of varying technology types. They act as a "line in the sand" when evaluating RFP bids. Bids that are more attractive than generic resources have a positive portfolio benefit, while those that are less attractive have a negative portfolio benefit.

Generic resources are displaced in the model with an individual project, such as an RFP project, to measure its impact on PSE's overall portfolio cost.

Key Outputs

PSM I calculates five metrics used by PSE to assess the economic competiveness of individual proposals: portfolio benefit, levelized net cost per KW or REC, levelized portfolio benefit/ KW or REC, levelized cost, and portfolio benefit ratio. Each metric provides a slightly different perspective on the economic benefits associated with each proposal.

- **Portfolio Benefit ($):** difference between the net present value portfolio revenue requirement with the proposed project in the portfolio replacing an equivalent amount of generic resource, and the net present value portfolio revenue requirement of the all generic portfolio. (Higher is better. Useful for comparing projects with the same winter capacity value or the same contribution to meeting PSE's renewable energy target.)

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Figure 1 below shows capacity additions for the all generic portfolio. Figure 2 identifies the portfolio with the proposed project and the resulting generic resources after displacement. Finally, figure three identifies the change in the portfolio additions that is being measured in the portfolio benefit metric.

- **Levelized Cost ($/MWh):** the net present value of the proposed project's revenue requirement divided by the net present value of the proposed project's generation. (Lower is better. Useful for comparing projects that have the same or similar operating characteristics.)

- **Portfolio Benefit Ratio**: portfolio benefit divided by the net present value of the proposed project's revenue requirement. (Higher is better. Useful for comparing projects that have the same or similar operating characteristics.)

- **Levelized net cost per unit of contribution to need ($/kW or $/REC):** difference between the net present value project revenue requirement and the net present value market revenue of the project's generation divided by the net present value of the project's capacity contribution. If a renewable project is being considered, then the numerator is divided by the net present value of the project's contribution to PSE's renewable energy target. (Lower is better. Useful for comparing across technologies and size.)

- **Levelized portfolio benefit per unit of contribution to need ($PB/kW or $PB/REC):** a project's portfolio benefit divided by the present value of the project's capacity contribution. If a renewable project is being considered, If a renewable project is being considered, then the numerator is divided by the net present value of the project's contribution to PSE's renewable energy target. (Higher is better. Useful for comparing across technologies and size.)

Together, the five metrics provide relative rankings for the projects PSE evaluates.

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Figure 1. 2011 RFP Phase 2 All generic portfolio

All Generic Portfolio									
Year	Peak Capacity Need	Peak Need (less operating reserves)	Generic Peaker Builds (Capacity Value)	Generic Transmisison (Capacity Value)	Generic Wind Builds (Capacity Value)	Generic Biomass Builds (Capacity Value)	Acquisition additions (Capacity Value)	Total Resource to meet Capacity Need	Surplus/ (Deficit)
2012	138	128	-	-	-	-	-	-	(128)
2013	242	225	-	-	-	-	-	-	(225)
2014	460	427	-	-	-	-	-	-	(427)
2015	554	515	617	-	-	-	-	617	102
2016	728	677	823	-	-	-	-	823	145
2017	866	805	823	-	-	-	-	823	18
2018	882	820	1,028	-	-	-	-	1,028	208
2019	905	842	1,028	-	-	-	-	1,028	186
2020	900	837	1,028	-	-	-	-	1,028	191
2021	914	850	1,028	-	-	-	-	1,028	178
2022	982	914	1,028	-	-	-	-	1,028	115
2023	1,070	995	1,028	-	4	-	-	1,032	37
2024	1,171	1,089	1,028	500	5	-	-	1,534	444
2025	1,282	1,192	1,028	500	5	-	-	1,534	341
2026	1,376	1,280	1,028	500	5	-	-	1,534	254
2027	1,477	1,373	1,028	500	5	23	-	1,557	184
2028	1,582	1,472	1,028	500	5	23	-	1,557	86
2029	1,691	1,573	1,234	500	5	47	-	1,786	213
2030	1,798	1,672	1,234	500	5	47	-	1,786	114
2031	1,901	1,768	1,234	500	5	47	-	1,786	18

Figure 2. 2011 RFP Phase 2- Coal Transition PPA displacing generic resources

	Peak Capacity Need	Peak Need (less operating reserves)	Generic Peaker Builds (Capacity Value)	Generic Transmisison (Capacity Value)	Generic Wind Builds (Capacity Value)	Generic Biomass Builds (Capacity Value)	Acquisition additions (Capacity Value)	Total Resource to meet Capacity Need	Surplus/ (Deficit)
2012	138	128	-	-	-	-	125	125	(3)
2013	242	225	-	-	-	-	225	225	(0)
2014	460	427	-	-	-	-	425	425	(2)
2015	554	515	119	-	-	-	498	617	102
2016	728	677	325	-	-	-	498	823	145
2017	866	805	325	-	-	-	498	823	18
2018	882	820	530	-	-	-	498	1,028	208
2019	905	842	530	-	-	-	498	1,028	186
2020	900	837	530	-	-	-	498	1,028	191
2021	914	850	530	-	-	-	498	1,028	178
2022	982	914	530	-	-	-	498	1,028	115
2023	1,070	995	628	-	4	-	400	1,032	37
2024	1,171	1,089	628	500	5	-	400	1,534	444
2025	1,282	1,192	728	500	5	-	300	1,534	341
2026	1,376	1,280	1,028	500	5	-	-	1,534	254
2027	1,477	1,373	1,028	500	5	23	-	1,557	184
2028	1,582	1,472	1,028	500	5	23	-	1,557	86
2029	1,691	1,573	1,234	500	5	47	-	1,786	213
2030	1,798	1,672	1,234	500	5	47	-	1,786	114
2031	1,901	1,768	1,234	500	5	47	-	1,786	18

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Figure 3. 2011 RFP Phase 2- Change between All generic portfolio and Coal Transition PPA portfolio

	Peak Capacity Need	Peak Need (less operating reserves)	Generic Peaker Builds (Capacity Value)	Generic Transmisison (Capacity Value)	Generic Wind Builds (Capacity Value)	Generic Biomass Builds (Capacity Value)	Acquisition additions (Capacity Value)	Total Resource to meet Capacity Need	Surplus/ (Deficit)
2012	-	-	-	-	-	-	125	125	125
2013	-	-	-	-	-	-	225	225	225
2014	-	-	-	-	-	-	425	425	425
2015	-	-	(498)	-	-	-	498	-	-
2016	-	-	(498)	-	-	-	498	-	-
2017	-	-	(498)	-	-	-	498	-	-
2018	-	-	(498)	-	-	-	498	-	-
2019	-	-	(498)	-	-	-	498	-	-
2020	-	-	(498)	-	-	-	498	-	-
2021	-	-	(498)	-	-	-	498	-	-
2022	-	-	(498)	-	-	-	498	-	-
2023	-	-	(400)	-	-	-	400	-	-
2024	-	-	(400)	-	-	-	400	-	-
2025	-	-	(300)	-	-	-	300	-	-
2026	-	-	-	-	-	-	-	-	-
2027	-	-	-	-	-	-	-	-	-
2028	-	-	-	-	-	-	-	-	-
2029	-	-	-	-	-	-	-	-	-
2030	-	-	-	-	-	-	-	-	-
2031	-	-	-	-	-	-	-	-	-

Appendix F

Self-build Peaker Memo

Self-build Peaker Memo – RFP 2011

PUGET SOUND ENERGY

Date: May 21, 2012
To: RFP 2011 Files
From: Nathan Adams, Resource Acquisition
Subject: Self Build Peaker Assumptions

SIMPLE-CYCLE

Technology Summary:

PSE's 2011 IRP showed a clear economic preference for simple-cycle installations, the best choice economically and technically, absent a value on flexibility for wind integration. PSE has started early development efforts on its own self-build peaker based on the Siemens 5000F technology.

Cost and Performance Assumptions:

Cost and performance data were provided by Black & Veatch (BV). BV also provided performance and emissions characteristics under different ambient conditions and at various output levels. The heatrate is degraded by 2% to simulate degradation typically experienced between major maintenance events.

The capital cost estimate provided by BV is composed of the Engineer, Procure, and Construct (EPC) and Owner's Costs components. The EPC cost was provided in June 2010 EPC costs are developed based on their in-house proprietary database of recently obtained specific and budgetary quotes for other recent projects and adjusted for current market pricing conditions, escalation factors, and information on local labor rates and productivity. The capital cost estimate for the Self-build peaker <u>does not</u> include an estimate for an oil storage tank and related equipment as the existing facility at the Fredonia site already has this infrastructure. However a generic peaker would include such costs. Owner's Costs such as development, permitting, engineering, site preparation, public relations, legal, construction management, O&M staff training, spares, acceptance testing, contingency, AFUDC, etc. were estimated based on BV recommendations and the initial permitting work performed for the Fredonia site, which is approximately [redacted]% of the EPC cost. For generic resources, BV recommends a 40% of EPC adder[1]. See Figure 1 for more details.

Non-fuel O&M costs were estimated by the BV using proprietary models which calculate a levelized cost for routine and major maintenance, labor, other maintenance items, and consumables. These rates are calculated based on operating characteristics provided by PSE: [redacted]% capacity factor and [redacted] starts per year for the [redacted] and [redacted] capacity factor and [redacted] starts per year for the [redacted] This operating profile is higher for the [redacted] because it has a lower heatrate and more operational flexibility for wind integration when compared to the [redacted] Staffing levels were determined by BV at [redacted] FTE and PSE's corporate overhead adder on labor was included. To be consistent with trade floor dispatch and with AURORA modeling practices at PSE, the team allocated major maintenance as a fixed expense instead of a variable cost as provided by BV.

[1] The EC notes that owner's costs typically average 40% of EPC, but vary widely (30-70%), primarily depending on the site, technology, and the developer's cost of capital.

Natural gas supply is assumed to be interruptible and based on estimates of gas transport rates available in the capacity release market. No estimate was included for the cost of distillate consumed when the plant is curtailed from natural gas supply. The plant is assumed to connect to the PSE transmission system and as such does not incur any direct transmission cost, but the capacity contribution to peak load should be reduced by 7% to account for operating reserves.

Figure 1- PSE Fredonia Self Build Peaker & Generic Cost Estimates in 2010 Dollars[2]

Puget Sound Energy Generic & Fredonia Self Build Total Capital Costs ($ 2010)

2010 Dollars	Generic 1x 5000F4	Fredonia Self Build 1x 5000F4	Fredonia Self Build 2x GE LMS100 PA
Purchase Contracts	[redacted]		
Civil / Structural	$		
Mechanical	$		
Combustion Turbine Generator & SCR/CO	$		
Electrical	$		
Control	$		
Chemical	$		
Subtotal Purchase Contract	$		
Construction Contracts			
Civil / Structural Construction	$		
Mechanical / Chemical Construction	$		
Electrical / Control Construction	$		
Fuel Oil Storage Tank & Initial Inventory	$		
Service Contracts & Construction Indirects	$		
Subtotal Construction Contracts	$		
Total Direct Cost	**$**		
Engineering Costs	$		
Construction Management	$		
Startup Spare Parts	$		
Project Insurance	$		
Performance Bond, Contingency, and Profit	$		
Total Indirect Costs	**$**		
Direct & Indirect Costs Combined	**$**		
Owners Cost Adder %			
Project Development			
Utility Interconnections			
Plant Equipment & Spare Parts			
Owners Project Management			
Plant Startup / Construction Support			
Taxes / Advisory / Legal Fees			
Contingency			
Total Owners Cost	**$**		
AFUDC			
Total Estimated Capital Requirement	**$**		
Net Output (kW, ISO)			
Net Output (kW, 23 degree peak)			
All-In Cost, $/kW (ISO)	$ 1,090	$ [redacted]	
All-In Cost, $/kW (23 degree peak)	$ 970	$	

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[2]For Phase II of 2011 RFP, PSE updated the cost estimates for the self-build peaker to be based on an expected on-line date to meet PSE's capacity need for the winter 2015-2016, PSE used a simple escalation of costs technique consistent with how costs are escalated for generic resources. Additionally, PSE changed the winter capacity value to be based on the 23 degree peak design day from an average winter temperature. This had the effect of changing the $/kW inputs for PSM I and PSM III's capital costs and fixed operating costs.

Appendix G

Environmental Policies

Environmental Policy Landscape and Trends

The following appendix is designed to provide a general sense of the environmental policy landscape and trends at the time the 2011 RFP was conducted. It is not intended to be an exhaustive list of all environmental policies existing or proposed at that time.

Federal

Greenhouse Gas Permitting (The Tailoring Rule). Recent federal climate change regulation includes the Tailoring Rule, which became effective January 2, 2011, setting permit levels for GHG emissions in two phases for power plants and other large stationary sources. The ruling limits the amount of GHG emissions a facility can emit by requiring installment of Best Available Control Technology (BACT). Phase I requires existing facilities that emit more than 100,000 tons of emissions per year to comply with the new BACT rules when air permits are renewed or when major modifications are made after January 2011. Phase II, effective July 2011, requires preconstruction permits using BACT for new projects that emit 100,000 tons of emissions per year or existing projects that make major modifications and that emit more than 75,000 tons per year. The EPA has released BACT guidance for coal and natural gas technologies when a major modification is made or when a new generating unit is constructed.

NAAQS for Ozone Smog and Fine Particulates. On September 2, 2011 the Obama Administration ordered EPA to postpone, for the fourth time, new air quality standards for ground level ozone, the main component of smog. The draft ozone rule proposed by EPA would have set national smog standards at between 60 and 70 parts per billion (ppb) - a level identified by the agency's science advisory panel but nullified by the Bush administration in 2008 in favor of a limit of 75 ppb. The Obama administration's new rule was aimed at establishing a new standard congruent with the most current scientific understanding of these pollutants. EPA will revisit the standard in 2013.

Proposed Greenhouse Gas Emission Limits for New Electric Generating Units. On March 27, 2012, the Environmental Protection Agency (EPA) proposed a nationwide standard for emissions of carbon dioxide (CO2) from new fossil fuel electric generating units (EGUs). Under this proposed New Source Performance Standard (NSPS), new fossil fuel EGUs would be subject to a maximum CO2 emissions rate of 1,000 pounds per megawatt-hour. The proposed NSPS also includes a narrowly drawn alternative compliance option allowing the construction of certain new coal-fired EGUs that commit to later install CCS equipment to capture and sequester CO2. The proposed standards would not apply to existing EGUs, or to the modification or reconstruction of existing EGUs. Furthermore, the standards would not apply to new coal-fired EGUs that have already received preconstruction permits and that commence construction within 12 months of the date the proposal is published in the Federal Register.

Carbon Legislation. With the commencement of the 112th Congress, any chance of comprehensive climate legislations was put to a stop by the House majority, and the majority wasted little time to roll back recent actions by the EPA. In particular, the majority focused on preventing EPA from implementing new rules for regulating GHG emissions under the Clean Air Act. With that, it now appears the prospect of an economy-wide cap-and-trade program has been abandoned by Democrats for other policy initiatives like New Source Performance Standards, the Clean Energy Standard, California AB 32, energy innovation and others.

Cross State Air Pollution Regulation. Rule adopted by US Environmental Protection Agency (EPA) to help states in the control pollution from upwind states. Rule's implementation has been stayed by a federal court pending review by the court. This rule does not affect plants in the western US.

Mercury and Air Toxics Rule. As adopted and published in the Federal Register, this rule sets limits on emissions of mercury, organic hazardous air pollutants (dioxins and furans), non-mercury metals and acid gases. Limits go into effect beginning April 2015.

Regional Haze Rule. The rule requires states to develop State Implementation Plans or, if the state doesn't act, a Federal Implementation Plan (FIP) to eliminate man-made visibility impairment at mandatory Class I areas (National Parks, National Forests, etc.) by the year 2064. Coal-fired power plants built before 1977 are required to install Best Available Retrofit Technology (BART) and all major stationary sources must make "Reasonable Progress" toward the 2064 goal. The EPA issued a draft FIP for Montana for public comment in March 2012. The EPA is expected to issue a Final FIP in August 2012 after reviewing public comments.

Coal Combustion Residuals (CCR) Rule. The EPA issued the draft rule in 2010. At this time, there is no date set for issuance of the final rule. Comments were requested on two alternative options for CCR disposal requirements (flyash, bottom ash, boiler slag and scrubber residue). The first option would continue to treat CCRs as non-hazardous under the requirements set forth in Sub-title D of the Resource Conservation and Recovery Act (RCRA) with disposal standards and enforcement delegated to the individual states. The second option would treat CCRs as Hazardous Waste under Subtitle C of RCRA with transportation, handling and disposal requirements and enforcement by EPA.

State policies

Renewable Portfolio Standard ("RPS"). The Washington RPS, as defined by The Energy Independence Act, Chapter 19.285 RCW, requires PSE to acquire qualifying renewable resources to meet the following targets: 3 percent of load by 2012, 9 percent of load by 2016, and 15 percent of load by 2020. At the time PSE issued the 2011 RFP, PSE forecast that the Company had acquired sufficient renewable resources to meet its targets in 2012 and 2016. Since that time, PSE has updated its renewable resource outlook assumptions. The resource need discussion in Section 2 provides an update on PSE's renewable outlook and REC banking assumptions.

Emissions Performance Standard ("EPS"). In 2007 Washington established a greenhouse gas (GHG) emission performance standard for baseload electricity generation of 1,100 pounds per megawatt-hour. Baseload generation is considered to be a generating unit that operates at a capacity factor of 60% or greater. The standard applies to all investor and consumer owned utilities in Washington State. Every five years the Department of Commerce (Commerce) must conduct a survey of GHG emission rates from new, commercially available combined cycle combustion turbines (CCCTs) and is directed to adopt, by rule, the average GHG emission rate derived from the survey. If the average CCCT GHG emission rate is lower than current standard of 1,100 pounds per megawatt-hour, it becomes the new greenhouse gas emission performance standard for the state.

The Department of Commerce filed a pre-proposal inquiry (form CR-101) on February 21, 2012 as a first step toward adjusting the 5-year update of the emission performance standard. Since starting the process of designing the survey, several complex decisions and adjustments necessary to calculate the average as described in RCW 80.80 were identified, delaying the survey design. Commerce is working with stakeholders to resolve these issues. This will include convening a technical subcommittee two or more times, and another in-person meeting of all stakeholders to discuss results of the subcommittee work, all prior to filing a proposed rule. Commerce has not proposed a final rulemaking timeline, but it still expects to have a new rule in place well before the end of 2012.

Appendix H

Presentations:

1. Presentations to PSE's Energy Management Committee

2011 RFP for All Generation Sources

PSE PUGET SOUND ENERGY

Aliza Seelig
Consulting Resource Acquisition Analyst

August 18, 2011

PSE PUGET SOUND ENERGY

Agenda

- *Schedule*
- *Resource need*
- *2011 RFP solicitation updates*
- *Improved evaluation process*

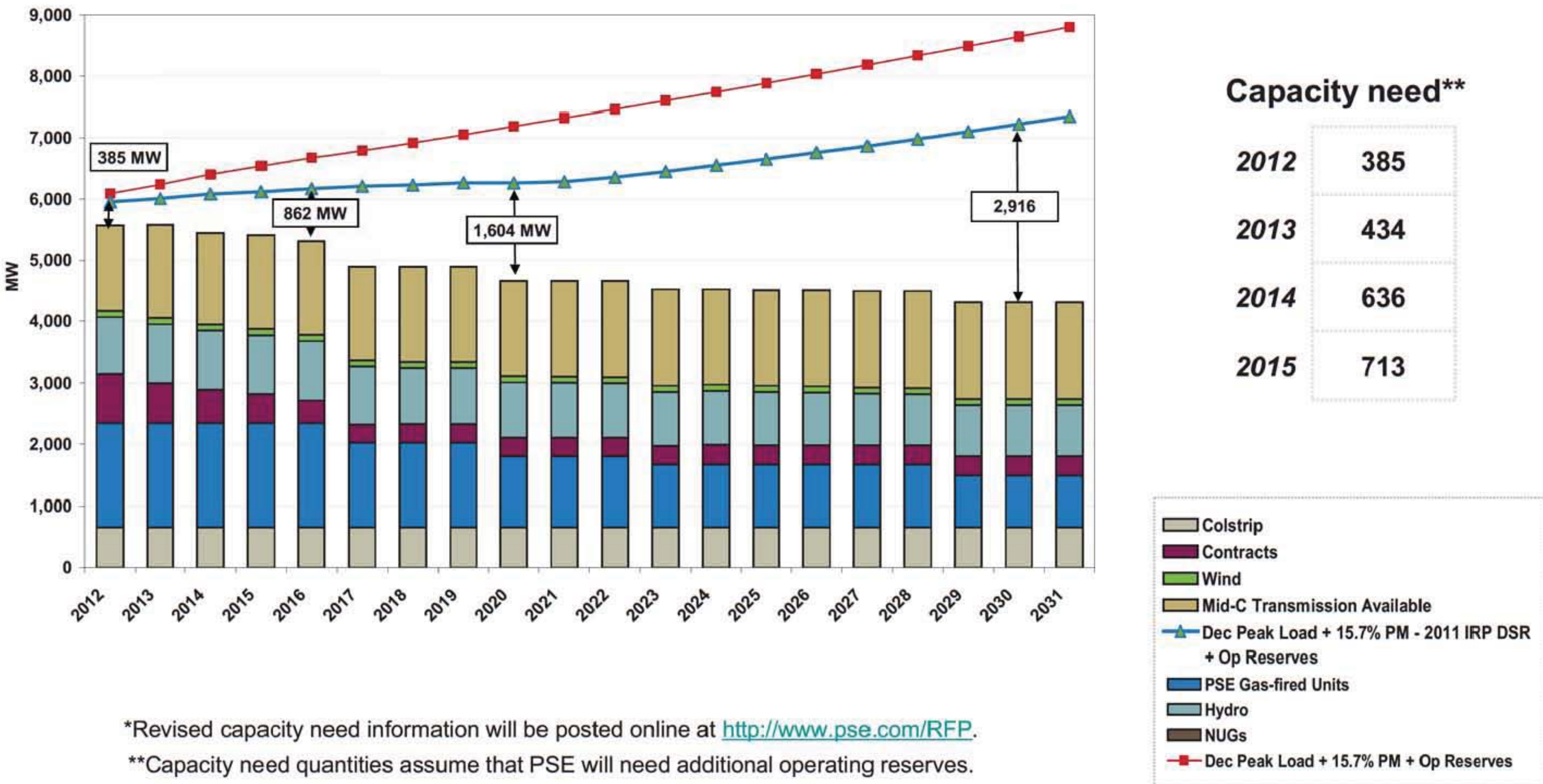
RFP schedule calls for proposals by Nov. 1*

August 1, 2011	Draft RFP filed with WUTC
August 16, 2011	PSE hosts proposal conference
September 30, 2011**	Public comments due
October 13, 2011**	WUTC approval expected
October 18, 2011**	PSE releases final RFP solicitation
October 24, 2011**	Mutual Confidentiality Agreements due to PSE
November 1, 2011	Offers due to PSE
Q1 2012	Final short list selected, respondents notified
To follow	Post-proposal negotiations

*This schedule is subject to adjustment based on WUTC review and the actual pace of PSE's evaluation process. Any updates will be posted online at http://www.pse.com/RFP.

**Milestones in teal have been revised since the draft RFP was filed on Aug. 1, 2011 to reflect changes requested by the WUTC.

PSE seeks 385 MW of capacity by end of 2012*



Capacity need**

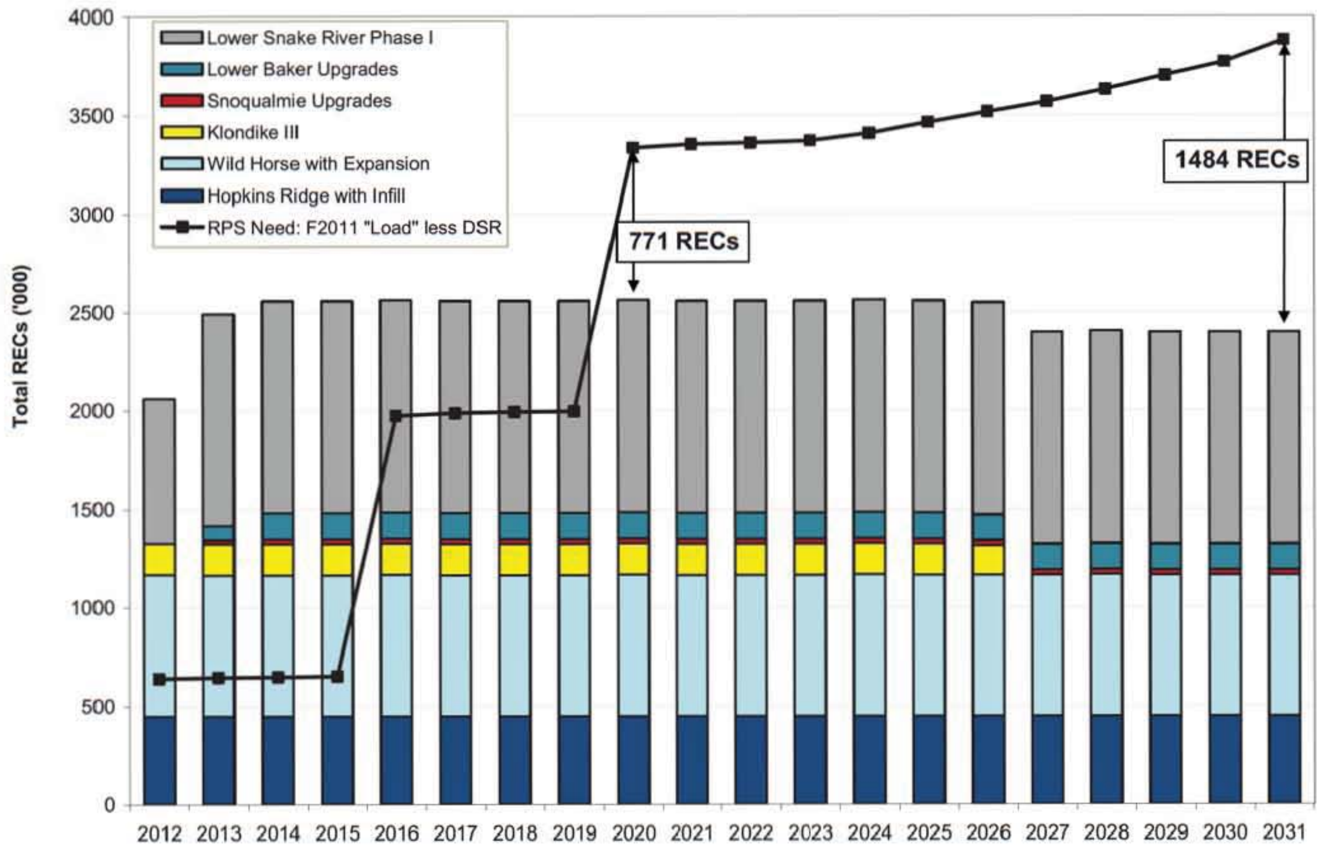
2012	385
2013	434
2014	636
2015	713

*Revised capacity need information will be posted online at http://www.pse.com/RFP.

**Capacity need quantities assume that PSE will need additional operating reserves.

EMC Update // August 18, 2011

Near-term RPS targets achieved

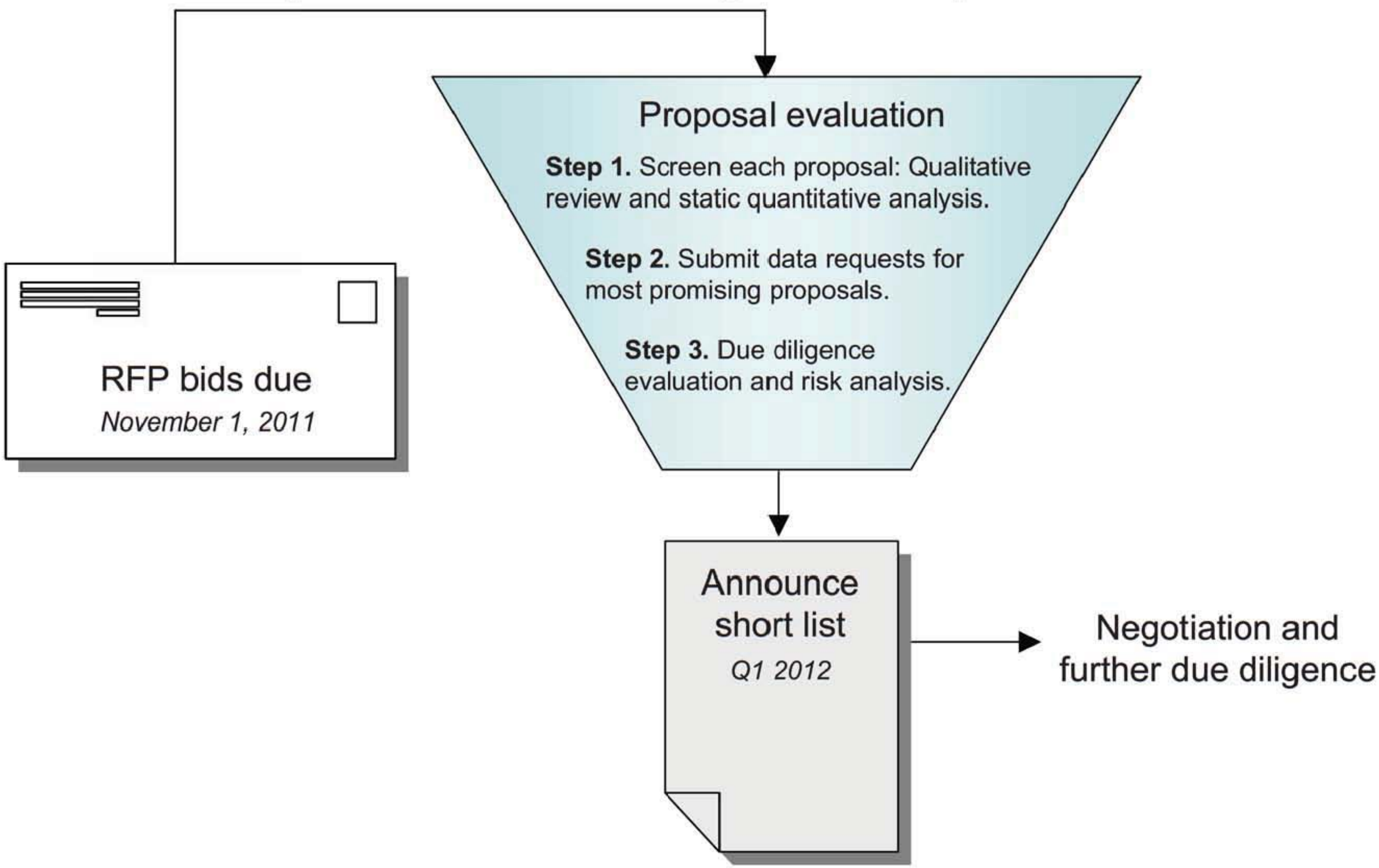


* If proposing a qualifying renewable resource that is located outside the Pacific Northwest as defined for the Bonneville Power Administration in Section 3 of the Pacific Northwest Electric Power Planning and Conservation Act (94 Stat. 2698; 16 U.S.C. Sec. 839a), describe how the electricity from the facility will be delivered into Washington state on a real-time basis without shaping, storage, or integration services.

So…what's different about this RFP?

- PSE has no near-term need for renewable energy credits - renewables must be competitive with capacity resources or market
- This RFP is not seeking non-unit-contingent PPAs delivered to Mid-C
  - This RFP will consider non-unit-contingent PPAs delivered to BPAT.PSEI
- Demand side resources offers are being referred to the energy efficiency RFP
  - An energy efficiency RFP will be issued at a later date
- PSE is requesting commercial term sheets for all proposals
- Streamlined proposal requirements and summary data form
- Fluid and flexible evaluation process and team

Similar RFP process with targeted improvements



More efficient resource deployment

	Evaluation team	Scope of review
Screening	Resource Acquisition ▪ Commercial & Development ▪ Quantitative Transmission & Integration ▪ Merchant ▪ PSE (as needed) Technical / Plant Operations Fuel Supply Permitting (as needed)	▪ Fatal flaw screening of key qualitative attributes, such as: ▪ Commercial viability as proposed? ▪ Acceptable offer terms? ▪ Timing / Likely to meet COD? ▪ Development status? ▪ Transmission solution? ▪ Static quantitative analysis screening by resource type
	Formal data requests submitted for most favorable resources	
Due Diligence	*Phase 1 team, plus:* Environmental Real Estate Power Supply Operations (Trade Floor) Credit Other (as needed) ▪ Regulatory / Legal ▪ Accounting / Finance / Tax ▪ Community / Government Relations ▪ Insurance ▪ Etc.	▪ Thorough evaluation of qualitative attributes based on evaluation criteria set forth in RFP ▪ Quantitative portfolio optimization and risk analysis ▪ Scenario analysis

RFP for All Generation Sources Update

Presented to PSE's Energy Management Committee ("EMC")

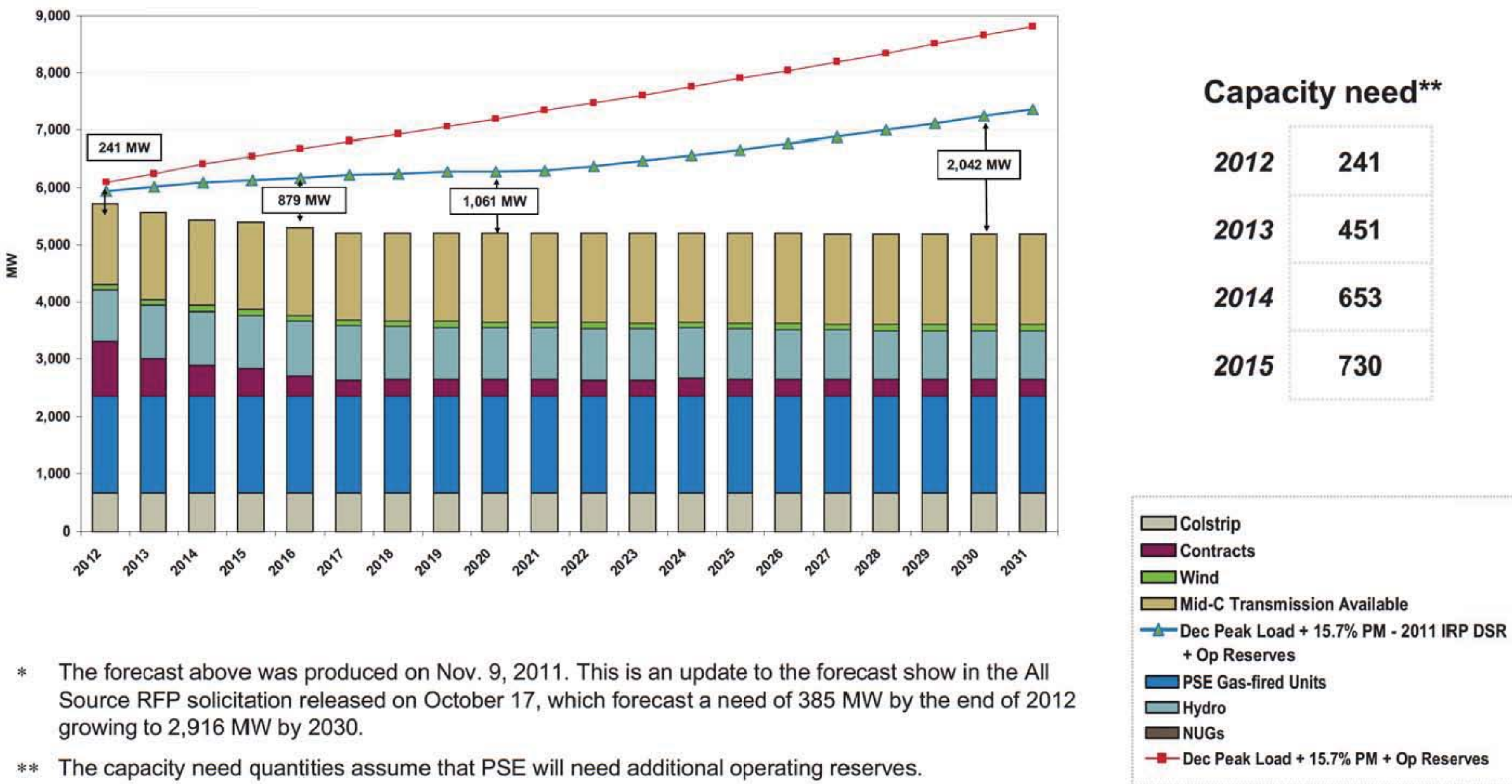
PSE PUGET SOUND ENERGY

Chris Bevil

Manager, Resource Acquisitions

December 15, 2011

PSE needs 241 MW of capacity by the end of 2012*



Capacity need**

2012	241
2013	451
2014	653
2015	730

* The forecast above was produced on Nov. 9, 2011. This is an update to the forecast show in the All Source RFP solicitation released on October 17, which forecast a need of 385 MW by the end of 2012 growing to 2,916 MW by 2030.

** The capacity need quantities assume that PSE will need additional operating reserves.

PUGET SOUND ENERGY

Summary of RFP proposals

Resource Type	Bids[1]	MW[2]	Operating	Development	PPA	Ownership	Notes
Renewable							
Wind	4	369	1	3	3	2	(3)
Biomass	3	61	0	3	3	1	(4)
Solar - PV	2	24	0	2	2	1	
Renewable Sub-total	9	454	1	8	8	4	
Thermal							
Coal	1	500	1	0	1	1	(5)
CCGT	6	2,006	4	2	6	2	
SCGT	1	179	0	1	0	1	
CHP	1	29	0	1	1	0	
GT	1	300	0	1	0	1	(6)
Recip	1	110	0	1	1	0	
Thermal Sub-total	11	3,124	5	6	9	5	
Other							
PPA-Market	4	400	4	0	4	0	
Hydro	1	77	0	1	0	1	
Waste-to-Energy	1	23	1	0	1	0	
Energy Storage	2	251	0	2	1	1	
Cold Fusion	1	1,880	0	1	0	1	
Other Sub-total	9	2,631	5	4	6	3	
TOTAL	**29**	**6,209**	**11**	**18**	**23**	**12**	

(1) Project/Counterparty specific bid (some bids may contain multiple options)
(2) Capacity offered
(3) One wind bid offered options for REC-only, energy only, energy + RECs, and capacity via battery storage
(4) One biomass bid offerd options for REC-only and asset sale
(5) An option included with the Coal PPA is asset sale of existing Centralia CCGT
(6) Equipment only sale for [redacted]

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REDACTED VERSION

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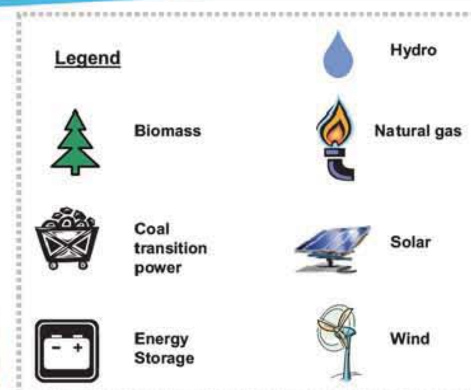
PUGET SOUND ENERGY

Confidential

RFP resource proposals by location

[redacted]

REDACTED VERSION



The map does not include:

(1) the following RFP proposals: two resources to be sited at unspecified locations within Washington state, the [redacted] and the [redacted] and four market PPAs;

(2) two unsolicited resources that PSE is screening alongside the RFP proposals: the [redacted] located in Lake County, Oregon and the [redacted] located in eastern Washington.

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DRAFT - PRELIMINARY

PSE PUGET SOUND ENERGY

Screening schedule and [redacted]*

REDACTED VERSION

	ID	Project	Owner/Developer	State	Type	MW Nameplate	Status	DRAFT selection status* (12/13/11)
WEEK 1 (Nov 9 - 15)								
1	11102	Centralia	TransAlta	WA	Coal [redacted]	[redacted]	Operating	Selected for further evaluation
2	11118	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Selected for further evaluation
3	11103	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Operating	Selected for further evaluation
4	11124	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Operating	Selected for further evaluation
WEEK 2 (Nov 16 - 22)								
5	11110	[redacted]	[redacted]	n/a	[redacted]	[redacted]	Operating	Selected for further evaluation
6	11112	[redacted]	[redacted]	n/a	[redacted]	[redacted]	Operating	Selection contingent upon transmission solution
7	11126	[redacted]	[redacted]	n/a	[redacted]	[redacted]	Operating	No transmission; ranks low among short-term PPAs
8	Unsolicited	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Operating	Ranks low among short-term PPA products
9	11127	[redacted]	[redacted]	n/a	[redacted]	[redacted]	Operating	Selected for further evaluation
				Nov 23 - 29 -- No screening team meeting				
WEEK 3 (Nov 30 - Dec 6)								
10	11117	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Operating	Selected for futher evaluation
11	11116	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Confirming quantitative results
12	11105	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not selected: High cost
13	11120	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Previous experience w/ owner; risk of default
WEEK 4 (Dec 7 - 13)								
14	11101	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not selected: High cost; development risk
15	11106	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not selected: High cost; development risk
16	11115	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not selected: High cost; development risk
17	11121	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not selected: High cost; development risk
18	11108	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not selected: High cost; development risk
				Dec 14 - Jan 3 -- No screening team meetings				
WEEK 5 (Jan 4 - Jan 10)								
19	11113	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Operating	Not yet screened
20	11114	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not yet screened
21	11111	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not yet screened
22	11104	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not yet screened
23	11122	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not yet screened
24	Unsolicited	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not yet screened
25	11125	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not yet screened
WEEK 6 (Jan 11 - Jan 17)								
26	11107	[redacted]	[redacted]	n/a	[redacted]	[redacted]	n/a	Not yet screened
27	11109	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not yet screened
28	11119	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not yet screened
29	11123	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not yet screened

* PSE has not finished screening all proposals. The DRAFT selection status shown above is subject to change based upon the final screening results.

PUGET SOUND ENERGY

Selected proposal highlights

- [redacted] wind project (currently in operations) is priced at [redacted]/MWh flat for a [redacted] PPA or [redacted]/kW for an asset sale; while their [redacted] wind project (currently in development) is priced at $[redacted]/MWh flat for a [redacted] PPA
- [redacted] existing [redacted] is priced at $[redacted]/kW for an asset sale or a [redacted] with a capacity price of $[redacted]/kW-mo flat
- [redacted] existing [redacted] is priced starting at $[redacted]/kW-mo escalating over a [redacted] (the first 5 yrs is winter-only and the last 5 yrs is year-round)
- [redacted] is priced at [redacted]/MWh flat for [redacted] MW firm for 4 yrs
- [redacted] priced at [redacted]/MWh flat (delivered) for 100 MW for 4 yrs 3 mos
- [redacted]

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PUGET SOUND ENERGY

Preliminary findings

- Existing thermal resources appear to be priced much more competitively and have lower risk profile than new greenfield development; furthermore, resources that avoid a BPA transmission wheel should have an economic advantage
- Short-term PPAs (5 yrs or less) appear to be priced competitively and in-line with short-term market forecasts; however, all may not have firm transmission to PSE system
- PSE does not have a renewable need until 2020 or later and the renewable proposals are not expected to be competitive with the non-renewable proposals from a “capacity need” basis

PUGET SOUND ENERGY

RFP for All Generation Sources Update

Presented to PSE's Energy Management Committee ("EMC")

Chris Bevil
Manager, Resource Acquisitions

March 15, 2012

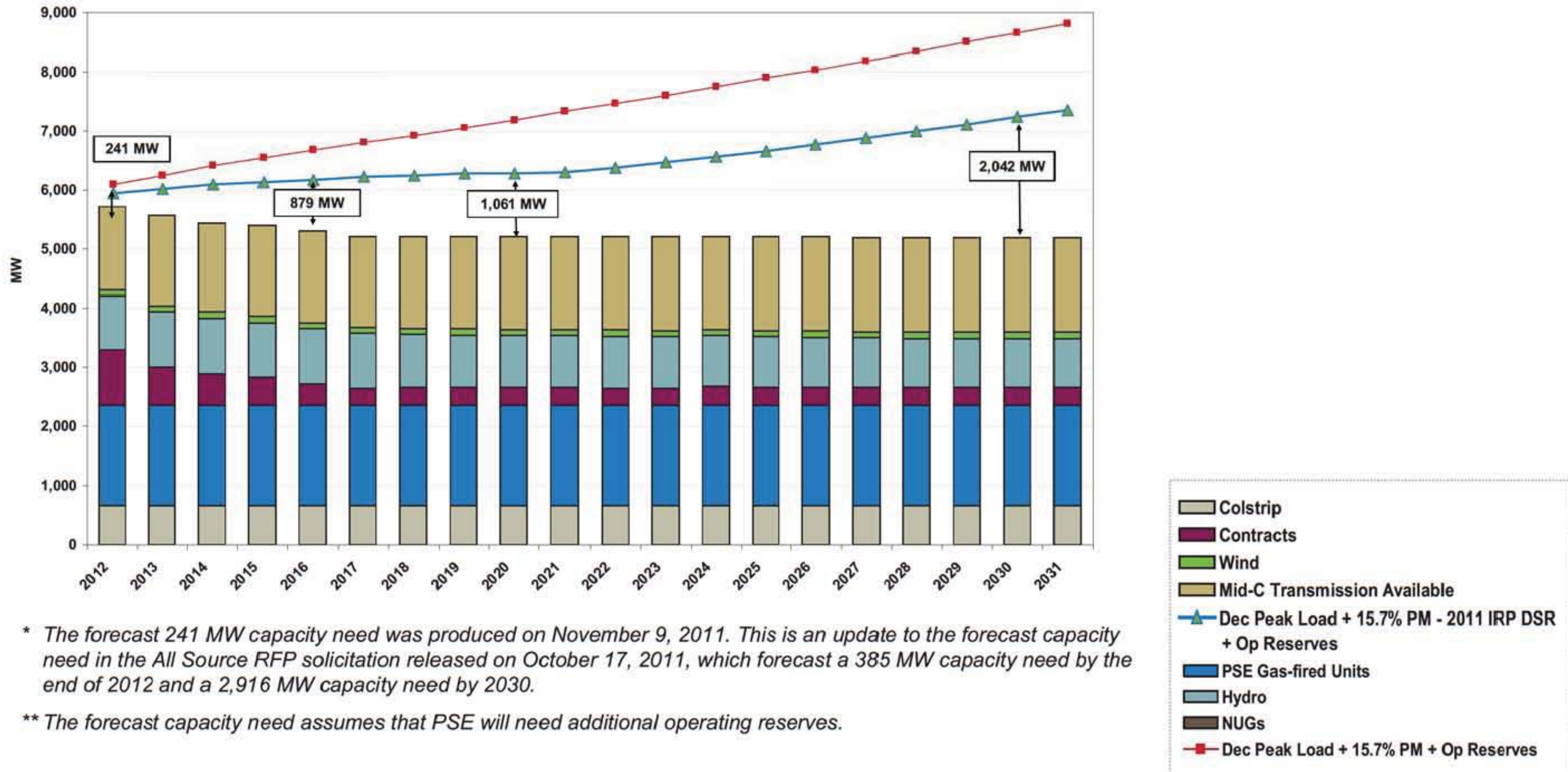
RFP schedule

August 1, 2011	Draft RFP filed with WUTC
October 13, 2011	WUTC approval
October 17, 2011	Final RFP issued
November 1, 2011	Offers due to PSE
March 15, 2012	“Candidate” short list selected
Late April 2012*	Final short list selected
To follow	Commercial negotiations

**Expected date.*

Capacity need forecast*

Unfilled Peak 1-hour Need (December MW) - Net of DSR					
	2012	2013	2014	2015	2016
Base F2011	241	451	653	730	879
Low F2011	212	403	586	642	770

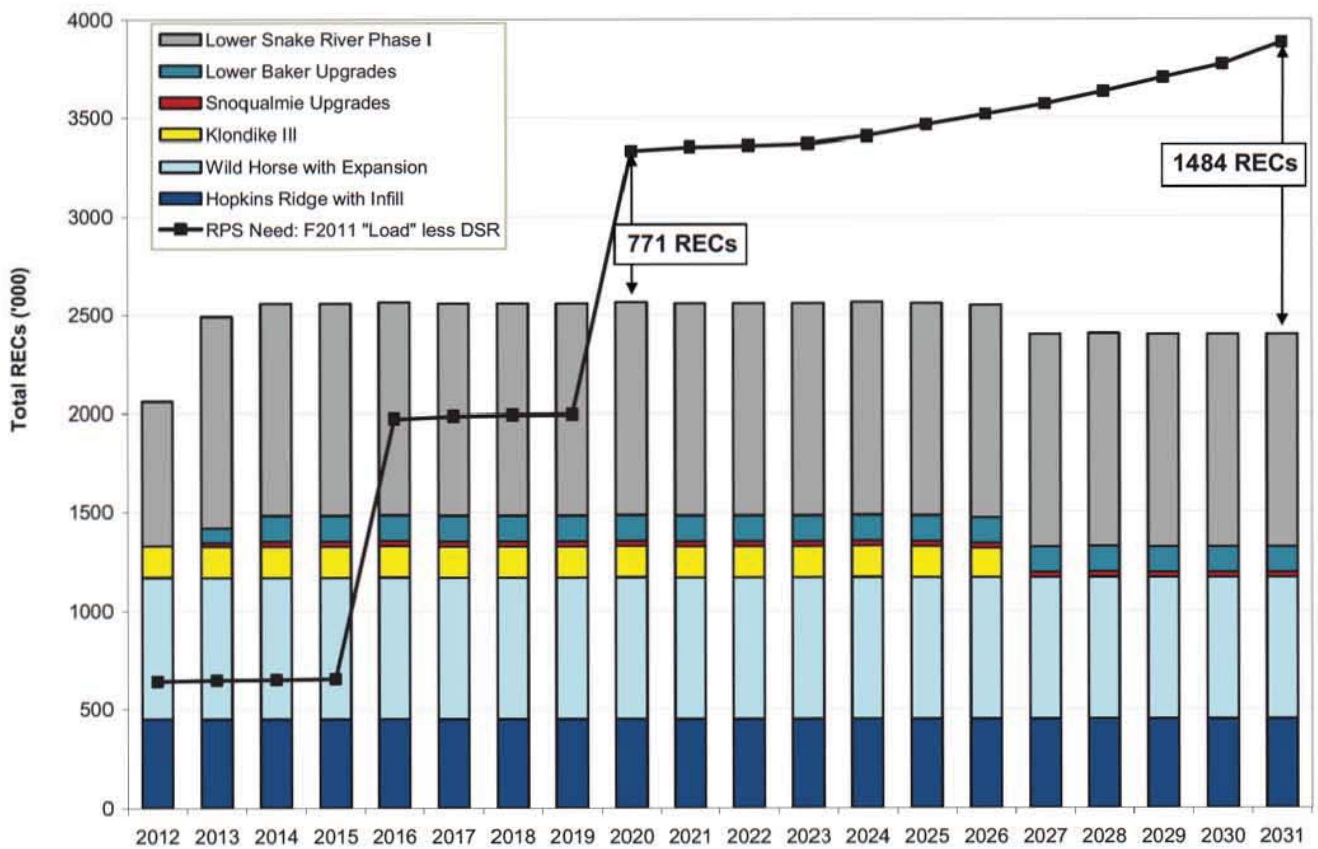


* *The forecast 241 MW capacity need was produced on November 9, 2011. This is an update to the forecast capacity need in the All Source RFP solicitation released on October 17, 2011, which forecast a 385 MW capacity need by the end of 2012 and a 2,916 MW capacity need by 2030.*

** *The forecast capacity need assumes that PSE will need additional operating reserves.*

PUGET SOUND ENERGY

Near-term renewable targets on track to be achieved*



* Renewable energy credit ("REC") banking and sales are not reflected in the chart.

Screening results observations

(Detailed results in appendix)

Capacity Resources

- Over 2,200 MW of operating capacity resources provide positive portfolio benefits.
- Generally <5-year and 10-year fixed price PPAs and non-unit contingent market based PPAs/exchanges have lower net costs and higher portfolio benefits as defined by the quantitative metrics used in the economic evaluation.

Renewable Resources

- An operating wind project and a biomass development project appear competitive from a quantitative basis, but qualitative risks exist.

PUGET SOUND ENERGY

Proposal offers identified for further evaluation

(Detailed summary in appendix)

- 12 of 29 proposals received evaluate favorably from qualitative and quantitative perspective.

Counterparty	Project Name	Offer	Term (yrs)	MW
[redacted]	[redacted]	Firm energy	4	[redacted]
[redacted]	[redacted]	Firm energy	10	[redacted]
[redacted]	[redacted]	PPA Extension	5	[redacted]
[redacted]	[redacted]	Firm energy	4	[redacted]
[redacted]	[redacted]	Firm / Peak / Exchange	10	[redacted]
[redacted]	[redacted]	Project PPA	25	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
TransAlta	Centralia	PPA	14	up to 500
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	Own / Tolling	15	[redacted]
[redacted]	[redacted]	Firm / Peak / Call / Exchange	5 / 10	[redacted]
[redacted]	[redacted]	Own / PPA	15 / 20 / 25	[redacted]

[redacted]

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REDACTED VERSION

Next steps

- Perform due diligence and scenario optimization & risk analysis
- Submit additional data requests as needed
- Continue qualitative due diligence
- Continue discussions of preferred commercial terms with counterparties

Key issues to be considered

- Short-term vs. long-term resources
- Transmission solutions
- RCW 80.80 emissions performance standard

RFP evaluation schedule

March 16	Data requests due from working groups
April 3	Evaluation team meeting
April 17	Recommended short list selection meeting
April 20	EMC meeting
April 30	Final due diligence memos due for all proposals

Appendix

Screening Results and Proposal Summary

Quantitative screening metrics definitions

- **Portfolio Benefit** ($): difference between the net present value portfolio revenue requirement of a proposed project, and the net present value portfolio revenue requirement of the generic portfolio strategy. (Higher is better.)
- **Levelized Cost** ($/MWh): level annual revenue requirement equivalent to the net present value revenue requirement based on a 20-year analytic period including end effects divided by the level annual generation equivalent to the net present value of generation for the 20 year period. (Lower is better.)
- **Portfolio Benefit Ratio:** *portfolio benefit* divided by the present value of the proposed project revenue requirement. (Higher is better.)
- **Net cost per unit of contribution to need** ($/kW-yr): difference between the project revenue requirement and the market revenue of the project's net generation divided by the capacity contribution. If a renewable project is being considered, then the numerator is divided by its annual contribution to PSE's renewable energy target. (Lower is better.)
- **Levelized *portfolio benefit* per unit of contribution to need** ($PB/kW-yr): a project's *portfolio benefit* divided by the present value of the project's capacity contribution. If a renewable project is being considered, then the numerator is divided by its annual contribution to PSE's renewable energy target. (Higher is better.)

Proposal status from screening*

ID	Project	Owner/Developer	State	Type	MW Nameplate	Status	DRAFT selection status* (3/7/12)
11102	Centralia	TransAlta	WA	[redacted] 14-yr PPA, [redacted]	[redacted]	Operating	Selected for further evaluation
11112	[redacted]	[redacted]	n/a	[redacted]	[redacted]	Operating	Selected for further evaluation
11118	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Selected for further evaluation
11103	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Operating	Selected for further evaluation
11113	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Operating	Selected for futher evaluation
11117	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Operating	Selected for futher evaluation
11126	[redacted]	[redacted]	n/a	[redacted]	[redacted]	Operating	Selected for further evaluation
11116	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Selected for further evaluation
11127	[redacted]	[redacted]	n/a	[redacted]	[redacted]	Operating	Selected for further evaluation
11110	[redacted]	[redacted]	n/a	[redacted]	[redacted]	Operating	Selected for further evaluation
11124	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Operating	Selected for further evaluation
11123	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not selected for further evaluation
11114	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not selected for further evaluation
11107	[redacted]	[redacted]	n/a	[redacted]	[redacted]	n/a	Not selected for further evaluation
11125	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not selected for further evaluation
11115	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not selected for further evaluation
11121	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not selected for further evaluation
11105	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not selected for further evaluation
11122	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not selected for further evaluation
11101	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not selected for further evaluation
11106	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not selected for further evaluation
11111	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not selected for further evaluation
11104	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not selected for further evaluation
11120	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not selected for further evaluation
Unsolicited	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not selected for further evaluation
11108	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not selected for further evaluation
11109	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not selected for further evaluation
Unsolicited	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Operating	Not selected for further evaluation
11119	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not selected for further evaluation

REDACTED VERSION

* *PSE has not completed the RFP evaluation process. The selection status above represents screening results only, and does not represent a final short list. Such short list will be selected after PSE completes its qualitative review and optimization analyses of the selected resources.*

PUGET SOUND ENERGY

Proposal offers identified for further evaluation

Proposal / Counterparty	Size (MW)	Term	Offer(s) selected	Portfolio Benefit / kW-yr	Key Risks and Benefits
[redacted] (#11112)	[redacted]	[redacted]	[redacted]	$135 / kW-yr	▪ Positive economic benefits ▪ No current transmission solution to PSE system due to congested [redacted] paths; further evaluation required
[redacted] (#11124)	[redacted]	[redacted]	[redacted]	$91 / kW-yr	▪ Positive economic benefits and no development risk ▪ Firm capacity [redacted] may help maintain grid stability [redacted] ▪ Known counterparty; low execution risk ▪ Terms related to operation of plant require further discussion with counterparty ▪ As proposed, replacement power due to unplanned outages will be supplied a [redacted] Further negotiations required to mitigate cost/risk.
[redacted] (#11117)	[redacted]	[redacted]	[redacted]	$85 / kW-yr	▪ Positive economic benefits and no development risk ▪ Extension of existing contract; counterparty experience has been positive; terms consistent with existing contract ▪ Transmission solution to PSE's system appears likely
[redacted] (#11110)	[redacted]	[redacted]	[redacted]	$80 / kW-yr	▪ Positive economic benefits ▪ Proposed terms very similar to previously negotiated terms; known counterparty and low execution risk ▪ Firm transmission to PSE's system
[redacted] (#11123)	[redacted]	[redacted]	[redacted]	$54 / kW-yr	▪ Positive economic benefits; 10-yr exchange offers the greatest economic benefit ▪ Transmission solution uncertain due to [redacted] further evaluation required ▪ Potential benefits associated with operational flexibility

REDACTED VERSION

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Many of the RFP proposals contained multiple offers. The evaluation summary tables show results for the best-ranked offer from each proposal selected for further evaluation.

Proposal offers identified for further evaluation

Proposal / Counterparty	Size (MW)	Term	Offer(s) selected	Portfolio Benefit / kW-yr	Key Risks and Benefits
[redacted] (#11116)	[redacted]	[redacted]	[redacted]	[redacted] kW-yr	▪ Positive economic benefits ▪ The [redacted] and substantial infrastructure already in place; existing air and wastewater permits ▪ Execution risk; counterparty has many development projects but few existing resources with contracts ▪ Transmission costs uncertain [redacted] ▪ Renewable risk due to [redacted] ▪ Fuel cost variability passed on to PSE
[redacted] (#11117)	[redacted]	[redacted]	[redacted]	[redacted] kW-yr	▪ Positive economic benefits and no development risk ▪ Positive experience with counterparty; low execution risk ▪ No firm transmission solution at this time; requires further consideration
Centralia TransAlta (#11102)	Up to 500	1/1/12 – 12/31/25	▪ 14-yr coal PPA ▪ [redacted]	[redacted] kW-yr	▪ Long-term flat firm power delivered to PSE's system ▪ Positive economic benefits and no development risk ▪ Coal transition power qualifies for WUTC pre-approval and equity return on PPA ▪ Proposed contract terms are inconsistent with PSE's standard terms; counterparty seems willing to negotiate
[redacted] (#11118)	[redacted]	[redacted]	[redacted]	[redacted] kW-yr	[redacted]

Many of the RFP proposals contained multiple offers. The evaluation summary tables show results for the best-ranked offer from each proposal selected for further evaluation.

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PUGET SOUND ENERGY

Proposal offers identified for further evaluation

Proposal / Counterparty	Size (MW)	Term	Offer(s) selected	Portfolio Benefit / kW-yr	Key Risks and Benefits
[redacted] (#11103)	[redacted]			[redacted] kW-yr	▪ Positive economic benefits. [redacted] ▪ Helps PSE meet a large and growing capacity need. ▪ Condition of equipmen[redacted] unknown; past site visit suggests upgrades necessary to meet PSE's operational standards ▪ Not offered with firm transmission, but solution appears likely
[redacted] (#11127)				TBD[1]	▪ No price originally proposed; but will offer a price in response to guidance from PSE on preferred structures ▪ [redacted] can offer many options and provide resource flexibility to meet PSE's needs ▪ Transmission uncertain ▪ Offer states power is delivered to PSE's system; solution uncertain; requires further evaluation
[redacted] (#11113)				n/a[2]	▪ Top ranked among renewable resources by portfolio benefit ▪ Positive economic benefits and no development risk ▪ Appears to have a transmission solution ▪ Community reaction to project requires further evaluation ▪ Technology risk associated with [redacted] turbines requires further due diligence ▪ PSE has met near-term renewable requirements; potential regulatory risk

REDACTED VERSION

[1] No price proposed. [redacted] will propose a price once PSE identifies its preferred offer structure(s).

[2] The Portfolio Benefit/kW-yr is a less informative metric for PPA offers with both a REC contribution and a capacity contribution. The Portfolio Benefit/kW-yr value shown for the [redacted] (previous slide) is for a capacity-only option. The evaluation summary tables do not include a Portfolio Benefit/kW-yr value for either the [redacted] or the [redacted] offer that includes RECs. More detailed quantitative findings for these and all other proposals are included in the quantitative results tables provided in the appendix.

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PUGET SOUND ENERGY

Capacity resources quantitative results

Project Name	PPA or Ownership	Project Start	Bool Life / Contract Term	Levelized Cost ($/MWh)	Portfolio Benefit ($000's)	PB / kW-yr ($/kW-yr)	PB / kW-yr Ranking	Net Cost / kW-yr ($/kW-yr)	Net Cost / kW-yr Ranking
[redacted]	Fixed Price	2013	4	[redacted]	42,979	[redacted]	1	[redacted]	1
[redacted]	Fixed Price	2012	10	[redacted]	49,986	[redacted]	2	[redacted]	4
[redacted]	Tolling	2016	1	[redacted]	25,707	[redacted]	3	[redacted]	2
[redacted]	Fixed Price	2013	4	[redacted]	25,329	[redacted]	4	[redacted]	8
[redacted]	Fixed Price	2015	11	[redacted]	31,678	[redacted]	5	[redacted]	6
[redacted]	Fixed Price	2014	25	[redacted]	10,510	[redacted]	6	[redacted]	15
[redacted]	Tolling	2013	5	[redacted]	14,377	[redacted]	7	[redacted]	3
[redacted]	Fixed Price	2013	10	[redacted]	24,595	[redacted]	8	[redacted]	5
[redacted]	Tolling	2013	10	[redacted]	18,957	[redacted]	9	[redacted]	9
[redacted]	Fixed Price	2013	5	[redacted]	10,007	[redacted]	10	[redacted]	10
[redacted]	Fixed Price	2012	14	[redacted]	65,310	[redacted]	11	[redacted]	12
[redacted]	[redacted]	[redacted]	11	[redacted]	44,462	[redacted]	12	[redacted]	7
[redacted]	Ownership	2014	29	[redacted]	129,569	[redacted]	13	[redacted]	14
[redacted]	Ownership	2015	35	[redacted]	(55,414)	[redacted]	14	[redacted]	16
[redacted]	Fixed Price	2012	13	[redacted]	(202)	[redacted]	15	[redacted]	13
[redacted]	Ownership	2016	35	[redacted]	(110,872)	[redacted]	16	[redacted]	18
[redacted]	Fixed Price	2012	5	[redacted]	(4,062)	[redacted]	17	[redacted]	11
[redacted]	Tolling	2015	21	[redacted]	(238,117)	[redacted]	18	[redacted]	17
[redacted]	Ownership	2016	35	[redacted]	(131,802)	[redacted]	19	[redacted]	19
[redacted]	Tolling	2016	30	[redacted]	(340,910)	[redacted]	20	[redacted]	20
[redacted]	Tolling	2015	21	[redacted]	(146,685)	[redacted]	21	[redacted]	21
[redacted]	Tolling	2014	21	[redacted]	(51,213)	[redacted]	22	[redacted]	22
[redacted]	Fixed Price	2014	20	[redacted]	(45,232)	[redacted]	23	[redacted]	25
[redacted]	Tolling	2014	21	[redacted]	(142,039)	[redacted]	24	[redacted]	23
[redacted]	Ownership	2014	18	[redacted]	(120,596)	[redacted]	25	[redacted]	24
[redacted]	Ownership	2020	35	[redacted]	(95,885)	[redacted]	26	[redacted]	26

REDACTED VERSION

Metrics Key:
- A lower number is better for "Net Cost/kW-yr" or "Net Cost/REC-yr", and "Levelized Cost".
- A higher number is better for "Portfolio Benefit", "PB/kW-yr" or "PB/REC-yr", and "Portfolio Benefit Ratio".
- It is difficult to compare different technologies by "Portfolio Benefit Ratio" and "Levelized Cost".

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PSE PUGET SOUND ENERGY

Capacity resources ranked by portfolio benefit ratio

- Portfolio benefit ratio is best comparing similar technology/offer structures

Benefit Ratio Ranking - Fixed Price PPA/Must Take

Project Name	Portfolio Benefit Ratio	Benefit Ratio Ranking
[redacted]	0.36	3
	0.20	5
	0.18	6
	0.87	1
	0.08	7
	0.58	2
	0.31	4
	0.05	8
	(0.05)	9
	(0.12)	10
	(0.23)	11
	(0.38)	12

REDACTED VERSION

Benefit Ratio Ranking - Baseload Tolling / Ownership

Project Name	Portfolio Benefit Ratio	Benefit Ratio Ranking
[redacted]	0.30	1
	0.17	2
	0.05	3
	(0.06)	4
	(0.27)	5
	(0.53)	7
	(0.33)	6

Benefit Ratio Ranking - Peaking Toll / Ownership

Project Name	Portfolio Benefit Ratio	Benefit Ratio Ranking
[redacted]	2.17	1
	(0.11)	3
	(0.06)	2
	(0.36)	5
	(0.32)	4
	(0.72)	6
	(0.77)	7

Metrics Key:
- A lower number is better for "Net Cost/kW-yr" or "Net Cost/REC-yr", and "Levelized Cost".
- A higher number is better for "Portfolio Benefit", "PB/kW-yr" or "PB/REC-yr", and "Portfolio Benefit Ratio".
- It is difficult to compare different technologies by "Portfolio Benefit Ratio" and "Levelized Cost".

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WAC 480-07-160

PUGET SOUND ENERGY

Renewable resources quantitative results

Project Name	PPA or Ownership	Project Start	Bool Life / Contract Term	Levelized Cost ($/MWh)	Portfolio Benefit ($000's)	PB / REC-yr ($/REC-yr)	PB / REC-yr Ranking	Net Cost / REC-yr ($/REC-yr)	Net Cost / REC-yr Ranking
[redacted]	Renewable PPA	2013	25	[redacted]	37,755	[redacted]	1	[redacted]	5
[redacted]	Renewable PPA	2013	20	[redacted]	28,871	[redacted]	2	[redacted]	4
[redacted]	Ownership	2013	23	[redacted]	28,487	[redacted]	3	[redacted]	6
[redacted]	Ownership	2015	25	[redacted]	26,601	[redacted]	4	[redacted]	7
[redacted]	Renewable PPA	2013	15	[redacted]	16,042	[redacted]	5	[redacted]	3
[redacted]	Fixed Price	2016	25	[redacted]	39,326	[redacted]	6	[redacted]	2
[redacted]	Renewable PPA	2014	20	[redacted]	25,705	[redacted]	7	[redacted]	1
[redacted]	Renewable PPA	2015	20	[redacted]	(12,408)	[redacted]	8	[redacted]	9
[redacted]	Renewable PPA	2014	20	[redacted]	(13,487)	[redacted]	9	[redacted]	8
[redacted]	Renewable PPA	2013	21	[redacted]	(17,555)	[redacted]	10	[redacted]	10
[redacted]	Ownership	2013	20	[redacted]	(14,983)	[redacted]	11	[redacted]	12
[redacted]	Renewable PPA	2013	20	[redacted]	(19,369)	[redacted]	12	[redacted]	11

REDACTED VERSION

Benefit Ratio Ranking - Renewable Proposals

Project Name	Portfolio Benefit Ratio	Benefit Ratio Ranking
[redacted]	0.16	3
[redacted]	0.14	4
[redacted]	0.12	5
[redacted]	0.07	7
[redacted]	0.10	6
[redacted]	0.96	1
[redacted]	0.73	2
[redacted]	(0.05)	8
[redacted]	(0.07)	9
[redacted]	(0.42)	11
[redacted]	(0.41)	10

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Metrics Key:

- A lower number is better for "Net Cost/kW-yr" or "Net Cost/REC-yr", and "Levelized Cost".
- A higher number is better for "Portfolio Benefit", "PB/kW-yr" or "PB/REC-yr", and "Portfolio Benefit Ratio".
- It is difficult to compare different technologies by "Portfolio Benefit Ratio" and "Levelized Cost".

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PUGET SOUND ENERGY

RPS compliant capacity resources

Project Name	PPA or Ownership	Project Start	Bool Life / Contract Term	Levelized Cost ($/MWh)	Portfolio Benefit ($000's)	Portfolio Benefit Ratio	Benefit Ratio Ranking
[redacted]	Fixed Price	2014	25	[redacted]	68,886	0.45	1
[redacted]	Fixed Price	2014	25	[redacted]	39,007	0.27	2
[redacted]	Fixed Price	2012	13	[redacted]	4	0.00	3
[redacted]	Fixed Price	2014	25	[redacted]	(23,534)	(0.08)	4
[redacted]	Fixed Price	2014	20	[redacted]	(27,371)	(0.11)	5
[redacted]	Ownership	2014	25	[redacted]	(47,274)	(0.15)	6

Note: The Net Cost per kW-yr (or per REC-yr) and the Portfolio Benefit per kW-yr (or per REC-yr) are less informative metrics when a project or PPA has both a REC contribution and capacity contribution.

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REDACTED VERSION

Metrics Key:
- A lower number is better for "Net Cost/kW-yr" or "Net Cost/REC-yr", and "Levelized Cost".
- A higher number is better for "Portfolio Benefit", "PB/kW-yr" or "PB/REC-yr", and "Portfolio Benefit Ratio".
- It is difficult to compare different technologies by "Portfolio Benefit Ratio" and "Levelized Cost".

PUGET SOUND ENERGY

Comparison of price scenarios

2011 IRP Price Scenarios	20-yr Levelized
Base	$57.46
Low Growth	$41.30
High Growth	$71.42

2011 RFP Phase I Price Scenarios	20-yr Levelized
Base	$52.29

Current Price Forecast

2011 RFP Phase II Price Scenarios	20-yr Levelized
Base	$48.41
Low Growth	$36.43
High Growth	$61.80

RFP for All Generation Sources Update

Presented to PSE's Energy Management Committee ("EMC")

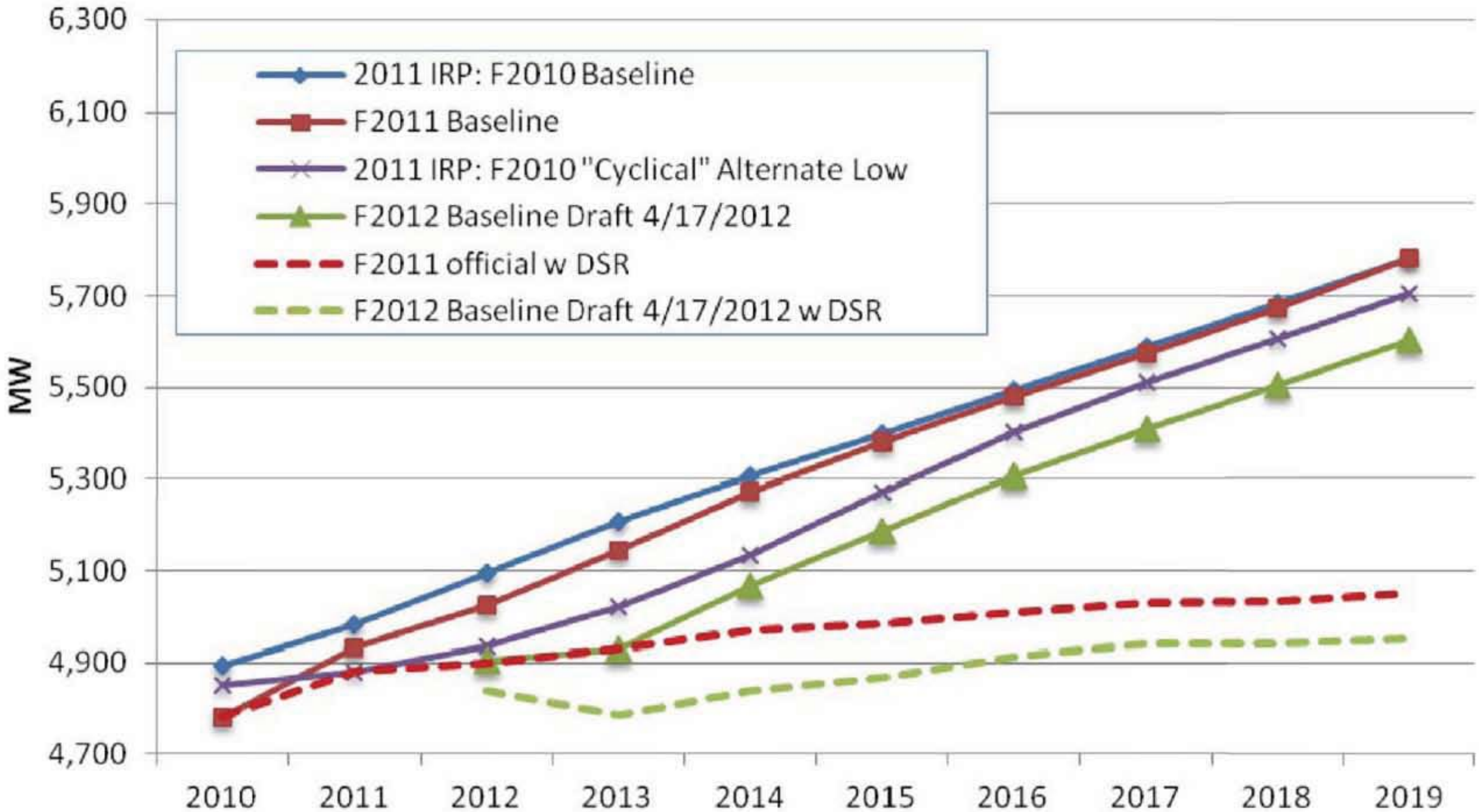
PSE PUGET SOUND ENERGY

Chris Bevil
Manager, Resource Acquisitions

April 20, 2012

PUGET SOUND ENERGY

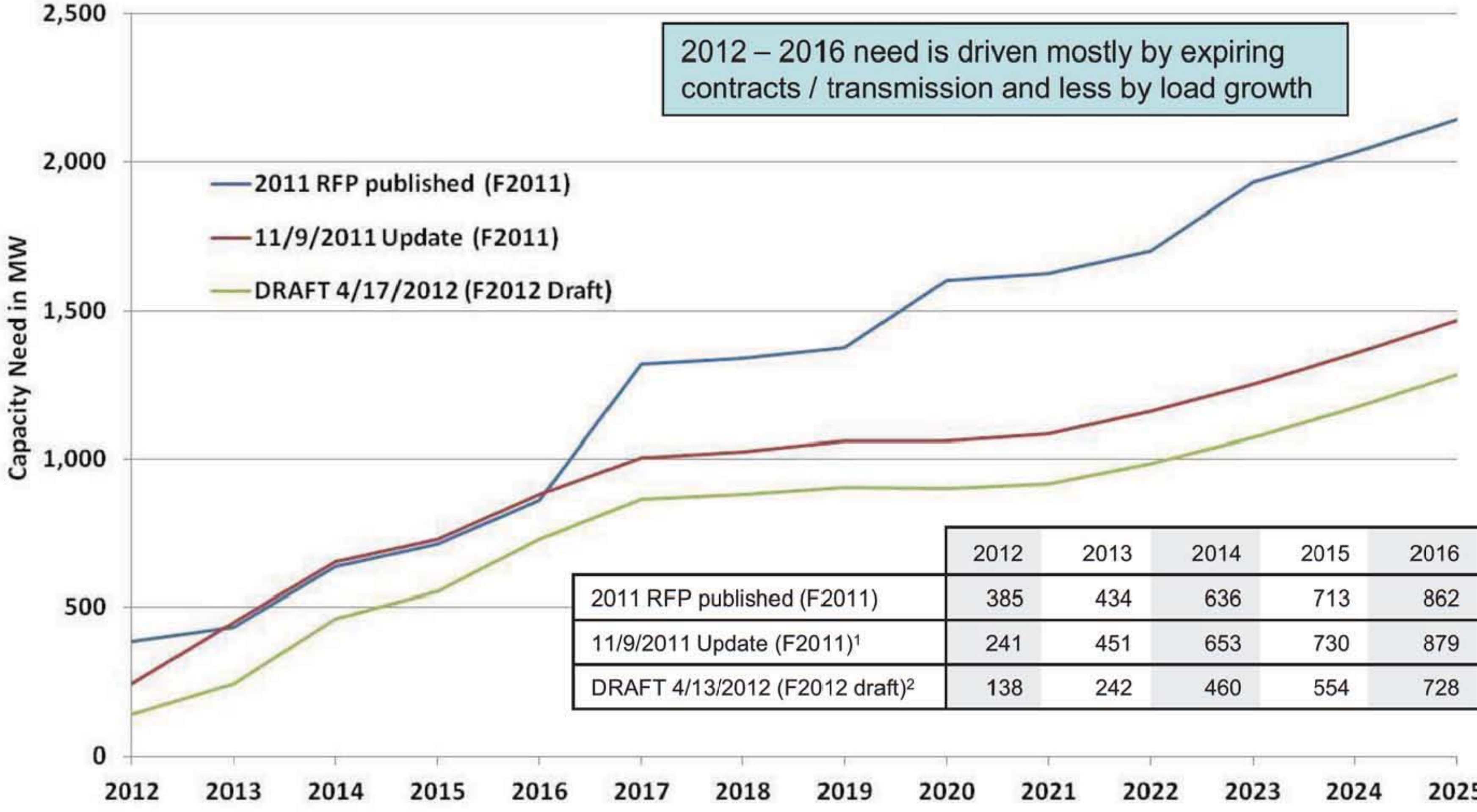
Comparison of December Peak Load Forecasts



WUTC staff comments 2011 IRP acceptance letter*: "Due to the prolonged recession, we find the 2010-2016 portion of the Low Cyclical forecast as plausible, and urge the Company to give adequate weight to this forecast as it acquires additional resources during this time period."*

Note: F2012 baseline reflects loss of Jefferson County April 2013

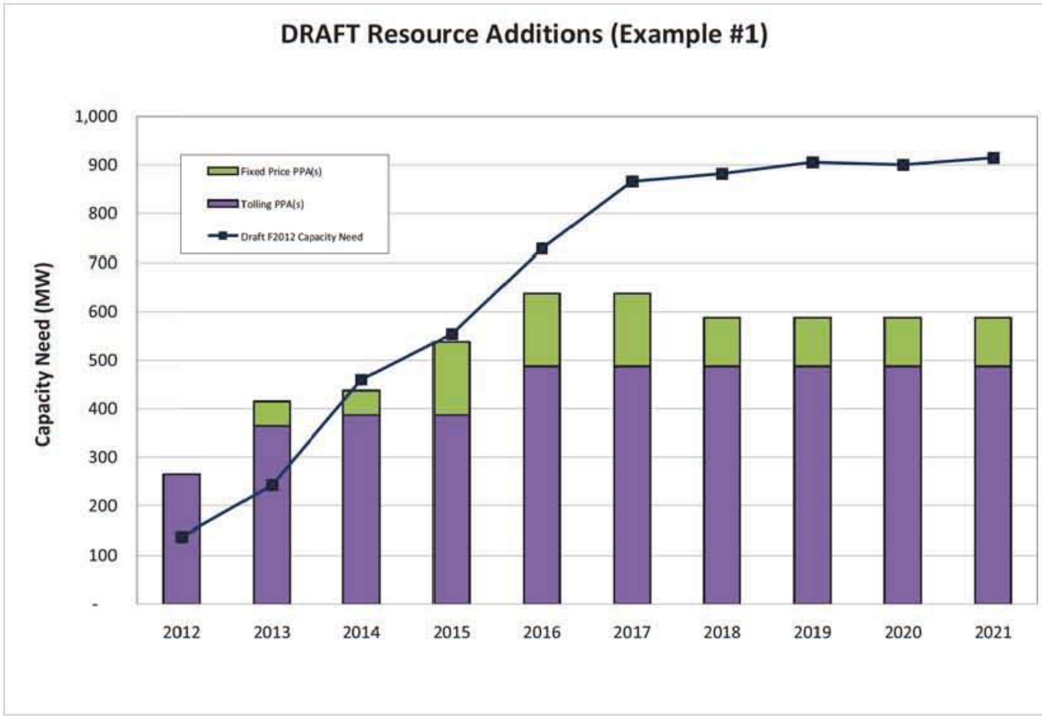
2011 RFP Updates to Capacity Need

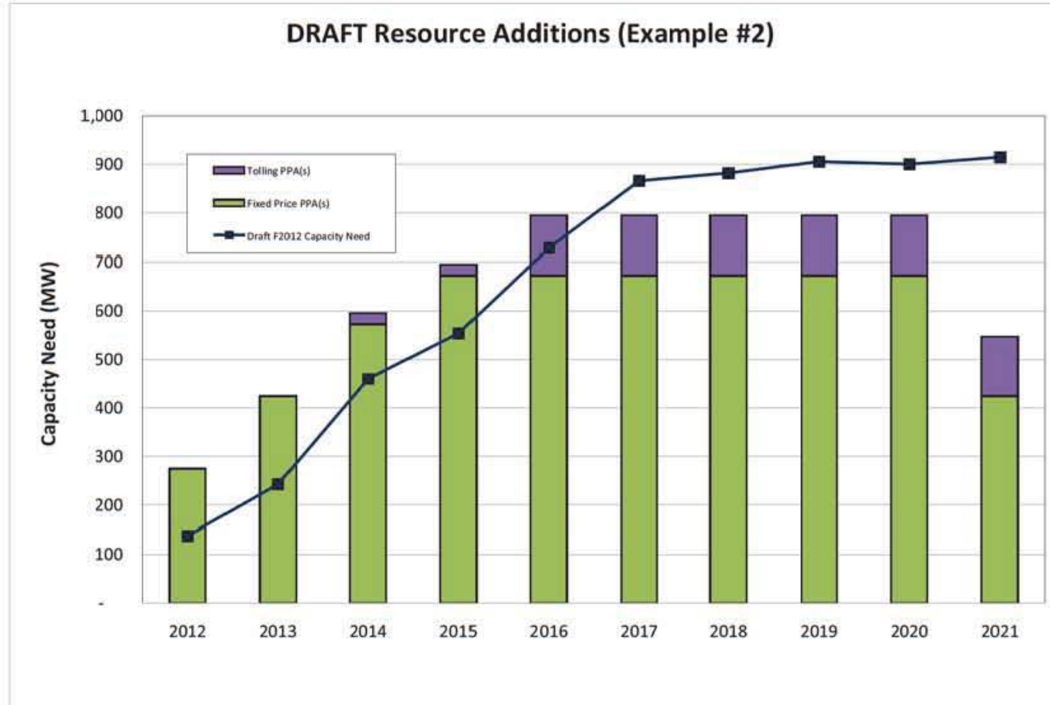


	2012	2013	2014	2015	2016	2017
2011 RFP published (F2011)	385	434	636	713	862	1,317
11/9/2011 Update (F2011)[1]	241	451	653	730	879	1,005
DRAFT 4/13/2012 (F2012 draft)[2]	138	242	460	554	728	866

Notes:
1. *Update to need reflects addition of short-term hedges, no existing gas plant retirements, line loss update (presented to EMC on 12/15/2011 and 3/15/2012)*
2. *F2012 reflects loss of Jefferson County on 4/2013, updates of existing gas plant contribution to peak*

Example of Resource Additions

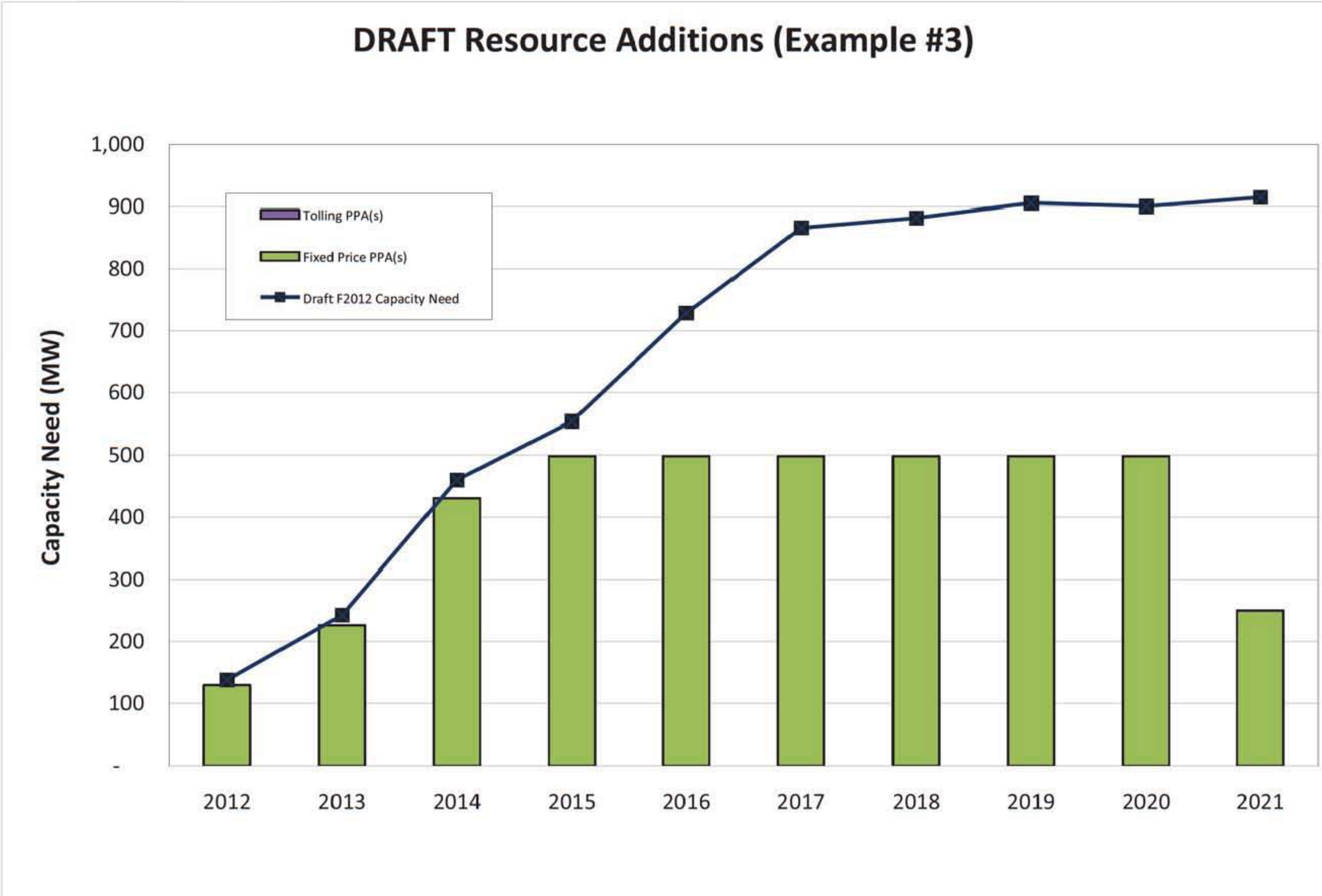




- Testing shows the resources being considered are relatively close to each other in terms of economics
- Small changes to price, size, or capacity need will impact the combination of resources being selected
- Some resources being selected have qualitative risks, which may lead to their dismissal from consideration
- In all cases, resources are being selected in surplus of our capacity need in the early years

PUGET SOUND ENERGY

Example of Resource Additions *(continued)*



PUGET SOUND ENERGY

DRAFT Qualitative Assessment

DRAFT for discussions purposes; subject to change upon final findings

Candidate Short List Proposals	Cost Minimization	Compatibility with Resource Need	Risk Management	Public Benefits	Strategic & Financial	Key Advantage (+) or Disadvantage (-)
Centralia, PPA **(#11102)** *TransAlta*	+	+	O	+	+	+ Ability to fit need exactly; Long-term supply; Supports State policy; Enhances company value
[redacted] **(#11112)** [redacted]	+	-	-	O	O	- No firm transmission; short-term supply
[redacted] **(#11118)** [redacted]	+	+	O	O	O	+ [redacted]
[redacted] **(#11103)** [redacted]	-	-	O	O	+	- High cost; capacity need (2016)
[redacted] **(#11113)** [redacted]	O	-	O	-	O	- Renewable need (2020); Community issues
[redacted] **(#11117)** [redacted]	+	O	-	O	O	- Change in control risk; Y2016 resource
[redacted] **(#11117)** [redacted]	O	-	-	O	O	- Change in control risk; Transmission does not match operational flexibility
[redacted] **(#11126)** [redacted]	+	+	?	O	O	+/- Flexible products; however, uncertain of value for long-term; Ties up transmission at [redacted]
[redacted] **(#11116)** [redacted]	-	O	-	O	O	- High cost for capacity; Development, counterparty & fuel risk
[redacted] **(#11127)** [redacted]	?	+	?	O	O	- Price unknown
[redacted] **(#11110)** [redacted]	+	O	-	O	O	-Short-term supply
[redacted] **(#11124)** [redacted]	+	+	O	+	O	+ Asset-backed fixed price; Long-term Supply; System benefits; QF

KEY:

+	A key advantage relative to other candidate short list proposals
-	A key disadvantage relative to other candidate short list proposals
O	Neither a key advantage or disadvantage relative to other candidate short list proposals

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2011 RFP Evaluation Schedule

- April 25* — PSM III scenario optimizations completed
  - shows the resource selections in multiple future price and load scenarios
- May 4* — Quantitative and qualitative risk analysis completed
  - measures price and volume risks of resources in alternative portfolios
  - discusses potential risks and mitigations of resources

  Updated PSM I rankings for candidate short list
  - ranks resources in updated Phase II base scenario

  Qualitative criteria matrix completed
  - shows qualitative comparison of resources relative to the RFP criteria
- May 14* — Short list selection meeting
  - identifies and documents final resource selections for recommendation to EMC
- May 17 — EMC meeting
  - approves resource short list selection for commercial negotiations

**Estimated dates; EMC approval may be sought earlier via email.*

Appendix

- RFP scenarios
- Gas price forecasts
- Power price forecasts

2011 RFP price scenarios

	WECC Demand	PSE Demand	Gas Price	Generic Resource Costs	Emissions Price
Base Case	Base	Base	Base	Base	None
Base + CO2	Base	Base	Base	Base	EPA APA Analysis
Base + No Centralia*	Base	Base	Base	Base	None
High Prices	High Structural	Base	High	Base	None
Low Growth	Low Structural	Low Structural	Low	Base	None

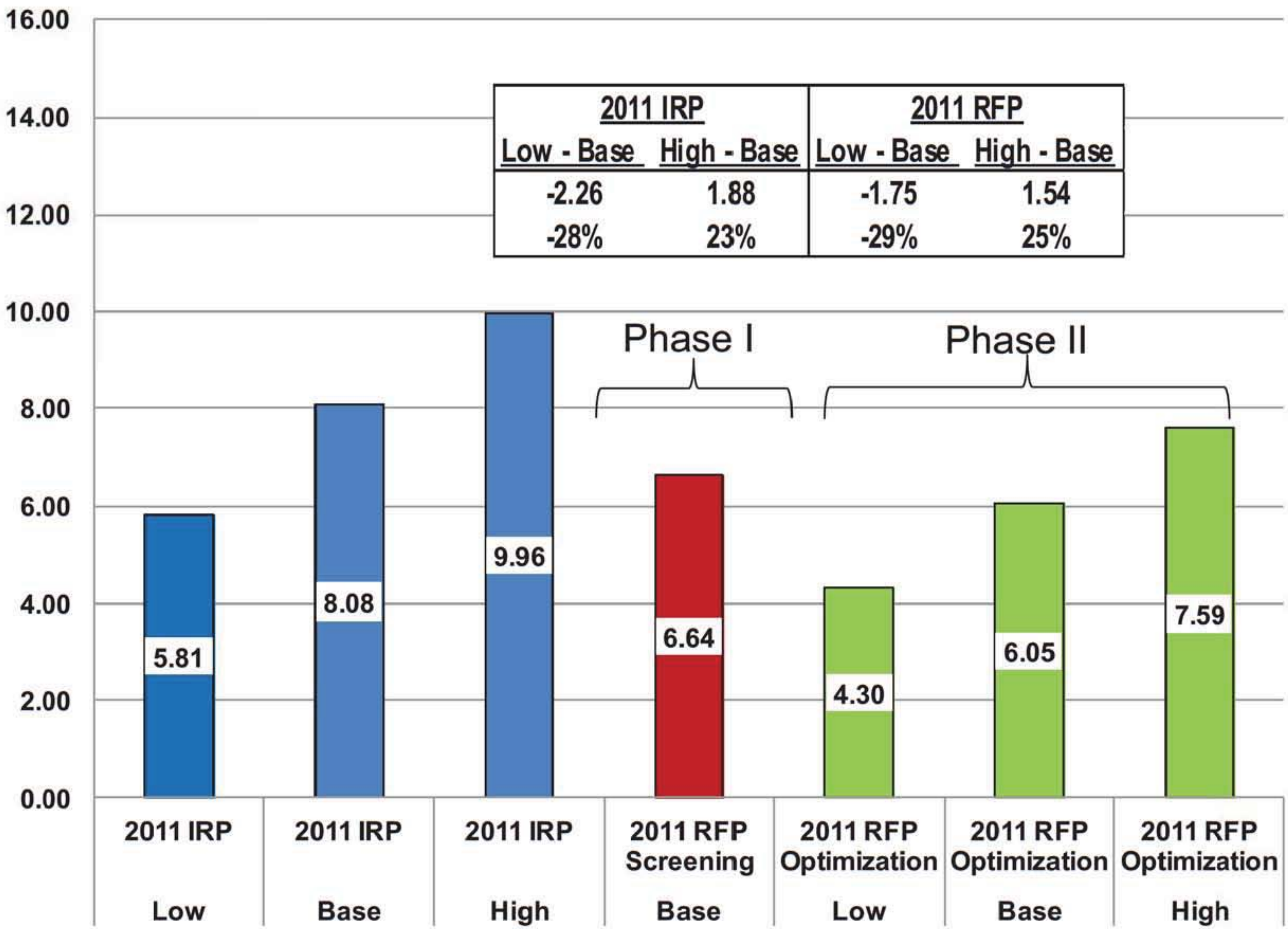
*Base + No Centralia: Centralia is forced to retire in 2013.

PUGET SOUND ENERGY

Compare Levelized Sumas Gas Prices

(nominal $)

2011 IRP		2011 RFP	
Low - Base	High - Base	Low - Base	High - Base
-2.26	1.88	-1.75	1.54
-28%	23%	-29%	25%



PUGET SOUND ENERGY

Comparison of price scenarios

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Base	$57.46
Low Growth	$41.30
High Growth	$71.42

2011 RFP Phase I Price Scenarios	20-yr Levelized
Base	$52.29

2011 RFP Phase II Price Scenarios	20-yr Levelized
Base	$48.41
Low Growth	$36.43
High Growth	$61.80

RFP for All Generation Sources Update

Presented to PSE's Energy Management Committee ("EMC")

PSE PUGET SOUND ENERGY

Aliza Seelig
Consulting Resource Acquisition Analyst

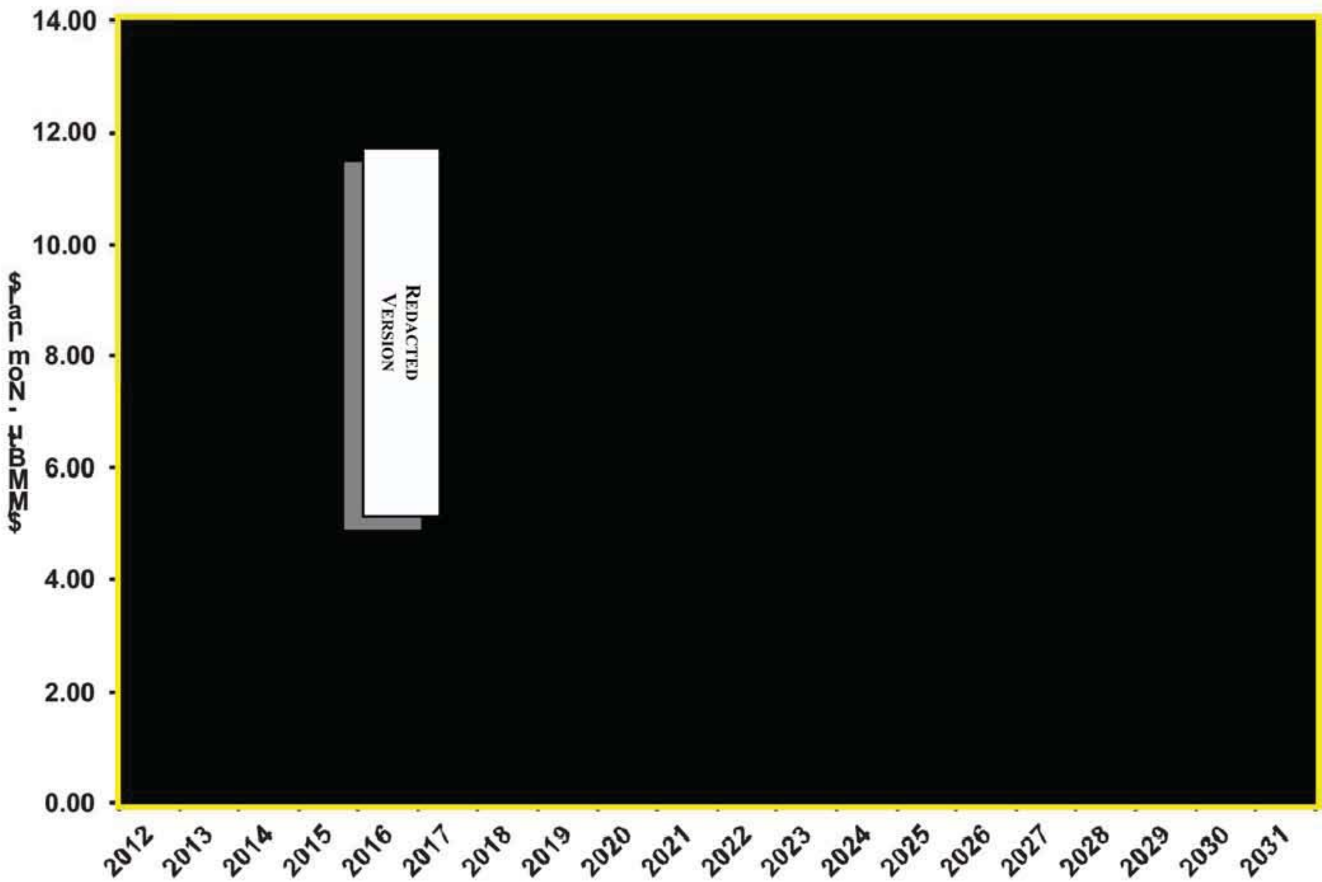
May 17, 2012

Key factors considered for RFP short list selection

- PSE's draft F2012 load forecast
- Continued drop in near-term natural gas prices
- Ability of RFP offers to obtain transmission solutions
- PSE's current renewable surplus limiting renewable need until 2020 or later
- Requirements to meet Washington Emissions Performance Standard (RCW 80.80)

PUGET SOUND ENERGY

Comparison of Sumas Hub gas price forecasts



[redacted]

REDACTED VERSION

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Over the shorter term, the relatively warm 2011-12 winter in North America reduced gas demand and diverted gas to storage reducing prices for the summer and upcoming winter.

PSE PUGET SOUND ENERGY

Phase II proposals eliminated prior to completing quantitative analysis[1]

Proposal	Rationale
[redacted]	Uncertain transmission solution; change in control risk; [redacted] limits flexibility
[redacted]	No transmission solution
[redacted]	No near-term renewable need; community issues
[redacted]	No near-term renewable need; development risk; counterparty risk

[1] [redacted] withdrew its offer of a Market PPA during Phase II. It was not included in the quantitative analysis.

[2] Counterparty recently expressed interest in discussing terms and potentially having additional transmission capacity.

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PUGET SOUND ENERGY

Individual project ranking in Base with new gas price scenario (Draft)

Project Name	PPA or Ownership	Project Start	Portfolio Benefit	PB / kW	PB / kW Ranking	Net Cost / kW	Net Cost / kW Ranking
[redacted]	Tolling	2016	$ 29,977	[redacted]	1	[redacted]	1
Centralia PPA	Fixed Price	2012	$ 209,309	[redacted]	2	[redacted]	5
[redacted]	Fixed Price	2016	$ 14,303	[redacted]	3	[redacted]	3
[redacted]	Fixed Price	2014	$ 13,114	[redacted]	4	[redacted]	2
[redacted]	Fixed Price	2012	$ 11,288	[redacted]	5	[redacted]	6
[redacted]	[redacted]	[redacted]	$ 30,582	[redacted]	6	[redacted]	4
Self Build Peaker [redacted]	Ownership	2015	$ 13,828	[redacted]	7	[redacted]	9
[redacted]	Ownership	2014	$ 10,035	[redacted]	8	[redacted]	10
[redacted]	Fixed Price	2014	$ (1,465)	[redacted]	9	[redacted]	8
[redacted]	Fixed Price	2013	$ (6,125)	[redacted]	10	[redacted]	7

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Metrics Key:

- A lower number is better for “Net Cost/kW-yr”.
- A higher number is better for “Portfolio Benefit” and “PB/kW-yr”.

REDACTED VERSION

Draft optimization results

- Selection in more scenarios is considered more favorable

Optimization Results Summary

Scenario	Base	Base + CO2	Base w/ New Gas	High Prices	Low Growth	Selected in X of 5 Scenarios
[redacted]						0
PSE Self Build Peaker					X	1
[redacted]	X	X		X	X	4
[redacted]		X	X			2
Centralia	X	X	X	X		4
[redacted]				X		1
[redacted]					X	1
[redacted]	X		X			2
[redacted]					X	1
[redacted]	X	X	X	X		4

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PUGET SOUND ENERGY

Preliminary short list outlook

RFP evaluation indicates that Centralia should be pursued first because

- Centralia fills immediate and longer term need while not exceeding it
- Opportunity to pursue TransAlta may be lost if delayed

	2012	2013	2014	2015	2016	2017	2018	2019	2020
Capacity (Deficit) / Surplus in MW:	(129)	(226)	(430)	(517)	(681)	(809)	(824)	(846)	(841)
[redacted]									
Remaining Capacity (Deficit) / Surplus in MW:	[redacted]								

Note: Capacity need does not reflect need for additional operating reserves when new resources are on PSE's system. March Point capacity as shown is reduced by PSE's operating reserve requirement for this resource addition.

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PSE PUGET SOUND ENERGY

Coal Transition Power Purchase & Sale Agreement

Seller:
- TransAlta Centralia Generation, LLC

Product:
- Firm, flat (7x24) electrical energy delivered to the Point of Delivery

Term:
- Dec 1, 2012 – Dec 31, 2025

Source:
- Centralia Transition Coal Facility (CTCF)

[redacted]

Point of Delivery:
- Centralia

[redacted]

Quantity:

125 MWh/hr;	Dec 1, 2012 – Nov 30, 2013
225 MWh/hr;	Dec 1, 2013 – Nov 30, 2014
425 MWh/hr;	Dec 1, 2014 – Nov 30, 2015
498 MWh/hr;	Dec 1, 2015 – Dec 31, 2022
400 MWh/hr;	Jan 1, 2023 – Dec 31, 2024
300 MWh/hr;	Jan 1, 2025 – Dec 31, 2025

Price:

[redacted] MWh;	Dec 1, 2012 – Nov 30, 2014
[redacted]/ MWh*;	Dec 1, 2014 – Nov 30, 2020
[redacted] MWh*;	Dec 1, 2020 – Dec 31, 2025

Termination:

[redacted]

*escalates @ [redacted] per year

REDACTED VERSION

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PSE PUGET SOUND ENERGY

Next steps:

- Issue final short list to EMC and notify bidders
- Negotiate and finalize agreement with TransAlta
- Re-evaluate updates as needed
- Seek EMC approval of Coal Transition PPA
- Seek Board approval of Coal Transition PPA

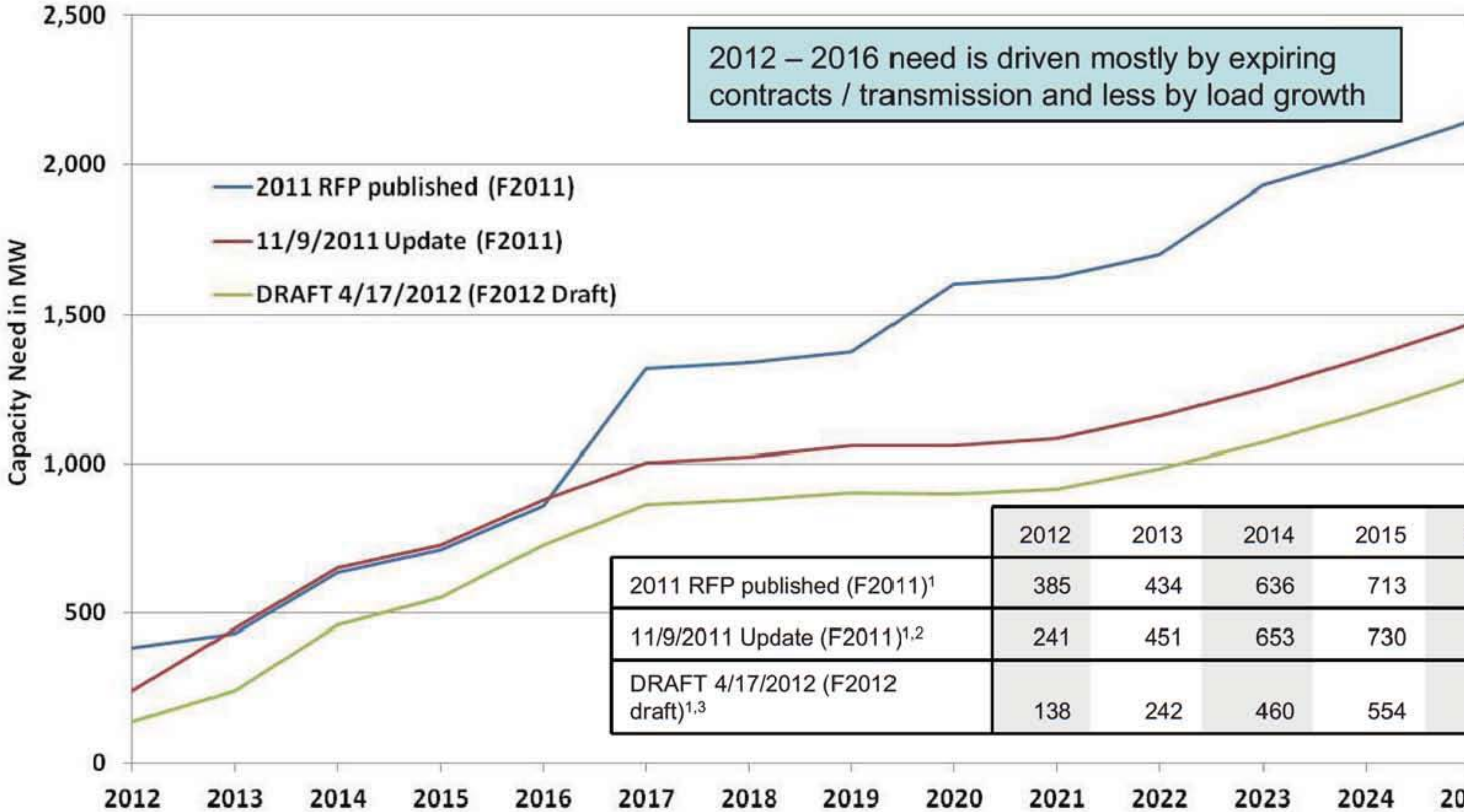
Regulatory process:

- File petition with WUTC in June 2012 in order for PPA to be effective by December 2012
- Petition will seek approval of Coal Transition PPA and the recovery of related acquisition costs (cost of power and equity rate of return)

PSE PUGET SOUND ENERGY

Appendix

2011 RFP updates to capacity need

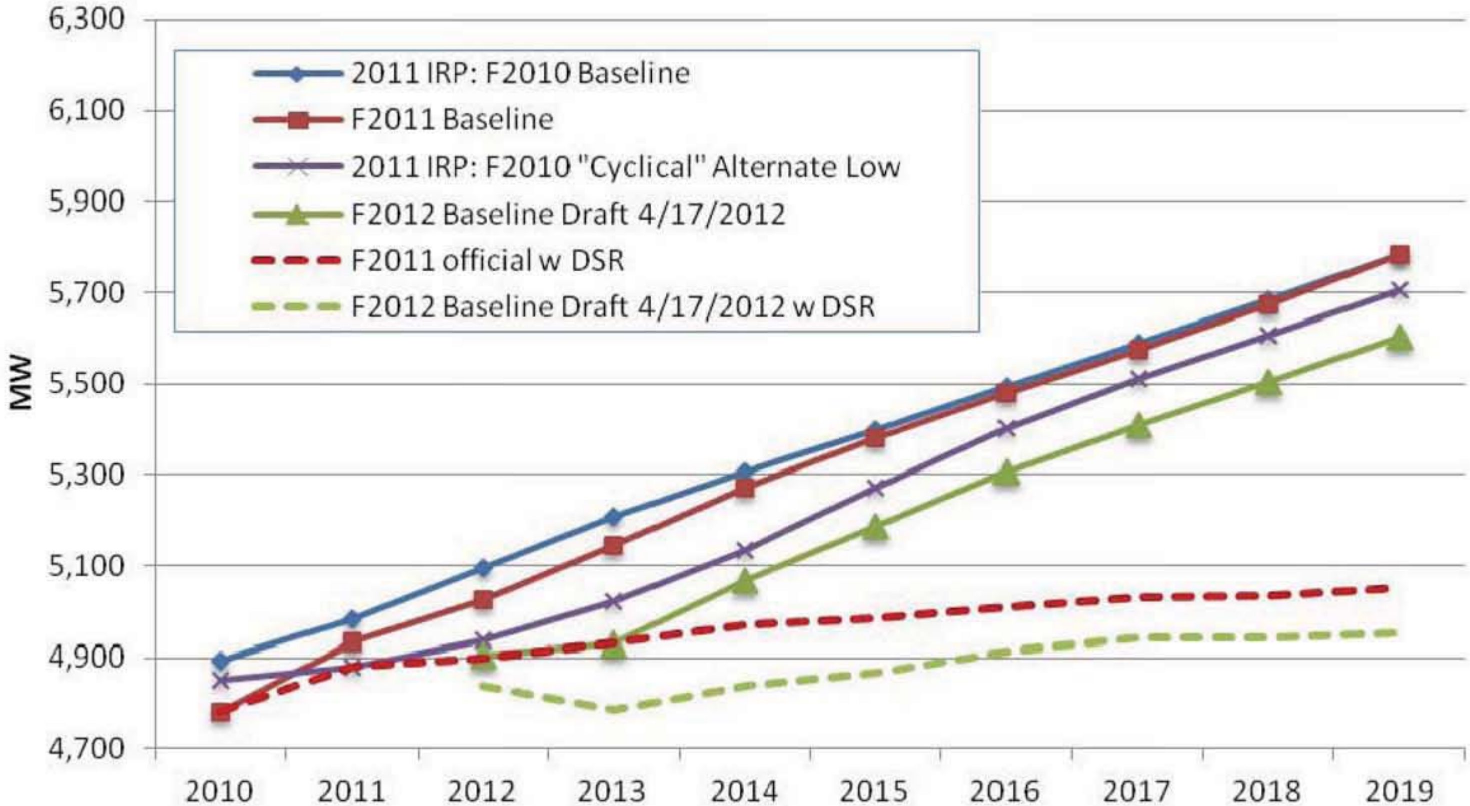


	2012	2013	2014	2015	2016	2017
2011 RFP published (F2011)[1]	385	434	636	713	862	1,317
11/9/2011 Update (F2011)[1,2]	241	451	653	730	879	1,005
DRAFT 4/17/2012 (F2012 draft)[1,3]	138	242	460	554	728	866

Notes:

1. *Capacity need reflects need for additional operating reserves in new resources are on PSE's system*
2. *Update to need reflects addition of short-term hedges, no existing gas plant retirements, line loss update (presented to EMC on 12/15/2011 and 3/15/2012)*
3. *F2012 reflects loss of Jefferson County on 4/2013, updates of existing gas plant contribution to peak*

Comparison of December peak load forecasts

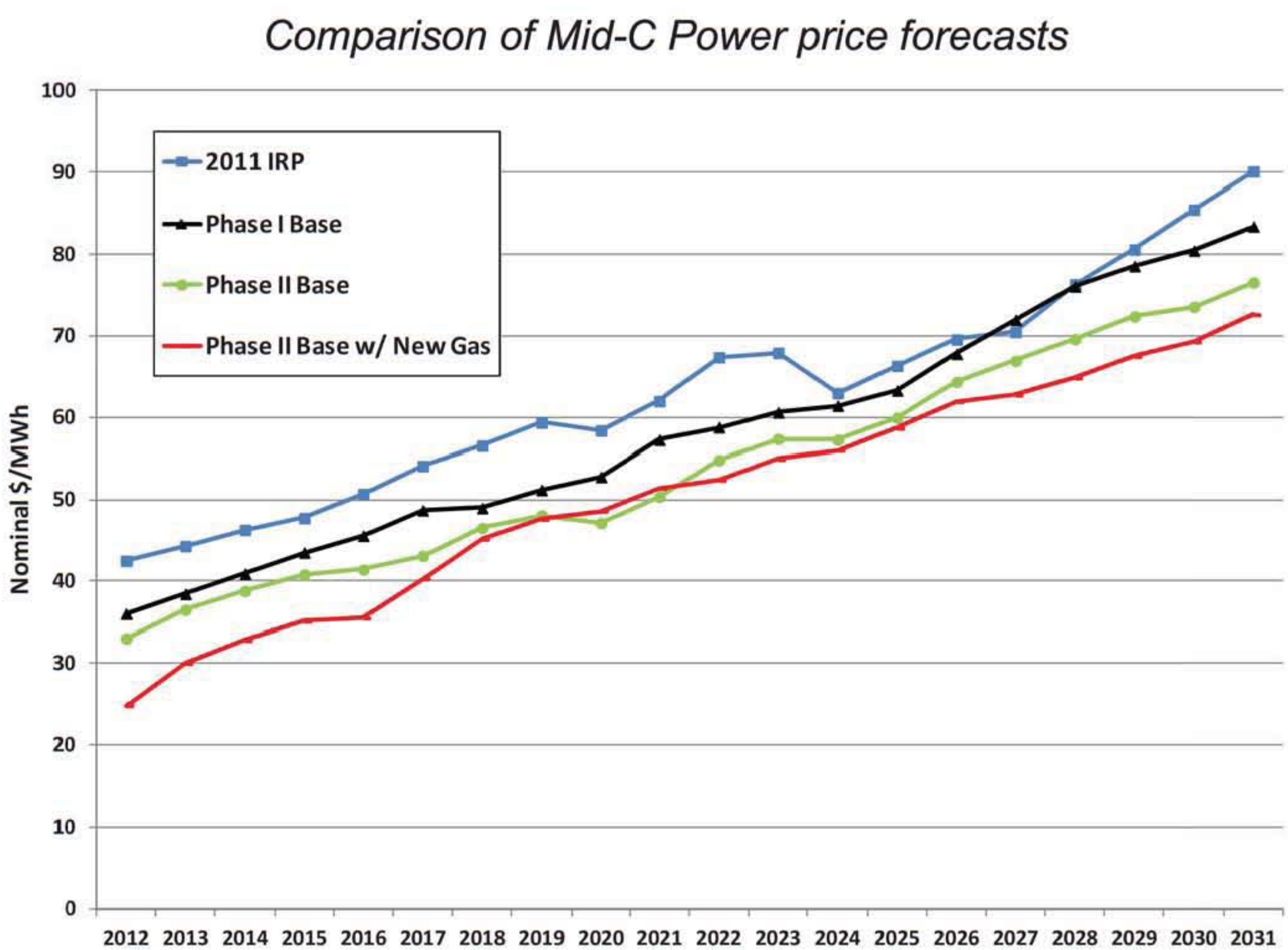


WUTC staff comments 2011 IRP acceptance letter: *"Due to the prolonged recession, we find the 2010-2016 portion of the Low Cyclical forecast as plausible, and urge the Company to give adequate weight to this forecast as it acquires additional resources during this time period."*

Note: F2012 baseline reflects loss of Jefferson County April 2013

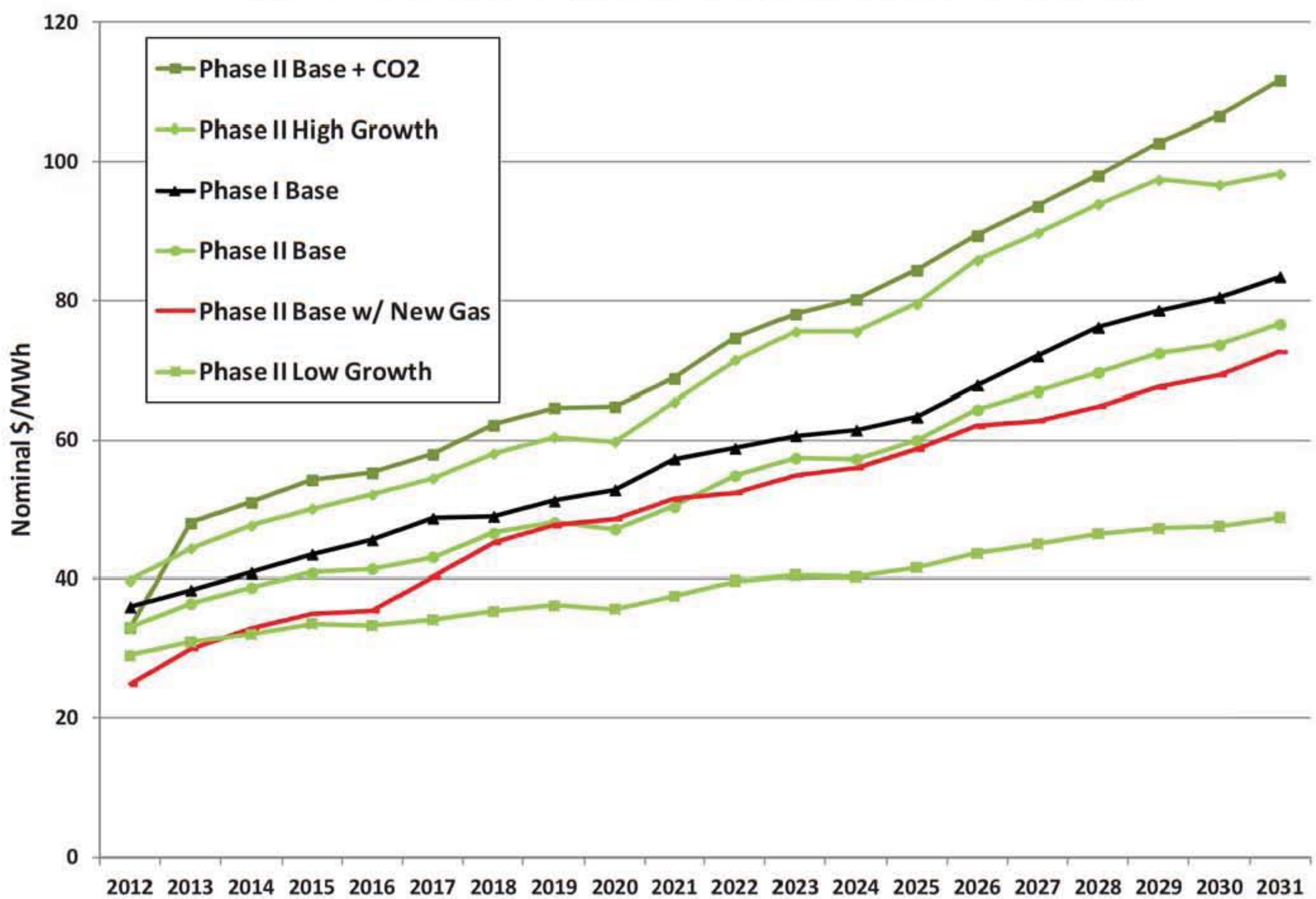
PUGET SOUND ENERGY

Change in Mid C power prices



2011 RFP Electric prices

2011 RFP Mid C power price scenario forecasts



PUGET SOUND ENERGY

Draft qualitative assessment

DRAFT for discussions purposes; subject to change based on final findings

Candidate Short List Proposals	Cost Minimization	Compatibility with Resource Need	Risk Management	Public Benefits	Strategic & Financial	Key Advantage (+) or Disadvantage (-)
Centralia, PPA (#11102) *TransAlta*	+	+	O	+	+	+ Ability to fit need exactly; Long-term supply; Supports State policy; Enhances company value
[redacted] (#11112)	+	-	-	O	O	- No firm transmission; short-term supply
[redacted] (#11118)	+	+	O	O	O	+ Operational flexibility; Long-term supply
[redacted] (#11103)	-	-	O	O	+	- High cost; capacity need (2016)
[redacted] (#11113)	O	-	O	-	O	- Renewable need (2020); Community issues
[redacted] (#11117)	+	O	-	O	O	- Change in control risk; Y2016 resource
[redacted] (#11117)	O	-	-	O	O	- Change in control risk; Transmission does not match operational flexibility
[redacted] (#11126)	+	+	?	O	O	+/- Flexible products; however, uncertain of value for long-term; Ties up transmission at [redacted]
[redacted] (#11116)	-	O	-	O	O	- High cost for capacity; Development, counterparty & fuel risk
[redacted] (#11127)	?	+	?	O	O	- Price unknown
[redacted] (#11110)	+	O	-	O	O	-Short-term supply
[redacted] (#11124)	+	+	O	+	O	+ Asset-backed fixed price; Long-term Supply; System benefits; QF

KEY:

+	A key advantage relative to other candidate short list proposals
-	A key disadvantage relative to other candidate short list proposals
O	Neither a key advantage or disadvantage relative to other candidate short list proposals

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PUGET SOUND ENERGY

Quantitative screening metrics definitions

- **Portfolio Benefit** ($): difference between the net present value portfolio revenue requirement of a proposed project, and the net present value portfolio revenue requirement of the generic portfolio strategy. (Higher is better.)

- **Levelized Cost** ($/MWh): level annual revenue requirement equivalent to the net present value revenue requirement based on a 20-year analytic period including end effects divided by the level annual generation equivalent to the net present value of generation for the 20 year period. (Lower is better.)

- **Portfolio Benefit Ratio:** *portfolio benefit* divided by the present value of the proposed project revenue requirement. (Higher is better.)

- **Net cost per unit of contribution to need** ($/kW-yr): difference between the project revenue requirement and the market revenue of the project's net generation divided by the capacity contribution. If a renewable project is being considered, then the numerator is divided by its annual contribution to PSE's renewable energy target. (Lower is better.)

- **Levelized *portfolio benefit* per unit of contribution to need** ($PB/kW-yr): a project's *portfolio benefit* divided by the present value of the project's capacity contribution. If a renewable project is being considered, then the numerator is divided by its annual contribution to PSE's renewable energy target. (Higher is better.)

PSE PUGET SOUND ENERGY

Additional screening metrics for individual project evaluations (draft)

- Base with New Gas Price Scenario

Benefit Ratio Ranking - Toll PPA/Dispatchable Ownership

Project Name	Portfolio Benefit Ratio	Benefit Ratio Ranking	Levelized Cost
[redacted]	2.49	1	[redacted]
[redacted]	0.18	2	
Self Build Peaker [redacted]	0.05	3	
[redacted]	0.00	4	

Benefit Ratio Ranking - Fixed/Index Price PPA

Project Name	Portfolio Benefit Ratio	Benefit Ratio Ranking	Levelized Cost
[redacted]	0.27	1	[redacted]
[redacted]	0.24	2	
Trans Alta PPA	0.13	3	
[redacted]	0.05	4	
	(0.03)	5	
	(0.08)	6	
	(0.48)	7	

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PSE PUGET SOUND ENERGY

Proposed short list (Draft)

Staff Recommendation	RFP ID	Proposal	Structure	Fuel Type	Size (MW)	Term
RFP Proposals[1]						
Short List	11102	**Centralia** *TransAlta*	PPA	Coal	up to 500	1/1/12-12/31/25
Short List	11117	[redacted]	winter PPA	NatG-SCCT	[redacted]	11/1/16-2/28/21
Short List	11124	[redacted]	PPA	NatG-CCCT	[redacted]	12/1/12-11/30/22
Continue to Investigate	11126	[redacted]	winter on-peak PPA / exchange	System	[redacted]	[3]
Not Selected	11112	[redacted]	PPA	System	[redacted]	11/1/12-12/31/16
Not Selected	11118	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Not Selected	11103	[redacted]	ownership	NatG-CCCT	[redacted]	n/a online
Not Selected	11113	[redacted]	PPA	Wind	[redacted]	1/1/13-1/1/38
Not Selected	11117	[redacted]	winter PPA	NatG-CCCT	[redacted]	2/1/13-3/31/22
Not Selected	11116	[redacted]	PPA with RECs	Biomass	[redacted]	12/1/13-12/1/38
Not Selected	11110	[redacted]	PPA	System	[redacted]	1/1/13-3/31/17

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NOTES:

1- [redacted] withdrew their offer of a Market PPA during Phase 2 of the evaluation. No price was ultimately proposed.

2 - Proposal offered up to 300 MW of capacity; however, transmission constraints limit delivered capacity to 134 MW.

3 - During Phase 2, PSE analyzed two 10-year temporal exchange product offers from this counterparty with the following term options: 7/1/13-2/28/23 or 7/1/15-2/28/25

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2011 RFP Short List Selection

Presented to PSE's Energy Management Committee ("EMC")

PSE PUGET SOUND ENERGY

Chris Bevil

Manager, Resource Acquisitions

June 12, 2012

Short List Selection

PUGET SOUND ENERGY

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Coal Transition PPA: *TransAlta Centralia Generation, LLC*

- Facility: Operating 1340 MW coal facility located in Centralia, WA
- Product/Size: Firm, flat (7x24) power delivered to PSE; 125 MW increasing to 498 MW over term
- [redacted]
- 1st Yr PPA Price: [redacted]/MWh[1] (does not include equity component)
- Key Benefits: (i) long-term fixed price; (ii) ramps to match PSE's capacity need; (iii) recognized as public policy resource preference by the State of Washington; (iv) strong public support

[redacted]

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(1) Price escalates over term

Key Considerations

PUGET SOUND ENERGY

- Analysis period extended to consider latest market assumptions
  - Used new F2012 load forecast (April 17, 2012) for a more current economic outlook
  - Updated natural gas price forecasts; 3-month average forward marks as of April 19, long-term as of April 24, 2012
- Transmission solutions important
  - Prefer resources that demonstrated an ability to secure long-term firm transmission to PSE's system
- Renewable need filled until 2020+
  - Practical result is renewable resources assessed based on their competitiveness with other resources, based on relative value of capacity, energy, though benefit of deferring additional renewable resource additions beyond 2020 was reflected in analysis.
- Legal constraints of RCW 80.80 (Emissions Performance Standard) limits non-resource specific PPAs to less than 5 years
  - Evaluating competitiveness of shorter-term resources may be more appropriately addressed by PSE's portfolio hedging group which may be able to obtain more competitive offers with lower transaction costs and risks
- Valuation of resource alternatives shows things are close
  - Quantitative analysis demonstrates that resources are relatively close to each other in terms of economics (small changes to price, size, timing, or PSE's capacity need impact the combination of resources being selected); the qualitative analysis combined with the quantitative results determine the resource strategy

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Evaluation Summary

PSE PUGET SOUND ENERGY

REDACTED VERSION

Status	Proposal	Quantitative summary	Qualitative summary
Selected	**Coal Transition (Centralia) PPA** TransAlta (#11102) Start: 2012 Term: 13-yrs Size: ramps up to 498 MW	▪ Least cost in 4 of 5 scenarios ▪ Lowers risk of portfolio costs ▪ Positive economic benefits; competitive levelized cost; high portfolio benefit/kW ▪ Benefits of long-term physical fixed price increases with rising power costs ▪ Best match to PSE's growing capacity need	▪ Provides long-term physical firm energy in addition to capacity ▪ Firm power backed by physical asset, [redacted] ▪ 498 MW of long-term firm transmission secured for contract term ▪ Counterparty accepts [redacted] ▪ Strong counterparty (BBB S&P credit rating) with long history of international owner/operator performance ▪ Consistent with and supportive of state policy goals and is supported by public ▪ Opportunity may be lost if not pursued now considering to the MOA between the state and TransAlta
Selected	[redacted] [redacted] (#11117) [redacted]	▪ Least cost in 4 of 5 scenarios ▪ Top ranked proposal based on screening model results ▪ Attractively priced winter-only "heat rate call option" ▪ Fits into future capacity need	▪ Strong counterparty relationship; extends existing contract at same terms ▪ Timing allows ability to continue [redacted]
Selected	[redacted] [redacted] (#11124) [redacted]	▪ Least cost in 3 of 5 scenarios ▪ Positive economic benefits; competitive levelized cost ▪ Benefits increase with rising costs ▪ Creates capacity surplus for first four years	▪ Strong counterparty relationship with low risks ▪ Provides grid system benefits [redacted] ▪ [redacted] may create opportunity to negotiate better terms

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Notes:
(1) Coal Transition PPA analysis includes equity component based on PSE's self build peaker
(2) For additional description of benefits and risks, see RFP Executive Summary

Evaluation Summary (cont.)

PUGET SOUND ENERGY

Status	Proposal	Quantitative summary	Qualitative summary
Not selected	[redacted] (#11118) [redacted]	[redacted]	[redacted]
Not selected	[redacted] #11103) [redacted]	▪ Least cost in no scenarios ▪ Other RFP alternatives have more favorable economics ▪ Size would produce substantial surplus until 2016	▪ Existing facility will likely face uncertainty because [redacted]
Not selected	[redacted] (#11123) [redacted]	▪ Least cost in 2 of 5 scenarios ▪ Positive economic benefits; however, additional analysis is required to evaluate appropriate market premium of energy exchange (shorter-term exchange is offered at only [redacted] premium verses [redacted] for longer-term)	▪ 10-yr deal is complicated by the Emissions Performance Standard ▪ Transmission solution uncertain [redacted] ▪ More competitive pricing could be sought through PSE's portfolio hedging group with lower transaction costs and risks
Not selected	[redacted] (#11110) [redacted]	▪ Least cost in 3 of 5 scenarios ▪ Economic benefits are negative; short-term PPAs are may be better evaluated through hedging program	▪ Since PPA is required to be less than 5-yrs due to Emissions Performance Standard, the short term trade desk may be able to obtain a more competitive offer with lower transaction costs and risks

Notes:

(1) One proposal withdrew from the 2011 RFP during Phase 2. Four other proposals selected at the end of Phase 1 for further evaluation were eliminated in Phase 2 prior to the optimization and risk analysis for qualitative reasons. A list of these proposals and the primary reasons they were not selected is included in the appendix.

(2) For additional description of benefits and risks, see RFP Executive Summary

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Resource Strategy

PSE PUGET SOUND ENERGY

- Coal Transition PPA fills immediate and longer term need while not exceeding it and provides protection from higher price market environments
- Coal Transition PPA should be pursued first and immediately
  - [redacted]
  - The Coal Transition PPA requires pre-approval from WUTC in order to be effective (180-day process)
  - Opportunity to pursue Coal Transition PPA may be lost if delayed
- Other short list resources should not be executed until outcome of Coal Transition PPA is known
  - The resource selection mix would change if the Coal Transition PPA is not approved by WUTC
  - Other resource alternatives not selected in RFP may be favored in order to fill PSE's capacity need

Comparison of Need with RFP Short List[1]	2012	2013	2014	2015	2016	2017	2018	2019	2020
Capacity (Deficit) / Surplus in MW[2]	(129)	(226)	(430)	(517)	(681)	(809)	(824)	(846)	(841)
Coal Transition PPA	[redacted]								
[redacted] (#11124)									
[redacted] (#11117)									
Remaining Capacity (Deficit) / Surplus in MW									

Notes:
(1) This chart demonstrates how the RFP short list fits into PSE's need and does not suggest that PSE will contract for all proposed resources.
(2) Capacity need does not reflect need for additional operating reserves when new resources are on PSE's system (see chart in appendix for capacity need that includes operating reserves).
(3) [redacted]
(4) Under the F2012 "low load" forecast, the need for 500 MW of capacity shifts from 2015 to 2016.

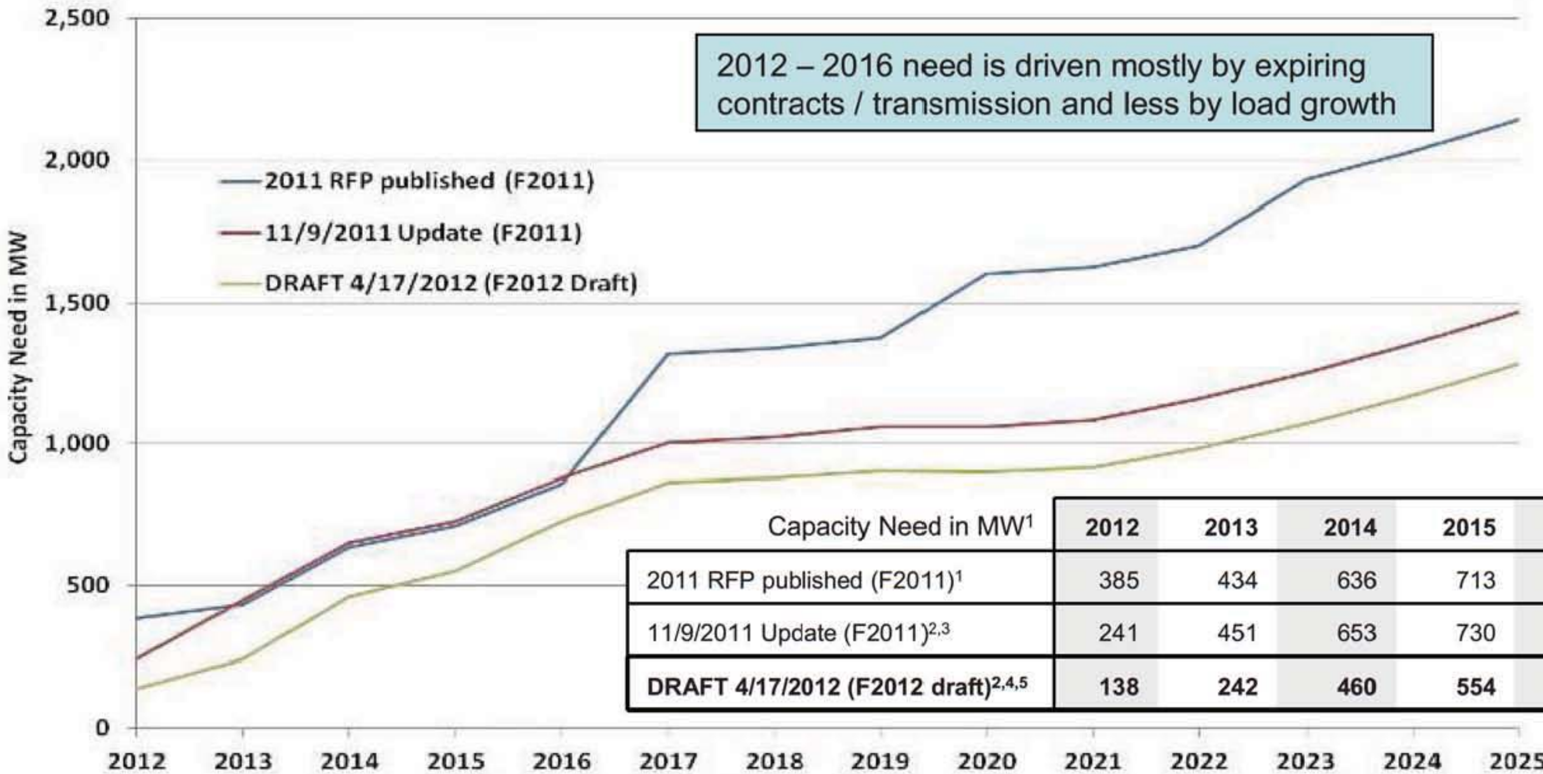
Next Steps

- Notify bidders of selection status
- Finalize negotiations with TransAlta for Coal Transition PPA
- Reevaluation of potential new or revised offers
- Seek EMC approval of Coal Transition PPA on June 22, 2012
- Seek Board of Directors approval of Coal Transition PPA on June 28, 2012
- File petition with WUTC seeking pre-approval of Coal Transition PPA by July 3, 2012
- After PSE receives a final, non-appealable order approving or disapproving the Coal Transition PPA, PSE will refresh resource alternatives evaluation and conduct negotiations with other short listed resources

Appendix

PSE PUGET SOUND ENERGY

2011 RFP capacity need (updated from 2011 IRP)



Capacity Need in MW[1]	2012	2013	2014	2015	2016	2017
2011 RFP published (F2011)[1]	385	434	636	713	862	1,317
11/9/2011 Update (F2011)[2,3]	241	451	653	730	879	1,005
DRAFT 4/17/2012 (F2012 draft)[2,4,5]	**138**	**242**	**460**	**554**	**728**	**866**

Notes:

(1) Based on 2011 Integrated Resource Plan; includes a planning reserve margin of 15.7%

(2) Capacity need reflects need for additional operating reserves if new resources are on PSE's system

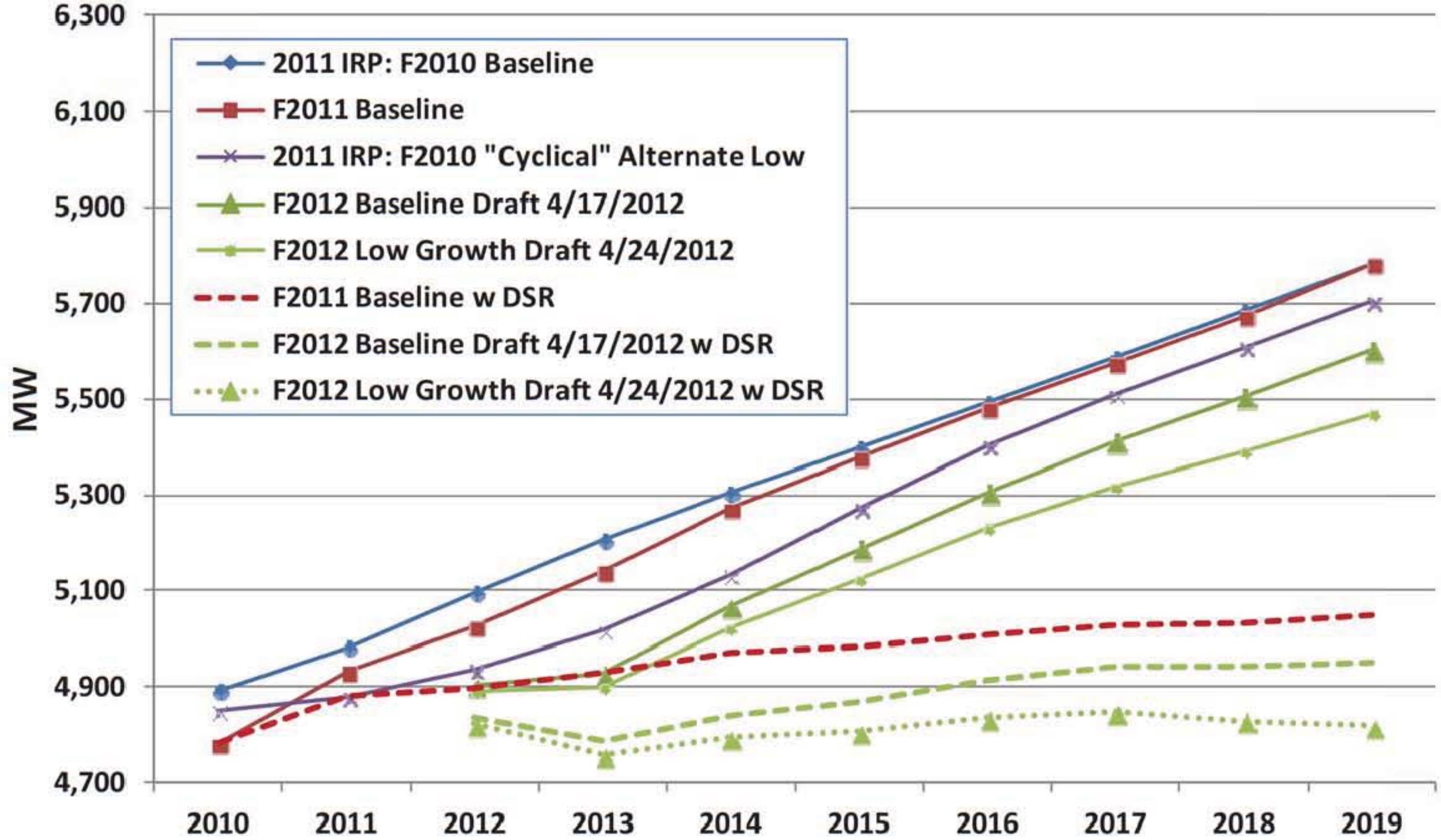
(3) Update to need reflects addition of short-term hedges, no existing gas plant retirements, line loss update (presented to EMC on 12/15/2011 and 3/15/2012)

(4) F2012 reflects loss of Jefferson County as of 4/2013, updates of existing gas plant contribution to peak

(5) Final F2012 load forecast shows negligible change to capacity need

PUGET SOUND ENERGY

Comparison of December peak load forecasts



WUTC comments 2011 IRP acknowledgement letter: *"Due to the prolonged recession in the current economic cycle , we find the 2010-2016 period of the scenario [Low Cyclical forecast] plausible, and urge the Company to give adequate weight to this forecast as it acquires additional resources during this period of time."*

Note: F2012 baseline reflects loss of Jefferson County April 2013

PUGET SOUND ENERGY

Short-list under Draft F2012 Low load forecast

- Under the “Low Load” scenario the need for 498 MW of Coal Transition PPA shifts out from 2015 to 2016
- Surpluses created by Coal Transition PPA range between 15 and 51 MW through 2015

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Comparison of Need with RFP Short List[1]	2012	2013	2014	2015	2016	2017	2018	2019	2020
Capacity (Deficit) / Surplus in MW:	(110)	(193)	(378)	(447)	(591)	(699)	(693)	(694)	(666)
Coal Transition PPA	125	225	425	498	498	498	498	498	498
[redacted] (#11124)	[redacted]								
[redacted] (#11117)									
Remaining Capacity (Deficit) / Surplus in MW:									
Surplus created by Coal Transition PPA									

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Note: This chart demonstrates how the RFP short list fits into PSE’s need and does not suggest that PSE will contract for all proposed resources.

PSE PUGET SOUND ENERGY

Proposals not included in optimization & risk analysis[1]

Proposal	Rationale
[redacted] (#11117)	Uncertain transmission solution; change in control risk; [redacted] limits flexibility; as proposed the project economics are less favorable than other RFP alternatives
[redacted] (#11112)	No transmission solution (fatal flaw)
[redacted] (#11113)	PSE currently has no near-term renewable need; project continues to face community issues from earlier development efforts; [redacted]
[redacted] (#11116)	PSE currently has no near-term renewable need; development risk; counterparty risk
[redacted]	[redacted]
[redacted] (#11103)	Tolling agreement is higher cost than the ownership offer; potential amendment to the Emissions Performance Standard would impact the costs or limit the sale of power to less than 5 years

Notes:
(1) [redacted] (#11127) withdrew its offer of a Market PPA during Phase II. It was not included in the quantitative analysis.
(2) Since completing the evaluation, counterparty has updated terms and has verbal indicated that the have additional transmission capacity. RFP team will re-evaluate with any revised offers received after notifying bidders.
(3) For additional description of risks and rational, see RFP Executive Summary

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PUGET SOUND ENERGY

Optimization scenario results

- Coal Transition PPA and [redacted] are selected in 4 out of 5 scenarios and both fit well within PSE's capacity need
- Sensitivities show that changes in price offers on other projects could change selections, but the portfolio cost may be similar

	Scenario: Base	Base + CO2	Base w/ New Gas	High Prices	Low Growth	Selected in X of 5 Scenarios
[redacted] (#11103)						0
PSE Self Build Peaker					X	1
[redacted] #11124)		X		X	X	3
[redacted] #11110)	X	X	X			3
Coal Transition (Centralia) PPA	X	X	X	X		4
[redacted] #11123)				X		1
[redacted] (#11123)					X	1
[redacted] #11123)	X		X			2
[redacted] (#11118)					X	1
[redacted] (#11117)	X	X	X	X		4
Portfolio Cost ($000)	10,151,274	13,491,908	9,858,326	11,097,217	7,966,006	

Notes:
(1) Selection in more scenarios is considered favorable; however, scenarios are not equally weighted
(2) "Base w/ New Gas" scenario reflects most current gas price forecast; proposed "Base" scenario for 2013 IRP
(3) In "Base + CO2" scenario, Coal Transition PPA is tested with a higher PPA price to reflect the increase in market prices between "Base" and "Base + CO2" (see slide 14 for details)
(4) Coal Transition PPA analysis includes equity component based on PSE's self build peaker

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PSE PUGET SOUND ENERGY

Screening model results: "Base w/ New Gas" scenario

- Coal Transition PPA, [redacted] and [redacted] are favorable relative to generic resources and other RFP alternatives in screening analysis

Capacity Proposals	PPA or Ownership	Project Start	Book Life / Contract Term	Levelized Cost $/MWh	Portfolio Benefit $000	Levelized PB / kW	Levelized PB / kW Ranking	Portfolio Benefit Ratio	Levelized Net Cost / kW	Levelized Net Cost / kW Ranking
[redacted] (#11117)	Tolling	2016	6	[redacted]	$ 29,977	[redacted]	1	2.49	[redacted]	1
Coal Transition (Centralia) PPA*	Fixed Price	2012	14	[redacted]	$ 193,260	[redacted]	2	0.13	[redacted]	7
[redacted] (#11123)	Index Price	2016	11	[redacted]	$ 14,303	[redacted]	3	0.27	[redacted]	4
[redacted] (#11123)	Index Price	2014	11	[redacted]	$ 13,114	[redacted]	4	0.24	[redacted]	3
[redacted] (#11124)	Fixed Price	2013	10	[redacted]	$ 11,288	[redacted]	5	0.05	[redacted]	8
[redacted] (#11117)	Tolling	2013	6	[redacted]	$ 14,223	[redacted]	6	0.12	[redacted]	2
[redacted] (#11118)	[redacted]	[redacted]	[redacted]	[redacted]	$ 30,582	[redacted]	7	0.18	[redacted]	5
[redacted] (#11117)	Tolling	2013	11	[redacted]	$ 17,381	[redacted]	8	0.07	[redacted]	6
PSE Self Build Peaker (Frame Tech.)	Ownership	2015	35	[redacted]	$ 13,828	[redacted]	9	0.05	[redacted]	11
[redacted] (#11103)	Ownership	2014	29	[redacted]	$ 12,037	[redacted]	10	0.00	[redacted]	13
[redacted] (#11103)	Tolling	2014	15	[redacted]	$ (25,766)	[redacted]	11	(0.02)	[redacted]	12
[redacted] (#11123)	Fixed Price	2014	5	[redacted]	$ (1,465)	[redacted]	12	(0.03)	[redacted]	10
[redacted] (#11110)	Fixed Price	2013	5	[redacted]	$ (6,125)	[redacted]	13	(0.08)	[redacted]	9
[redacted] (#11116)	Fixed Price	2014	25	[redacted]	$ (12,211)	[redacted]	14	(0.08)	[redacted]	14
[redacted] (#11112)	Fatal Flaw									

Renewable Proposals	PPA or Ownership	Project Start	Book Life / Contract Term	Levelized Cost $/MWh	Portfolio Benefit	Levelized PB / REC	Levelized PB / REC Ranking	Portfolio Benefit Ratio	Levelized Net Cost / REC	Levelized Net Cost / REC Ranking
[redacted] (#11116)	Fixed Price	2014	25	[redacted]	$ 27,408	[redacted]	1	0.1960	[redacted]	2
[redacted] (#11113)	Fixed Price	2013	25	[redacted]	$ 7,833	[redacted]	2	0.0330	[redacted]	1

Coal Transition PPA analysis includes equity component based on PSE's self build peaker

PSM I Metrics Key:

- Results are based on "Base w/ New Gas" price scenario only; Phase II did not evaluate alternative PSM I screening model scenarios.
- A lower number is better for "Levelized Net Cost/kW" and "Levelized Net Cost/kW or "Levelized Net Cost/REC".
- A higher number is better for "Portfolio Benefit", "Portfolio Benefit Ratio", and "Levelized PB/kW" or "Levelized PB/REC".

Quantitative screening metrics definitions

- **Portfolio Benefit** ($): difference between the net present value portfolio revenue requirement with the proposed project in the portfolio replacing an equivalent amount of generic resource, and the net present value portfolio revenue requirement of the all generic portfolio. (Higher is better. Useful for comparing projects with the same winter capacity value or the same contribution to meeting PSE's renewable energy target.)

- **Levelized Cost** ($/MWh): the net present value of the proposed project's revenue requirement divided by the net present value of the proposed project's generation. (Lower is better. Useful for comparing projects that have the same or similar operating characteristics.)

- **Portfolio Benefit Ratio:** *portfolio benefit* divided by the net present value of the proposed project's revenue requirement. (Higher is better. Useful for comparing projects that have the same or similar operating characteristics.)

- **Levelized net cost per unit of contribution to need** ($/kW or $/REC): difference between the net present value project revenue requirement and the net present value market revenue of the project's generation divided by the net present value of the project's capacity contribution. If a renewable project is being considered, then the numerator is divided by the net present value of the project's contribution to PSE's renewable energy target. (Lower is better. Useful for comparing across technologies and size.)

- **Levelized *portfolio benefit* per unit of contribution to need** ($PB/kW or $PB/REC): a project's *portfolio benefit* divided by the present value of the project's capacity contribution. If a renewable project is being considered, If a renewable project is being considered, then the numerator is divided by the net present value of the project's contribution to PSE's renewable energy target. (Higher is better. Useful for comparing across technologies and size.)

PUGET SOUND ENERGY

AURORA 2011 RFP Phase II Base scenario summary

- Reflects falling natural gas prices, electricity prices, and the abandoned federal legislative efforts for an economy-wide cap-and-trade program.
- The following are the key assumptions sources:
  - Regional Load: NPCC 6th Power Plan Base less Conservation
  - PSE Peaks and Load: F2012 Base load forecast
  - PSE demand-side resources: Consistent with 2011 IRP
  - Natural Gas Price
    - 2012-2015: 3-month average forward marks for period ending Nov. 7, 2011
    - 2016-2031: October 2011 Wood Mackenzie long-run fundamental forecast
  - Resource Costs: Consistent with 2011 IRP
  - CO_2 costs: No price included, includes known regional retirements of coal plants

PUGET SOUND ENERGY

2011 RFP scenarios and sensitivities

Red text indicates assumptions are different than the Base assumptions.

Base
- PSE F2012 Base load forecast
- Mid Natural Gas Price
- Mid Regional Loads
- No CO_2 Price

High Prices
- PSE F2012 Base load forecast
- High Natural Gas Price
- High Regional Loads
- No CO_2 Price

Base + CO2
- PSE F2012 Base load forecast
- High Natural Gas Price
- Mid Regional Loads
- CO_2 Starts 2013 at $18/Ton

Low Growth
- PSE F2012 Low load forecast (structural)
- Low Natural Gas Price
- Low Regional Loads
- No CO_2 Price

Base w/ New Gas
- PSE F2012 Base load forecast
- Natural Gas Price = Wood Mackenzie April 2012 + 3 month average forward marks ending Apr 19, 2012 (lower than base)
- Mid Regional Loads
- No CO_2 Price

Sensitivity (PSM III Only): Low Price w/ Base load
- PSE F2012 Base load forecast
- Low Natural Gas Price
- Low Growth scenario power price

PUGET SOUND ENERGY

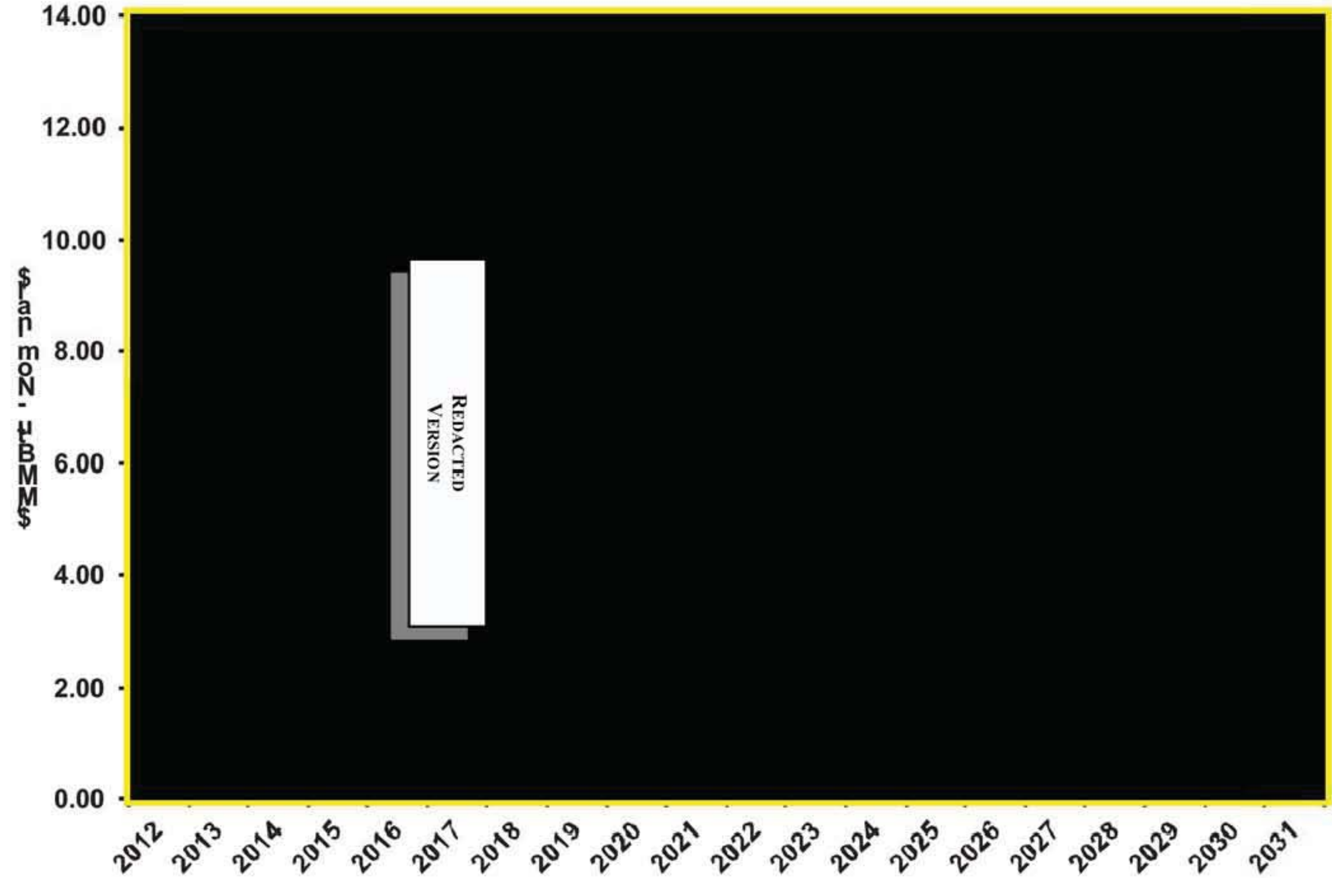
PSM III optimization scenarios and sensitivities

INPUT ASSUMPTIONS

	PSE Demand	Gas Price	AURORA Electric Price	Generic Resource Costs	Emissions Price
SCENARIOS					
Base	Base	Base	Base	Base	None
Base + CO2	Base	Base	Base	Base	EPA APA Analysis
Base w/ New Gas[1]	Base	Base + New Gas	Base + New Gas	Base	None
High Prices	Base	High	High	Base	None
Low Growth	Low Structural[2]	Low	Low	Base	None
SENSITIVITY					
Low Price w/ Base Load	Base	Low	Low	Base	None

Notes:
(1) "Base w/ New Gas": New Wood Mackenzie gas prices as of late April 2012
(2) Lower regional population growth

Comparison of Sumas Hub gas price forecasts



[redacted]

Note: Over the shorter term, the relatively warm 2011-12 winter in North America reduced gas demand, diverted gas to storage, and reduced prices for the 2012 summer and 2012-13 winter.

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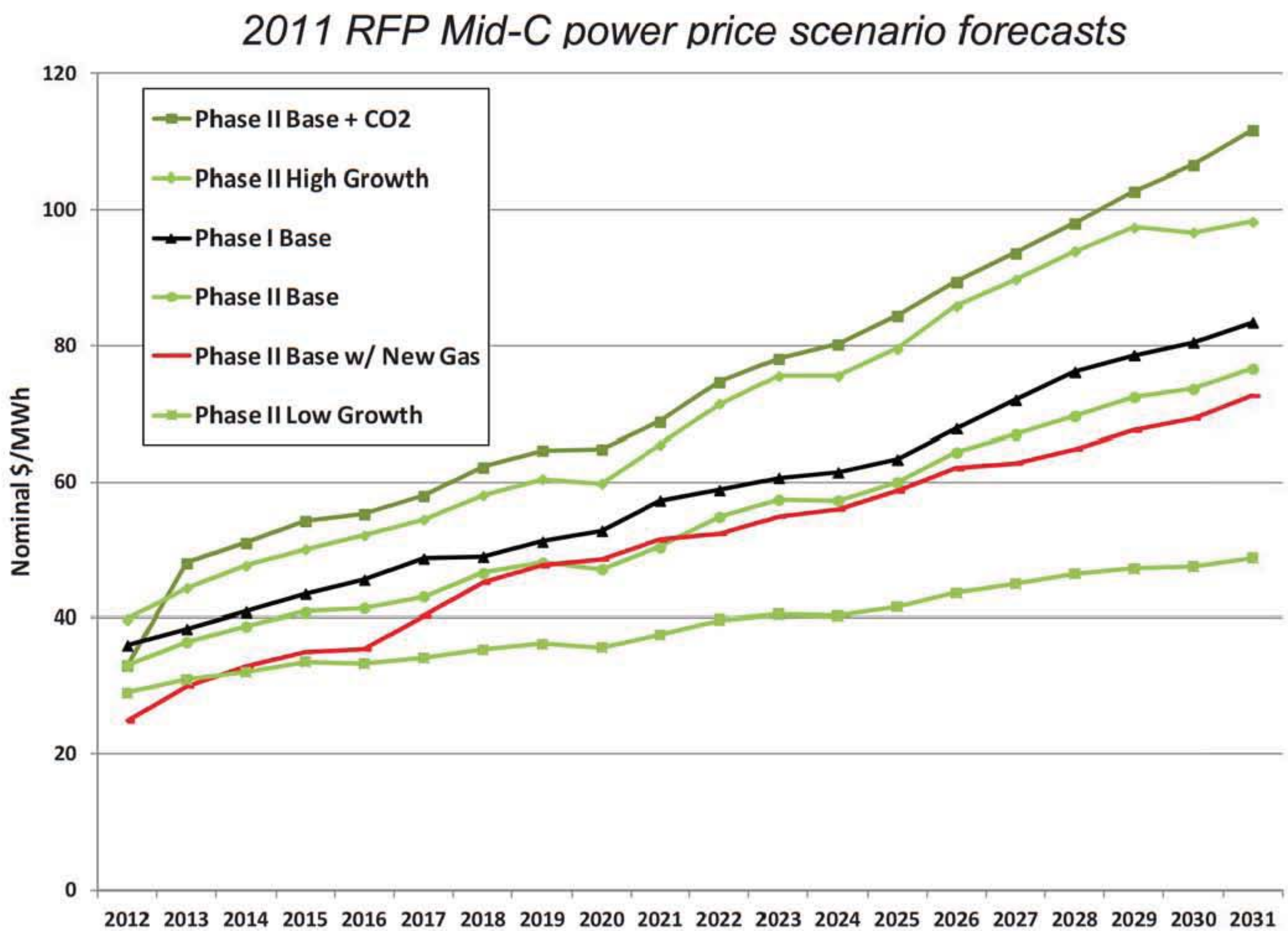
2011 RFP electric price forecasts



PUGET SOUND ENERGY

Creating the "Base + CO2" scenario

	Nominal $/tCO$_2$e		Mid C Power Price $/MWh		Adder in Base + CO2 scenario
	Base[1]	Base + CO2[2]	Base	Base + CO2	$/MWh
2012	0	0	33.04	33.04	0.00
2013	0	18	36.50	47.98	11.48
2014	0	20	38.78	50.96	12.18
2015	0	21	40.81	54.22	13.41
2016	0	23	41.40	55.24	13.84
2017	0	25	43.09	57.93	14.84
2018	0	27	46.52	62.12	15.60
2019	0	29	48.04	64.62	16.58
2020	0	31	47.12	64.78	17.66
2021	0	33	50.33	68.73	18.40
2022	0	36	54.82	74.57	19.75
2023	0	38	57.36	78.01	20.65
2024	0	41	57.25	80.14	22.89
2025	0	44	59.94	84.36	24.42
2026	0	48	64.33	89.36	25.03
2027	0	51	66.91	93.58	26.67
2028	0	55	69.58	98.01	28.43
2029	0	59	72.38	102.69	30.31
2030	0	64	73.56	106.46	32.90
2031	0	69	76.56	111.61	35.05

The table shows:

- CO_2 price used by PSE in "Base"[1] and "Base + CO2"[2] scenarios
- Mid-C power prices
- Adder included in the evaluation of the Coal Transition PPA, which is the difference in the Mid-C power prices between scenarios

Notes:
(1) "Base" and all other scenarios except "Base + CO2"
(2) Source is EPA's analysis of the American Power Act of 2010

PUGET SOUND ENERGY

Optimization sensitivities:

[redacted]

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REDACTED VERSION

	Scenario: Base	Base w/ New Gas	Base + CO2	Low Growth	High Prices	Selected in X of 5 Scenarios
[redacted]	[redacted]					5
[redacted] (#11103)						0
PSE Self Build Peaker						0
[redacted] (#11124)			X		X	2
[redacted] (#11110)	X	X	X			3
Coal Transition (Centralia) PPA	X	X	X	X	X	5
[redacted] (#11123)					X	1
[redacted] (#11123)						0
[redacted] (#11123)	X	X				2
[redacted] (#11118)						0
[redacted] (#11117)	X	X	X	X	X	5

Portfolio Cost ($000)	[redacted]				
w/ Centralia price adjustment					
w/ Centralia price as offered	10,151,274	9,858,326	13,491,908	7,966,006	11,097,217
Increase (Reduction) in portfolio cost with sensitivity	[redacted]				

Notes:
(1) Coal Transition PPA analysis includes equity component based on PSE's self build peaker
(2) Portfolio does not include Coal Transition PPA

PUGET SOUND ENERGY

Optimization sensitivities:

[redacted]

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REDACTED VERSION

	Scenario: Base	Base w/ New Gas	Base + CO2	Low Growth	High Prices	Selected in X of 5 Scenarios
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	5
[redacted] (#11103)						0
PSE Self Build Peaker		X		X		2
[redacted] (#11124)		X	X	X	X	4
[redacted] (#11110)		X	X			2
Coal Transition (Centralia) PPA	X		X		X	3
[redacted] (#11123) 1					X	1
[redacted] (#11123)		X		X		2
[redacted] (#11123)						0
[redacted] (#11118)	X	X	X	X	X	5
[redacted] (#11117)	X	X	X		X	4

Portfolio Cost ($000)

	Base	Base w/ New Gas	Base + CO2	Low Growth	High Prices
w/ [redacted] price reduction	[redacted]				
w/ [redacted] price as offered	10,151,274	9,858,326	13,491,908	8,139,571	11,097,217
Increase (Reduction) in portfolio cost with sensitivity	[redacted]				

Notes:

(1) Coal Transition PPA analysis includes equity component based on PSE's self build peaker

(2) Portfolio does not include [redacted]

PUGET SOUND ENERGY

Optimization sensitivities:

[redacted]

	Base	Base w/ New Gas	Base + CO2	Low Growth	High Prices	Selected in X of 5 Scenarios
	Scenario					
[redacted]						5
[redacted] (#11103)						0
PSE Self Build Peaker		X		X		2
[redacted] (#11124)	X	X	X	X	X	5
[redacted] (#11110)	X	X	X	X		4
Coal Transition (Centralia) PPA [1]	X		X		X	3
[redacted] (#11123)					X	1
[redacted] (#11123)		X		X		2
[redacted] (#11123)						0
[redacted] (#11118)		X		X		2
[redacted] (#11117)	X	X	X	X	X	5

Portfolio Cost ($000)

w/ [redacted] price reduction	[redacted]				
w/ [redacted] price as offered	10,151,274	9,858,326 [2]	13,491,908 [2]	8,639,987	11,097,217
Increase (Reduction) in portfolio cost with sensitivity	[redacted]				

Notes:

(1) Coal Transition PPA analysis includes equity component based on PSE's self build peaker

(2) Portfolio does not include [redacted]

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PUGET SOUND ENERGY

Optimization sensitivities:

Are resources being selected just filling the near term need or do they provide benefits in the long-term?

- If PSE could rely on short-term market purchases until 2015 and current contract opportunities are lost, Coal Transition PPA is selected in 3 of 5 scenarios

	Start	Scenario: Base	Base + CO2	Base w/ New Gas	High Prices	Low Growth
[redacted] #11103)	2014		X			
PSE Self Build Peaker	2015					X
[redacted] (#11124)	2012		X		X	
[redacted] #11110)	2013	X	X			
Coal Transition (Centralia) PPA	2012	X		X	X	
[redacted] #11123)	2014				X	
[redacted] #11123)	2014			X		X
[redacted] (#11123)	2016	X	X			
[redacted] (#11118)	2012					
[redacted] #11117)	2013	X	X	X	X	X
Portfolio Cost ($000)		[redacted]				

Note: Coal Transition PPA analysis includes equity component based on PSE's self build peaker

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PSE PUGET SOUND ENERGY

Sensitivity analysis:

Comparing portfolios with & without Coal Transition PPA (in PSM III)

- Coal Transition PPA provides the biggest portfolio benefits when gas and power prices are higher and is not favorable compared to alternatives in a sustained low growth environment

	With Centralia	No Centralia
[redacted] (#11103)		
PSE Self Build Peaker		X
[redacted] (#11124)		X
[redacted] (#11110)	X	X
Coal Transition (Centralia) PPA	X	
[redacted] (#11123)		
[redacted] #11123)		X
[redacted] (#11123)	X	
[redacted] (#11118)		X
[redacted] (#11117)	X	

Portfolio Cost ($000's)	Scenarios				
	Base	Base + CO2	Base w/ New Gas	High Prices	Low Growth
No Centralia	[redacted]				
With Centralia					
(Benefit)/Cost Portfolio with Centralia	[redacted]				

Notes:
(1) Coal Transition PPA analysis includes equity component based on PSE's self build peaker
(2) No Coal Transition PPA portfolio is created from "Low Price w/ Base Load" sensitivity.

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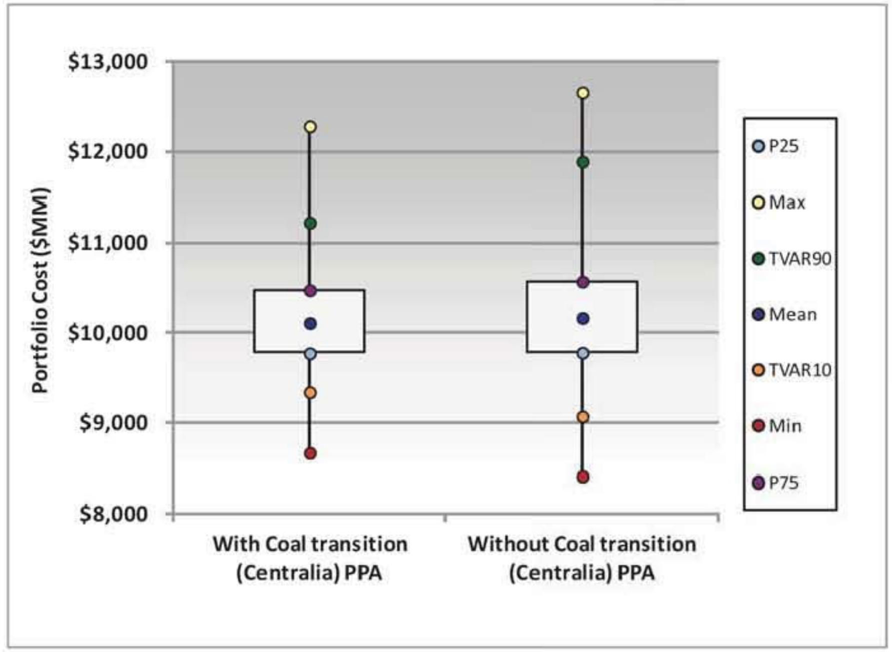
PUGET SOUND ENERGY

Risk analysis in RFP Phase II Base scenario:

Comparing portfolios with & without Coal Transition PPA (in PSM III)

- Coal Transition PPA reduces exposure to high prices
- Risk Analysis considers variability in natural gas and power prices (Base, High, Low), wind and hydro generation (historical), and load (Base, High, Low)

	With Centralia	No Centralia
[redacted](#11103)		
PSE Self Build Peaker		X
[redacted]#11124)		X
[redacted](#11110)	X	X
Coal Transition (Centralia) PPA	X	
[redacted](#11123)		
[redacted]#11123)		X
[redacted](#11123)	X	
[redacted]#11118)		X
[redacted](#11117)	X	



Portfolio Cost (Revenue Requirement) $MM

	With Coal transition (Centralia) PPA	Without Coal transition (Centralia)
Max	[redacted]	[redacted]
TVAR90		
P75		
Median		
Mean		
P25		
TVAR10		
Min		
Annual Volatility (%)	24.1%	24.5%

Notes:

(1) Coal Transition PPA analysis includes equity component based on PSE's self build peaker

(2) No Coal Transition PPA portfolio is created from "Low Price w/ Base Load" sensitivity.

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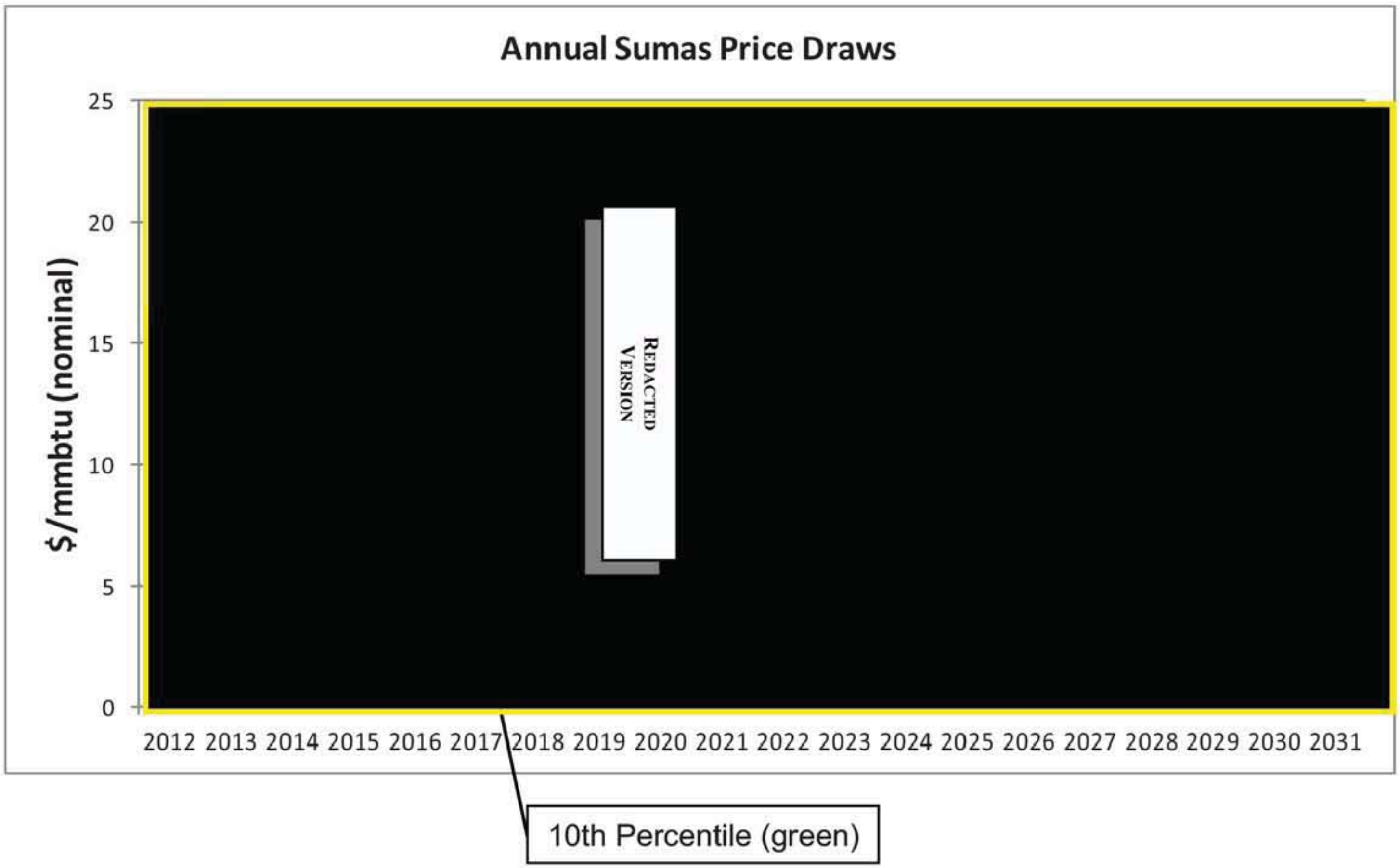
REDACTED VERSION

PUGET SOUND ENERGY

Risk analysis in RFP Phase II Base scenario:

Annual Sumas Price Distribution



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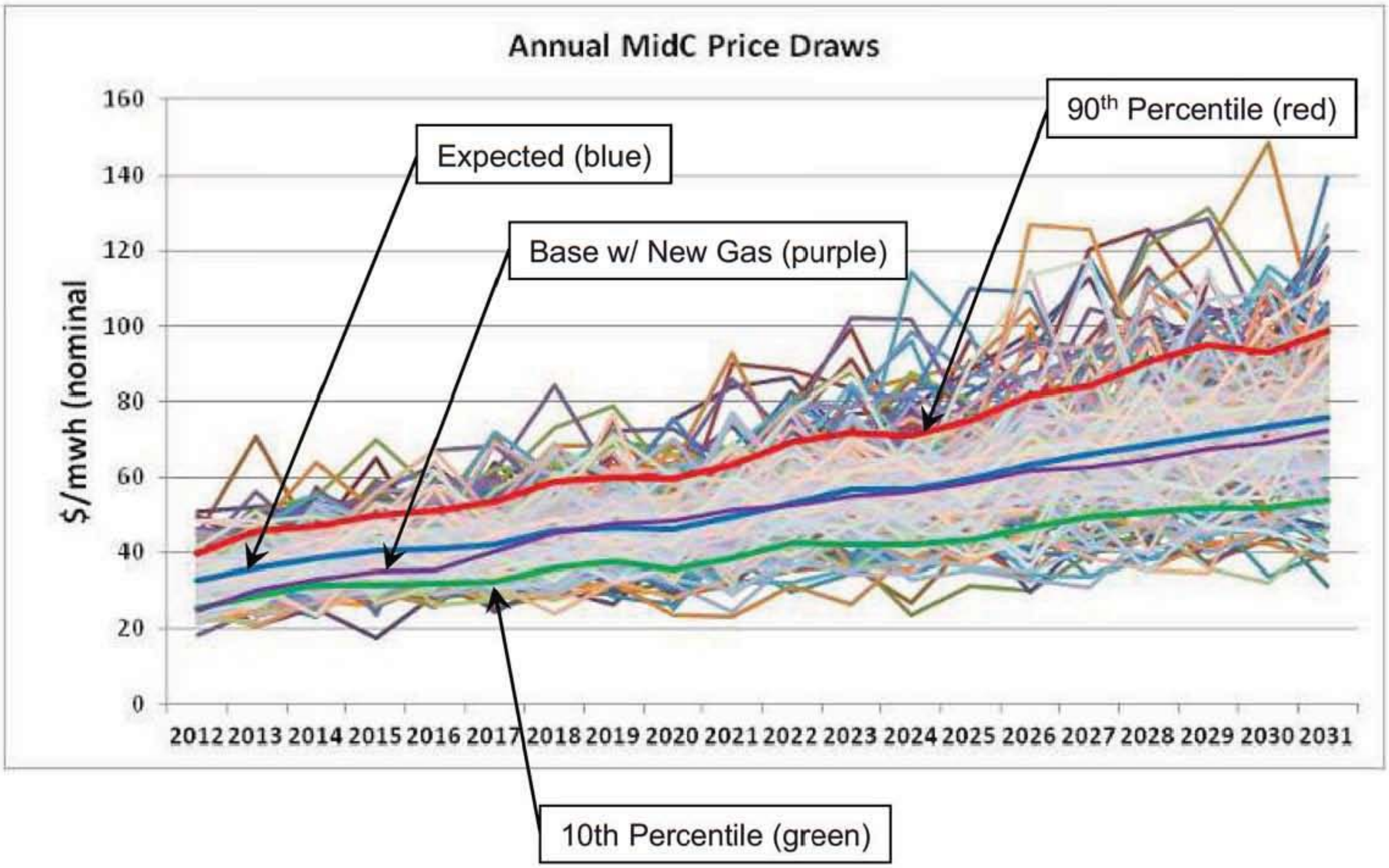
PUGET SOUND ENERGY

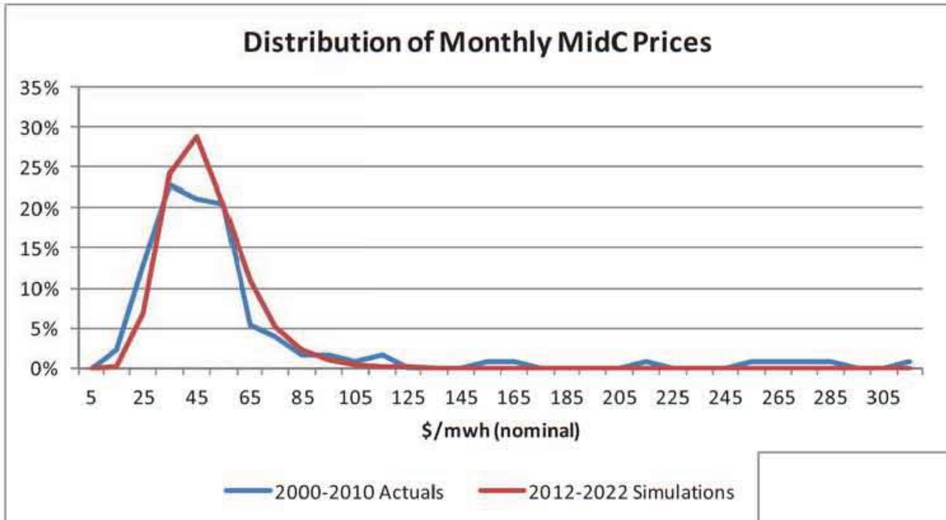
Risk analysis in RFP Phase II Base scenario:

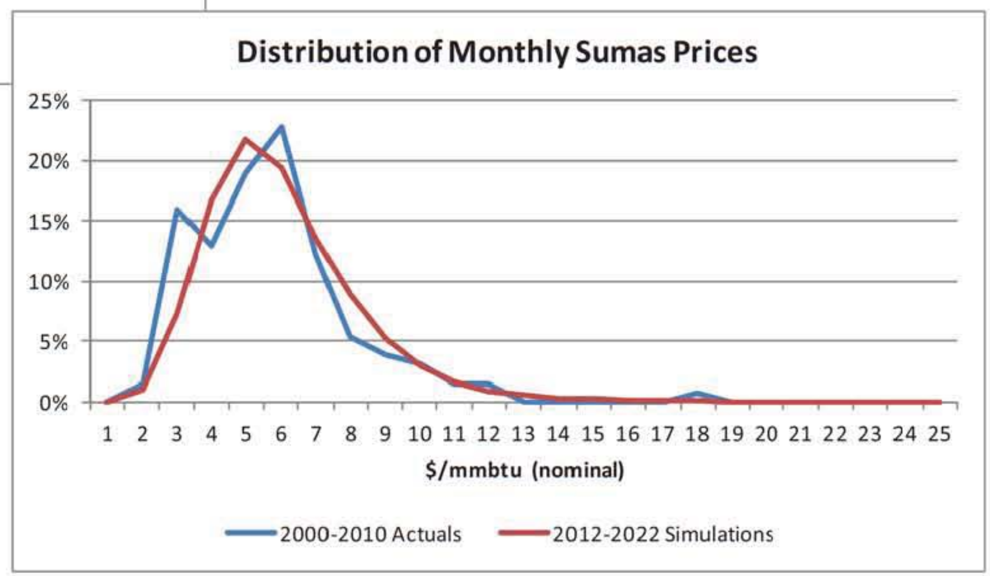
Annual Mid-C Electric Price Distribution



Risk analysis in RFP Phase II Base scenario:

Historical distributions compared to RFP





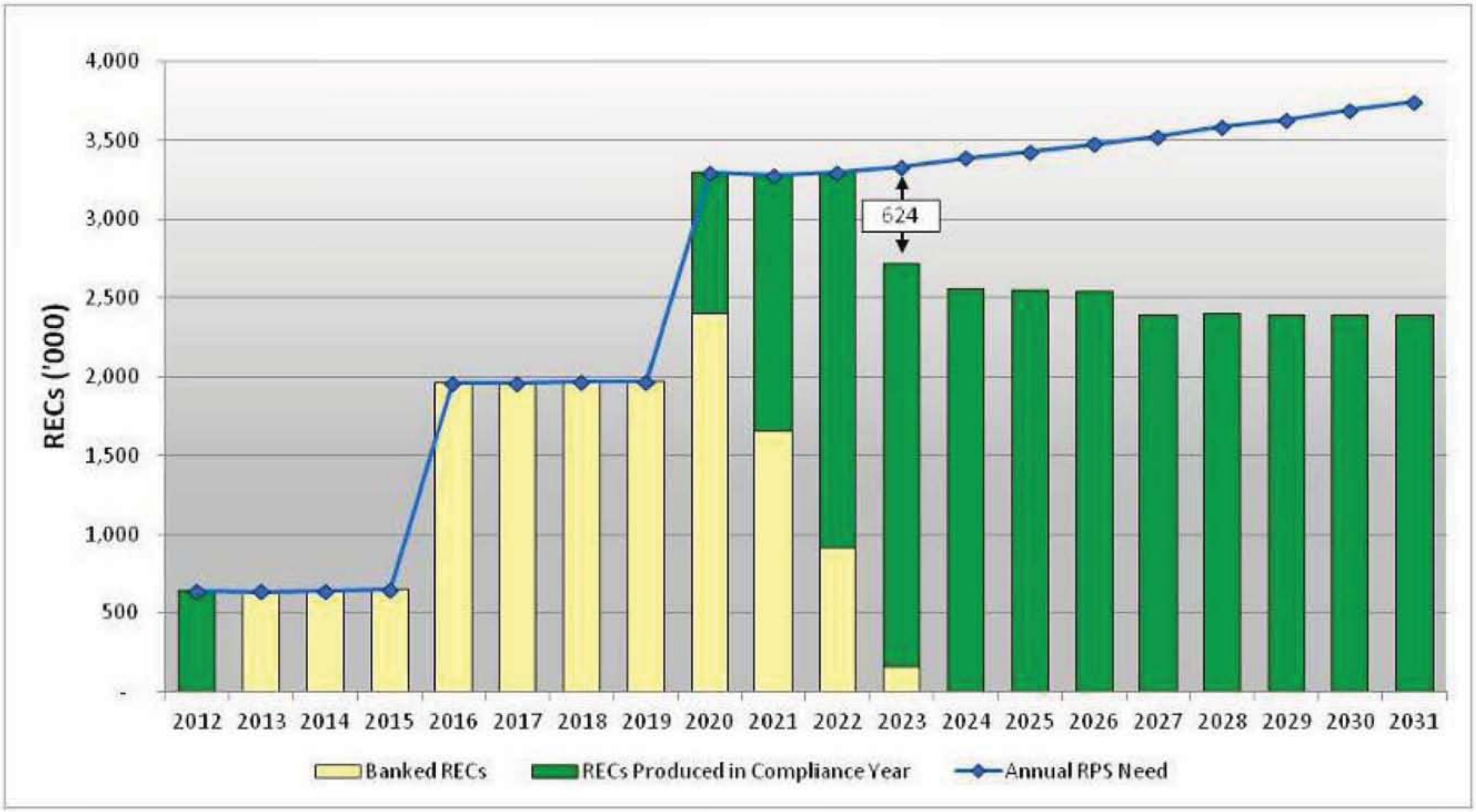
PSE PUGET SOUND ENERGY

REC banking in 2011 RFP Phase II

- Phase II evaluation includes banking RECs from existing resources -- estimated based on P50 generation
- RECs produced from apprentice labor multiplier credits are not bifurcated from underlying REC
- Non-REC eligible generation such as hydro efficiency upgrades are not banked
- RECs not used for compliance in the year they are created, or banked for future year's use are sold at voluntary market price.

REC banking in 2011 RFP Phase II

- Renewable need is shifted from 2020 to 2023 if existing RECs are banked



Appendix H

Presentations:

2. Presentations to the Washington Utilities and Transportation Committee

PUGET SOUND ENERGY

RFP for All Generation Sources Update

Presented to Washington Utilities and Transportation Commission Staff

PSE's Resource Acquisition and Planning staff

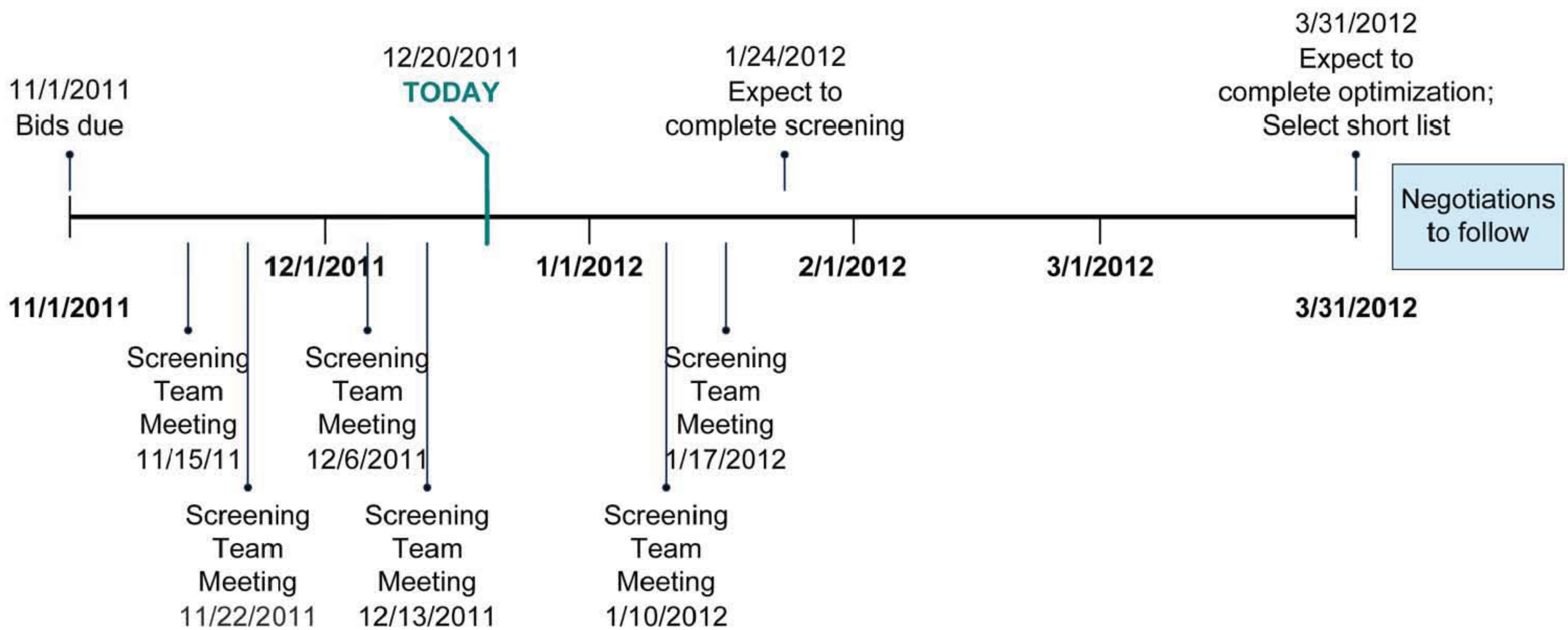
December 20, 2011

Presentation contains "Confidential" and "Highly Confidential" material per WAC 480-07-160

2011 RFP update

- Schedule
- Need for resources
- Proposals summary
- Evaluation process
- Preliminary screening analysis findings (formerly Phase I)
- Next steps
- Appendix
  - Metrics
  - Updates from 2011 IRP

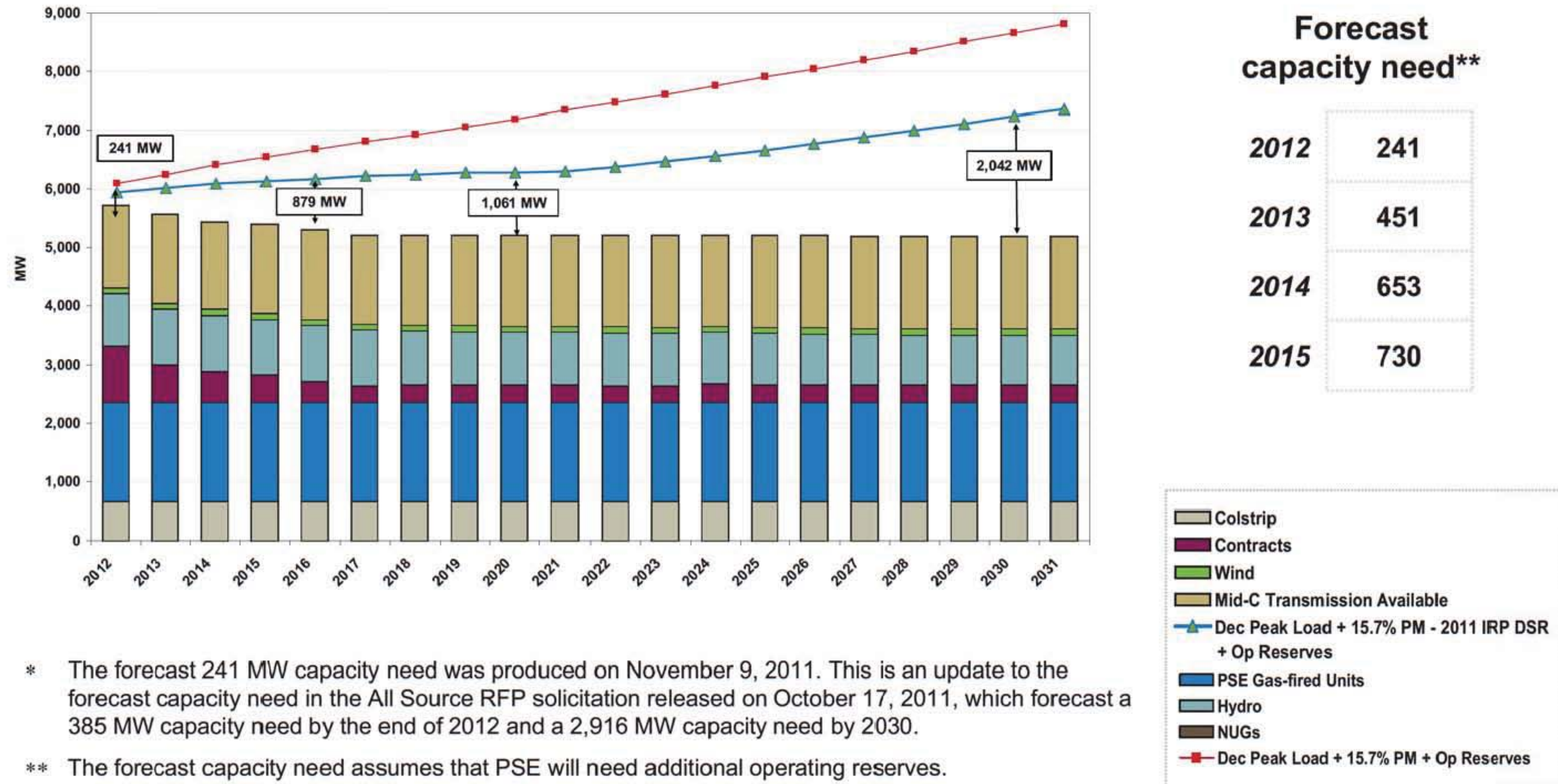
Schedule



11/1/2011
Bids due
12/20/2011
TODAY
1/24/2012
Expect to
complete screening
3/31/2012
Expect to
complete optimization;
Select short list
Negotiations to follow
11/1/2011
12/1/2011
1/1/2012
2/1/2012
3/1/2012
3/31/2012
Screening Team Meeting 11/15/11
Screening Team Meeting 11/22/2011
Screening Team Meeting 12/6/2011
Screening Team Meeting 12/13/2011
Screening Team Meeting 1/10/2012
Screening Team Meeting 1/17/2012

PUGET SOUND ENERGY

PSE forecasts a 241 MW capacity need by the end of 2012*



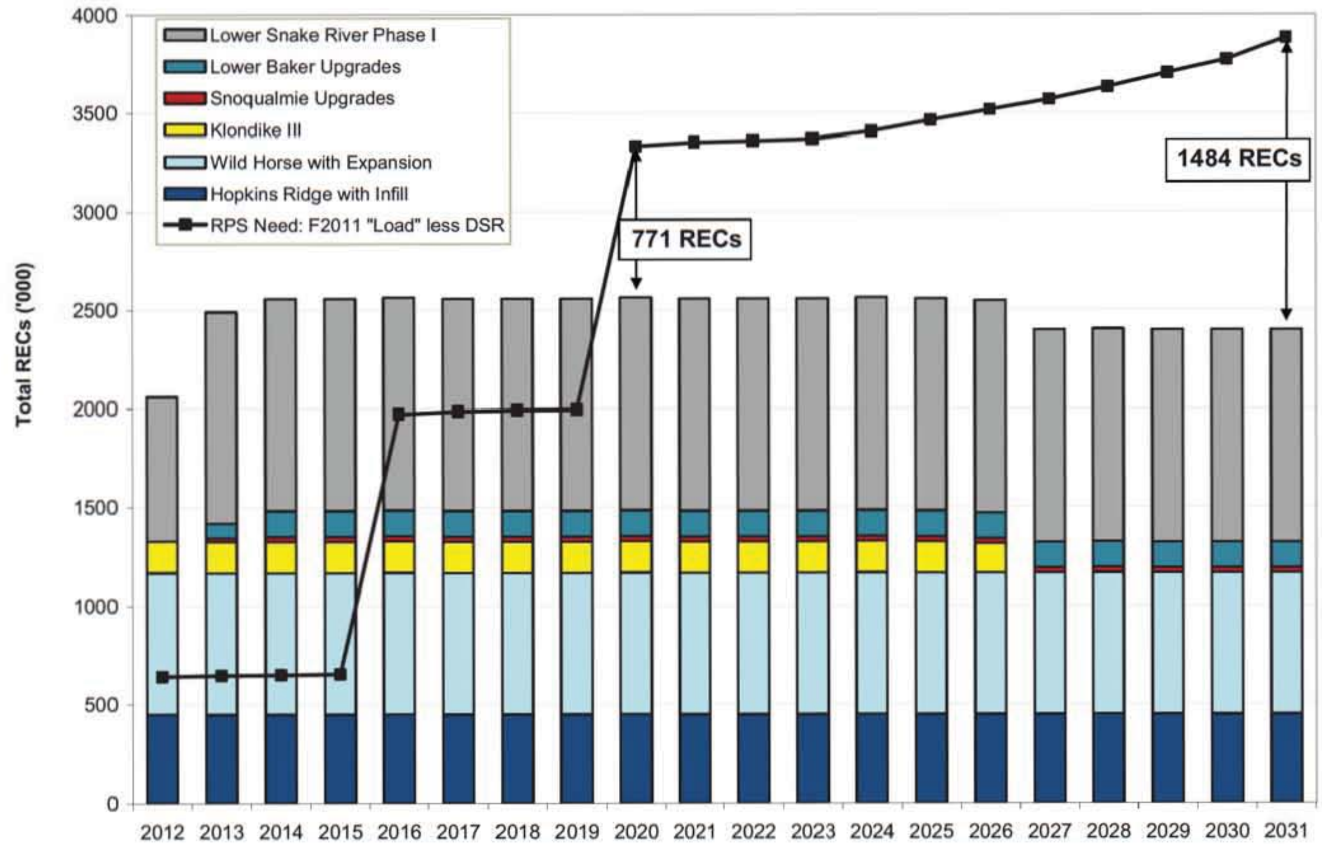
Forecast capacity need**

2012	**241**
2013	**451**
2014	**653**
2015	**730**

* The forecast 241 MW capacity need was produced on November 9, 2011. This is an update to the forecast capacity need in the All Source RFP solicitation released on October 17, 2011, which forecast a 385 MW capacity need by the end of 2012 and a 2,916 MW capacity need by 2030.

** The forecast capacity need assumes that PSE will need additional operating reserves.

Near-term renewable energy targets on track to be achieved*



*Renewable energy credit ("REC") banking and sales are not reflected in the chart.

PSE PUGET SOUND ENERGY

Highly Confidential per WAC 480-07-160

Summary of RFP proposals

Resource Type	Bids[1]	MW[2]	Operating	Development	PPA	Ownership	Notes
Renewable							
Wind	4	369	1	3	3	2	(3)
Biomass	3	61	0	3	3	1	(4)
Solar - PV	2	24	0	2	2	1	
Renewable Sub-total	9	454	1	8	8	4	
Thermal							
Coal	1	500	1	0	1	1	(5)
CCGT	6	2,006	4	2	6	2	
SCGT	1	179	0	1	0	1	
CHP	1	29	0	1	1	0	
GT	1	300	0	1	0	1	(6)
Recip	1	110	0	1	1	0	
Thermal Sub-total	11	3,124	5	6	9	5	
Other							
PPA-Market	4	400	4	0	4	0	
Hydro	1	77	0	1	0	1	
Waste-to-Energy	1	23	1	0	1	0	
Energy Storage	2	251	0	2	1	1	
Cold Fusion	1	1,880	0	1	0	1	
Other Sub-total	9	2,631	5	4	6	3	
TOTAL	**29**	**6,209**	**11**	**18**	**23**	**12**	

(1) Project/Counterparty specific bid (some bids may contain multiple options)
(2) Capacity offered
(3) One wind bid offered options for REC-only, energy only, energy + RECs, and capacity via battery storage
(4) One biomass bid offerd options for REC-only and asset sale
(5) An option included with the Coal PPA [redacted]
(6) Equipment only sale for [redacted]

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PUGET SOUND ENERGY

RFP resource proposals by location

Highly Confidential per WAC 480-07-160

[redacted]

REDACTED VERSION

Legend

- Biomass
- Coal transition power
- Energy Storage
- Hydro
- Natural gas
- Solar
- Wind

The map does not include:

(1) the following RFP proposals: two resources to be sited at unspecified locations within Washington state (the [redacted] and the [redacted] and four market PPAs;

(2) two unsolicited resources that PSE is screening alongside the RFP proposals: the [redacted] located in [redacted] and the [redacted] located in [redacted]

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PUGET SOUND ENERGY

RFP seeks capacity resources to fill near-term need

- Approximately 250 MW capacity delivered to PSE's system on a firm basis by end of 2012.
- Preference for online or near-term resources. Eligible resources will be online by or before 2015.
- Preference for long-term resources with flexible contract start dates to align with PSE's need.
- Market PPAs should be delivered to BPAT.PSEI to qualify for this RFP.
- Renewable resources that are competitive with capacity resources or market.
- Demand-side resource products ("DSR") are not eligible for this RFP. PSE filed a separate energy efficiency DSR RFP, which the commission approved last week.

* PSE will consider all proposals, although some may contain fatal flaws.

PSE PUGET SOUND ENERGY

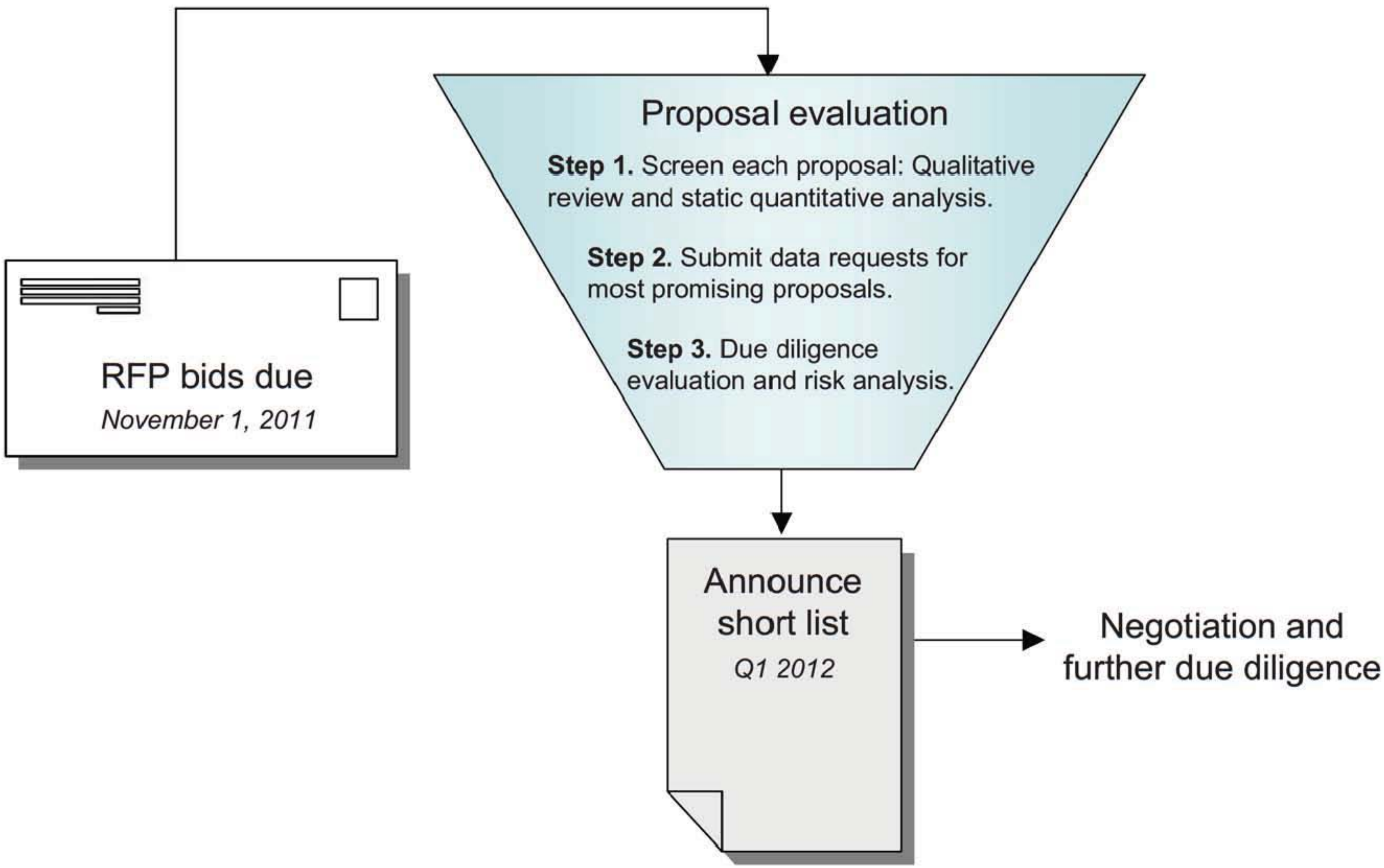
Commercial structure and compliance considerations

- All proposals must comply with Washington's Emissions Performance Standards [1]
- PSE will consider the following acquisition mechanisms:
  - Ownership arrangements, including co-ownership arrangements in which PSE retains adequate dispatchability and rights of control
  - Power purchase agreements of varying lengths (>4 years) [2]
  - Temporal exchange agreements
  - Transmission-only product agreements

[1] Washington's Emissions Performance Standards (EPS) (WAC 173-407, effective June 19, 2008) requires new and modified baseload electric generation to meet a greenhouse gas limit of 1,100 pounds per megawatt hour (lbs/MWh). The EPS applies to all baseload electric generation for which electric utilities enter into long-term financial commitments on or after July 1, 2008.

[2] Engrossed Second Substitute Senate Bill 5769, codified in RCW 80.80, provides the requirements under which PSE may enter into a long-term financial commitment with coal transition power.

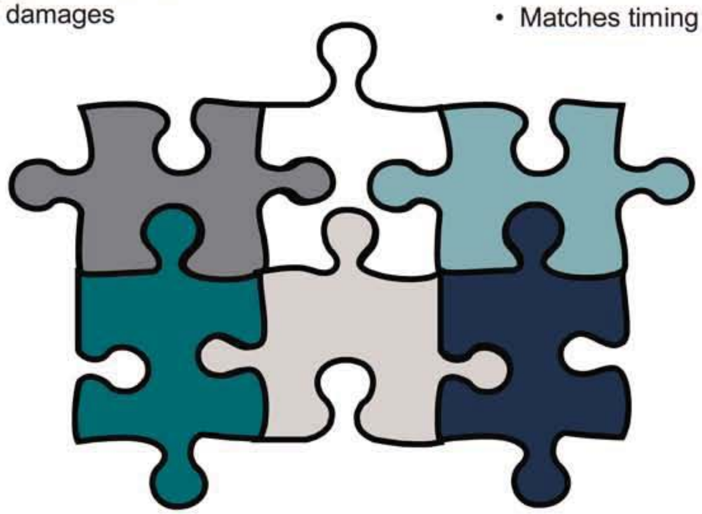
RFP evaluation process



Evaluation criteria – Identify proposals with lowest reasonable cost and risk

Strategic and financial
- Offer viability: project and respondent's ability to deliver
- Appropriate credit support or liquidated damages offered by bidder
- No PSE credit support required

Compatibility with resource need
- Can be shaped to match PSE's need (gas) or resource shape matches PSE's need (wind)
- Firm delivery of capacity and energy to PSE's system.
- Matches timing of resource need; flexibility



Public benefits
- Economic benefit to the community
- Local support for the project
- Low environmental impact

Cost minimization
- Lower/ lowest portfolio revenue requirement while meeting capacity and RPS need

Risk management
- Commercially-proven technology with long-term reliability
- Reduces PSE's risk exposure to changes in power prices, environmental policies, fuel prices, hydro generation, etc.

See Exhibit A of the 2011 All Source RFP for complete evaluation criteria.

PUGET SOUND ENERGY

Quantitative analysis

- Screening in Portfolio Screening Model ("PSM")
  - Additional metrics (two more)
- Optimization and risk analysis
  - Scenario analysis in PSM III ("Optimization model")
  - Risk analysis in PSM III

2011 RFP update

- Schedule
- Need for resources
- Proposals summary
- Evaluation process
- Preliminary screening analysis findings (formerly Phase I)
- Next steps
- Appendix
  - Metrics
  - Updates from 2011 IRP

DRAFT - PRELIMINARY

PSE PUGET SOUND ENERGY

Screening schedule and preliminary selections*

	ID	Project	Owner/Developer	State	Type	MW Nameplate	Status	DRAFT selection status* (12/13/11)
WEEK 1 (Nov 9 - 15)								
1	11102	[redacted]	[redacted]	[redacted]	Coal [redacted]	500	Operating	Selected for further evaluation
2	11118	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Selected for further evaluation
3	11103	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Operating	Selected for further evaluation
4	11124	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Operating	Selected for further evaluation
WEEK 2 (Nov 16								
5	11110	[redacted]	[redacted]	n/a	[redacted]	[redacted]	Operating	Selected for further evaluation
6	11112	[redacted]	[redacted]	n/a	[redacted]	[redacted]	Operating	Selection contingent upon transmission solution
7	11126	[redacted]	[redacted]	n/a	[redacted]	[redacted]	Operating	No transmission; ranks low among short-term PPAs
8	Unsolicited	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Operating	Ranks low among short-term PPA products
9	11127	[redacted]	[redacted]	n/a	[redacted]	[redacted]	Operating	Selected for further evaluation
		[redacted]		Nov 23 - 29 -- No screening team meeting				
WEEK 3 (Nov 30								
10	11117	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Operating	Selected for futher evaluation
11	11116	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Confirming quantitative results
12	11105	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not selected: High cost
13	11120	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Previous experience w/ owner; risk of default
WEEK 4 (Dec 7 -								
14	11101	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not selected: High cost; development risk
15	11106	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not selected: High cost; development risk
16	11115	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not selected: High cost; development risk
17	11121	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not selected: High cost; development risk
18	11108	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not selected: High cost; development risk
		[redacted]		Dec 14 - Jan 3 -- No screening team meetings				
WEEK 5 (Jan 4 -								
19	11113	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Operating	Not yet screened
20	11114	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not yet screened
21	11111	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not yet screened
22	11104	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not yet screened
23	11122	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not yet screened
24	Unsolicited	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not yet screened
25	11125	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not yet screened
WEEK 6 (Jan 11								
26	11107	[redacted]	[redacted]	n/a	[redacted]	[redacted]	n/a	Not yet screened
27	11109	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not yet screened
28	11119	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not yet screened
29	11123	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not yet screened

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** PSE has not finished screening all proposals. The DRAFT selection status shown above is subject to change based upon the final screening results.*

Preliminary findings

- Existing thermal resources appear to be priced competitively and avoid construction risk of new greenfield development; furthermore, resources that avoid a transmission wheel should have an economic advantage.

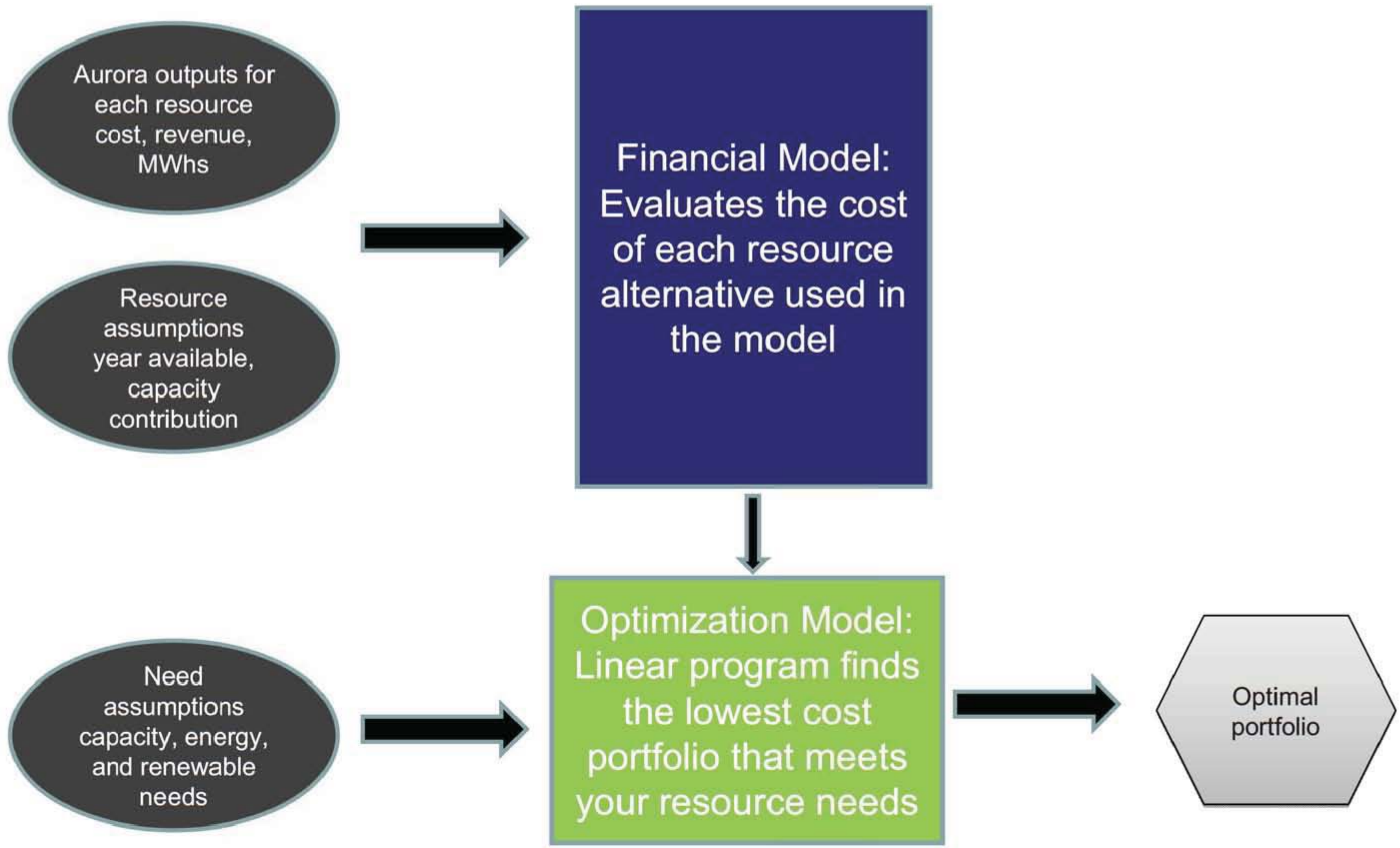
- Short-term PPAs (less than 5 years) appear to be priced competitively and in-line with short-term market forecasts; however, not all may have firm transmission to PSE system.

- PSE does not have a renewable energy need to meet renewable energy targets until 2020 or later. Renewable energy proposals may not be competitive with non-renewable proposals from a "capacity need" basis.

Next steps

- Complete screening analysis (Step 1)
  - Renewable resources
  - Battery storage and other technologies
- Submit remaining data requests (Step 2)
- Perform due diligence and scenario optimization & risk analysis (Step 3)
  - Finalize quantitative updates from the 2011 IRP (scenarios and assumption updates)

PSM III Optimization process: Step 3



Portfolio selections from Optimization Model - results from 2010 RFP capacity phase

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Sample	2010 Trends	Business As Usual	Green World	Low Growth	Low Growth Base Cost	2010 Trends Shortlist	2010 Trends Shortlist w [redacted] in 2017
	5 Scenarios					Sensitivities	
Portfolio Revenue Requirement ($MM)	$13,832	$11,659	$17,881	$9,494	$10,102	$13,815	$13,703
[redacted]	100 MW		100 MW	100 MW		100 MW	100 MW
				75 MW		75 MW	75 MW
	175 MW	275 MW		250 MW	75 MW	175 MW	175 MW
	25 MW	125 MW		275 MW	100 MW	25 MW	
	25 MW	100 MW		300 MW	100 MW		
					25 MW		
	75 MW	75 MW			75 MW		
PSE Build Peaker [redacted]	214 MW	214 MW				214 MW	214 MW
[redacted]	277 MW	277 MW			277 MW	277 MW	277 MW
			643 MW				
	Not an option in these portfolios						643 MW
			26 MW			26 MW	
			5 MW				
		20 MW	20 MW				20 MW
			24 MW				
			25 MW				25 MW
			[redacted]				
	110 MW		110 MW			110 MW	
			172 MW				
	23 MW	23 MW		23 MW	23 MW	23 MW	
Generic Peaker Builds Through 2017	207 MW (2015); 414 MW (2017)	207 MW (2015); 414 MW (2017)	207 MW (2017)	414 MW (2015); 621 MW (2017)	207 MW (2015); 414 MW (2017)	207 MW (2015); 617 MW (2017)	None
Generic Wind Builds Through 2017	None	None	100 MW (2014)	100 MW (2016); 200 MW (2017)	None	None	None

1 - Wind projects are shown at nameplate capacity; thermal and biomass are shown at winter capacity
2 - Index Contracts are one year market price PPAs
3 - Green World, Low Growth, and Low Growth with Base Costs assume low load forecasts
[redacted] unbundled RECs provide 61,000 RECs annually which equate to a 23 MW wind project

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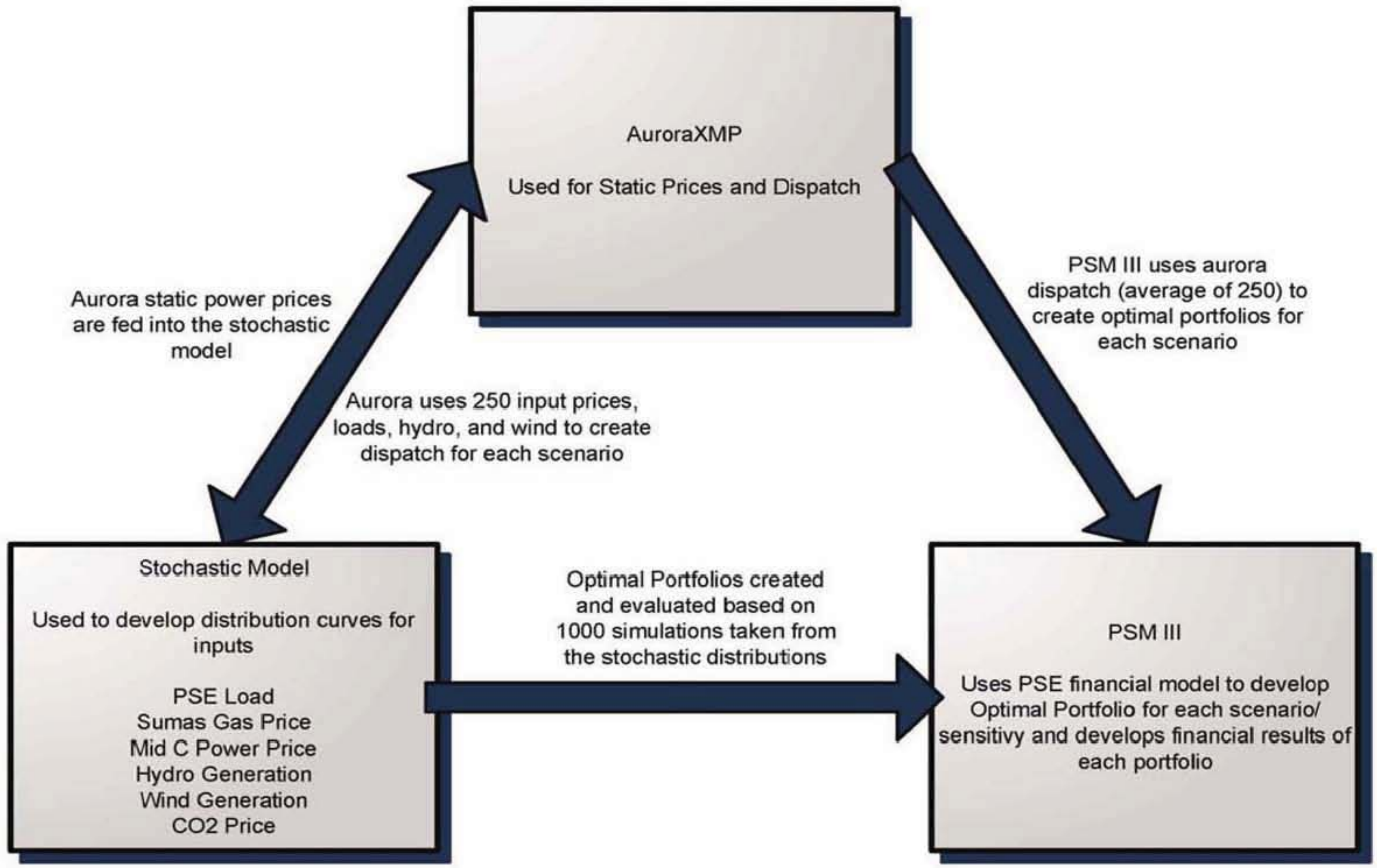
PSE Portfolio Optimization and Risk Analysis: Step 3



Changes from 2011 IRP to 2011 RFP

- No PSE-owned natural gas plant retirements
- Uses PSE's official F2011 load forecast less DSR (same as 2011 GRC)
- Updated natural gas prices
- Key AURORAxmp database updates
  - EPIS database DB2010.02 (same as 2011 GRC)
  - 2011 GRC resource assumptions and hydro shapes
  - Retire Boardman in 2020 (in DB2010.02)
  - Retire Centralia in 2020 and 2025

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2011 RFP price scenarios

	WECC /PSE Demand	Gas Price	Generic Resource Costs	Emissions Price
Base Case	Base	Base	Base	None
Base + CO2	Base	Base	Base	EPA APA Analysis
Base + No Centralia*	Base	Base	Base	None
High Growth	High	High	Base	None
Low Growth	Low	Low	Base	None

*Base + No Centralia: Centralia is forced to retire in 2013.

2011 RFP update

- Schedule
- Need for resources
- Proposals summary
- Evaluation process
- Preliminary screening analysis findings (formerly Phase I)
- Next steps
- Appendix
  - Metrics
  - Updates from 2011 IRP

Appendix

- Metrics
- Updates from 2011 IRP

Screening metrics – application & changes

- Used by resource acquisition team to analyze alternatives meeting PSE's resource needs
  - to compare and rank resource alternatives relative to each other
  - to help identify the combination of resources that is lowest cost

- With PSE's change in focus from an energy need to a capacity need, the team has identified new metrics for the 2011 RFP.

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Original quantitative screening metrics

Portfolio Benefit ($) - ***difference*** between the net present value ***portfolio revenue requirement*** of a ***proposed project***, ***and*** the net present value ***portfolio revenue requirement*** of the ***generic portfolio strategy***.

Levelized Cost ($/MWh) - level annual revenue requirement equivalent to the net present value ***revenue requirement*** based on a 20-year analytic period ***divided by*** the level annual generation equivalent to the net present value of ***generation*** for the same 20 year period.

Portfolio Benefit Ratio - ***portfolio benefit divided by*** the present value of the proposed ***project revenue requirement.***

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Additional quantitative screening metrics

Levelized net cost per unit of contribution to need ($/kW)

Levelized portfolio benefit per unit of contribution to need ($PB/kW)

Net cost per unit of contribution to need *

- ***Net cost per unit of contribution to need*** is the **difference** between the **project revenue requirement** and the **market revenue** of the project's net generation **divided by** the **capacity contribution**.
- If a renewable project is being considered, then the numerator shown below is **divided by** its annual contribution to PSE's **renewable energy target.**

- **Net cost per unit of contribution to need ($/kW)** =

$$\frac{\text{PV (Revenue Requirement (\$))} - \text{PV (Market Revenue (\$))}}{\text{PV (Contribution to Need (kW or REC))}}$$

*calculated on a levelized basis

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Portfolio benefit per unit of contribution to capacity need*

- ***Portfolio benefit per unit of contribution to capacity need* ($PB/kW)** is the project's **portfolio benefit divided by** the present value of the project's **capacity contribution**.
- If a renewable project is being considered, then the numerator shown below is **divided by** its annual contribution to PSE's **renewable energy target.**

- ***Portfolio benefit* per unit of contribution to need ($PB/kW)** =

$$\frac{\text{Portfolio Benefit (\$)}}{\text{PV(Contribution to Need (kW or REC))}}$$

*calculated on a levelized basis

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Goal of new screening metrics

- Accounts for projects of different sizes and levels of market revenue generation.
- New metrics may evaluate projects more similarly to how the portfolio optimization model operates.

Appendix

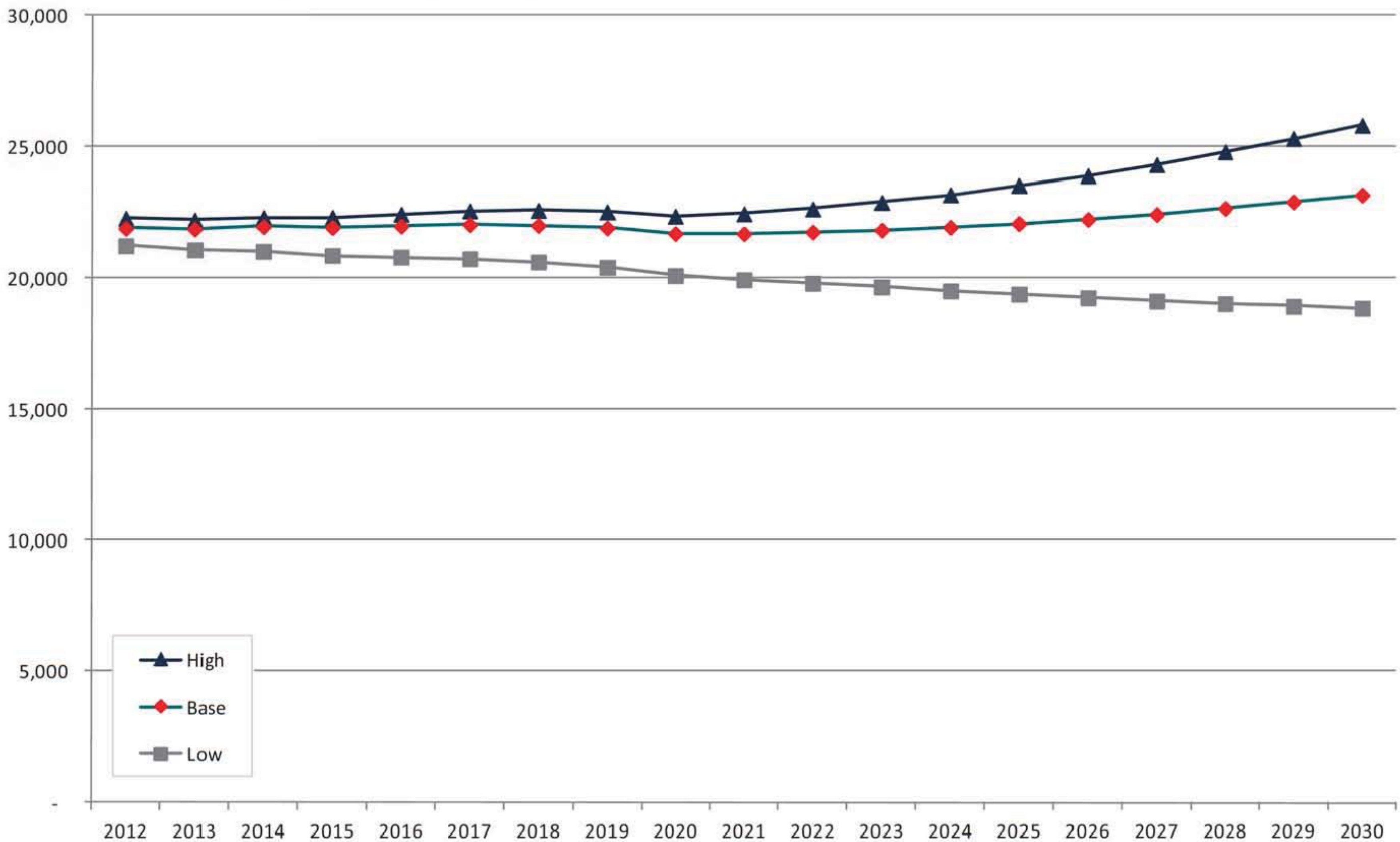
- Metrics
- Updates from 2011 IRP

Similar assumptions as the 2011 IRP

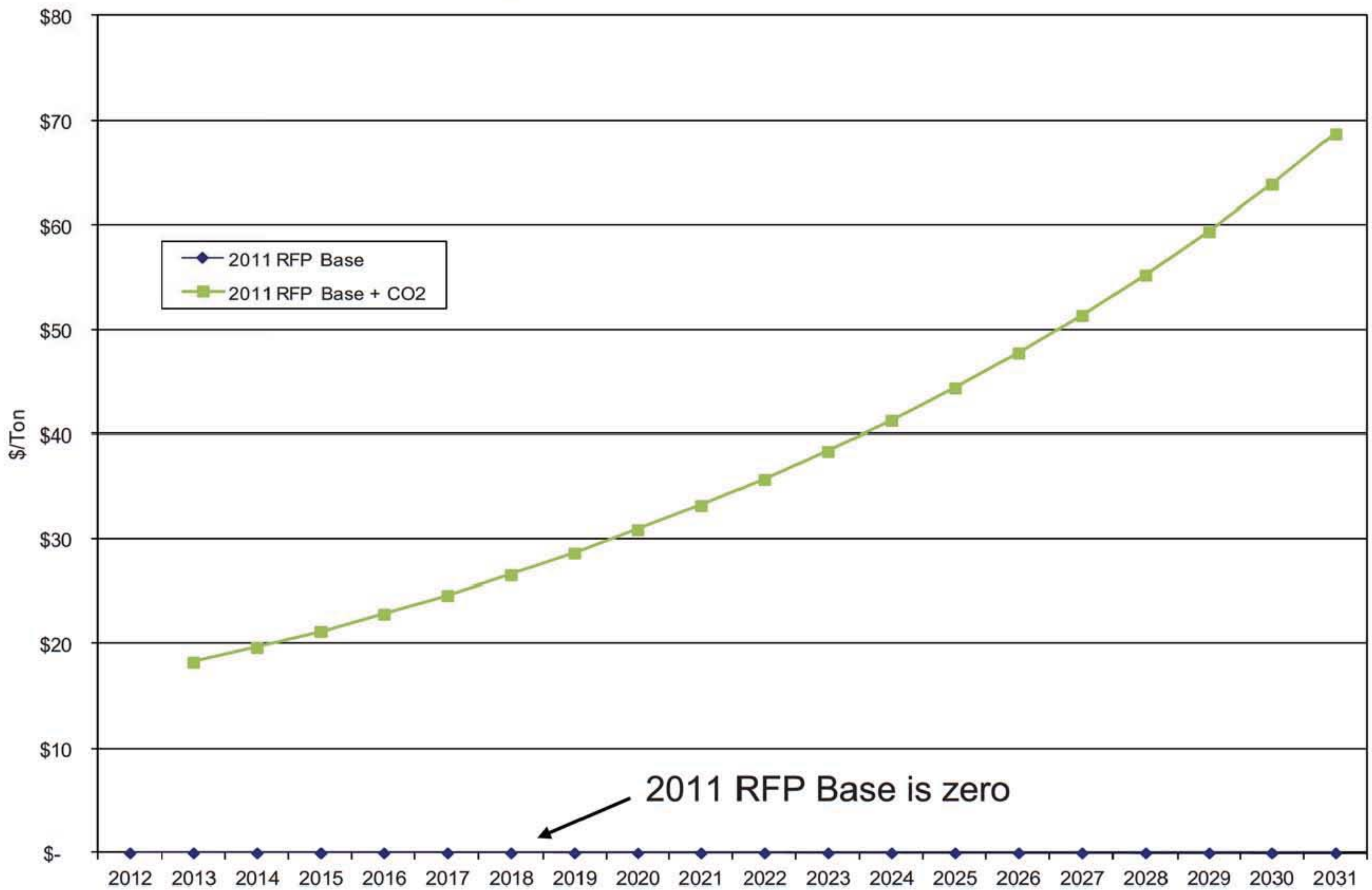
- RPS resources
  - Same process as 2011 IRP
  - Updated wind and solar capacity factors (from EPIS DB2010.02)
- Regional load forecast
  - NWPCC 6th Power Plan load forecast
  - Same as 2011 IRP
- CO2 price
  - Same as 2011 IRP
- Generic resource assumptions
  - Same as 2011 IRP

OR, WA, ID, MT-W Annual Demand in aMW

2011 IRP: Northwest Power and Conservation Council 6th Power Plan less DSR



CO_2 Price ($/Ton)



Changes from 2011 IRP to 2011 RFP

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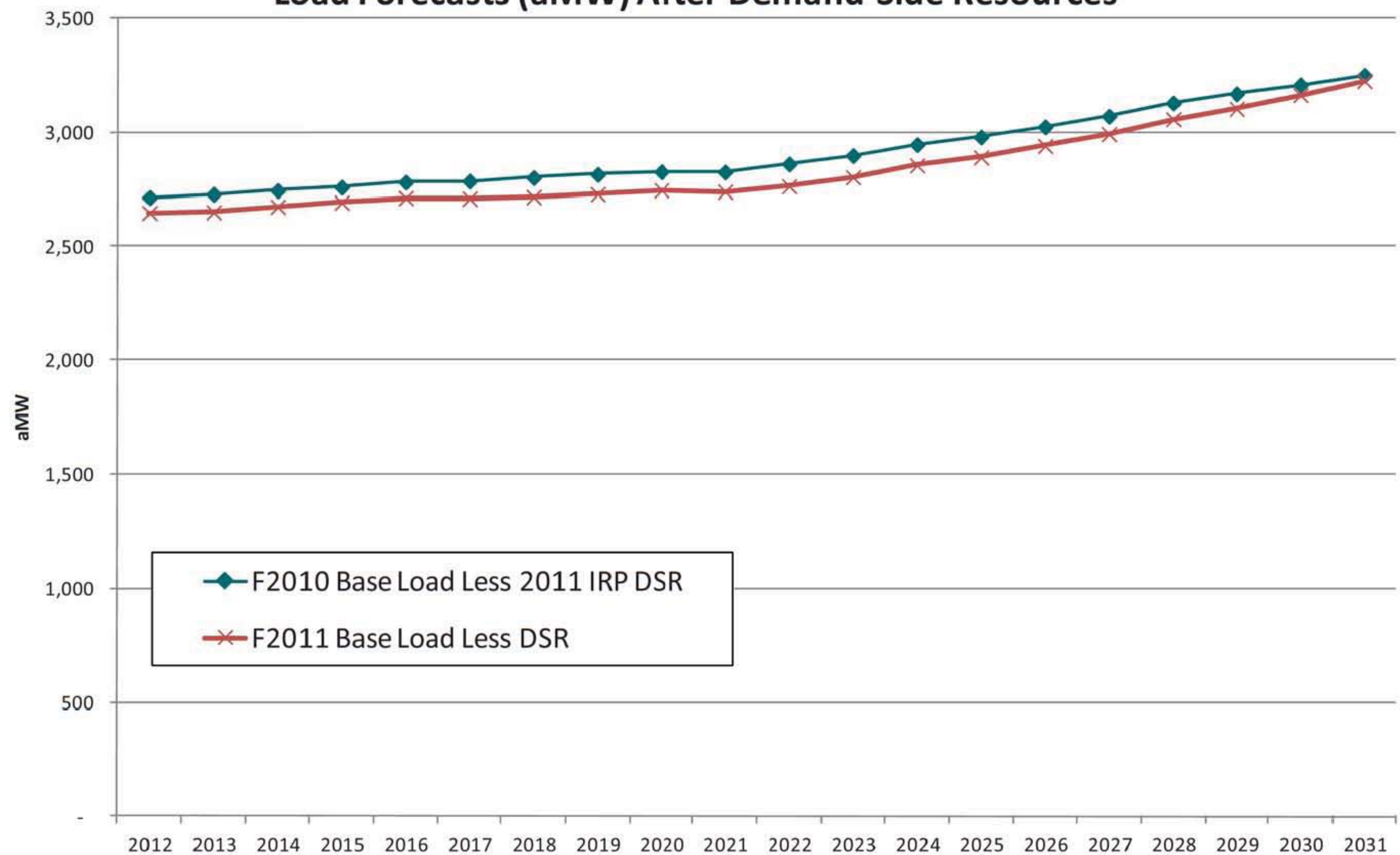
  - Retire Centralia in 2020 and 2025

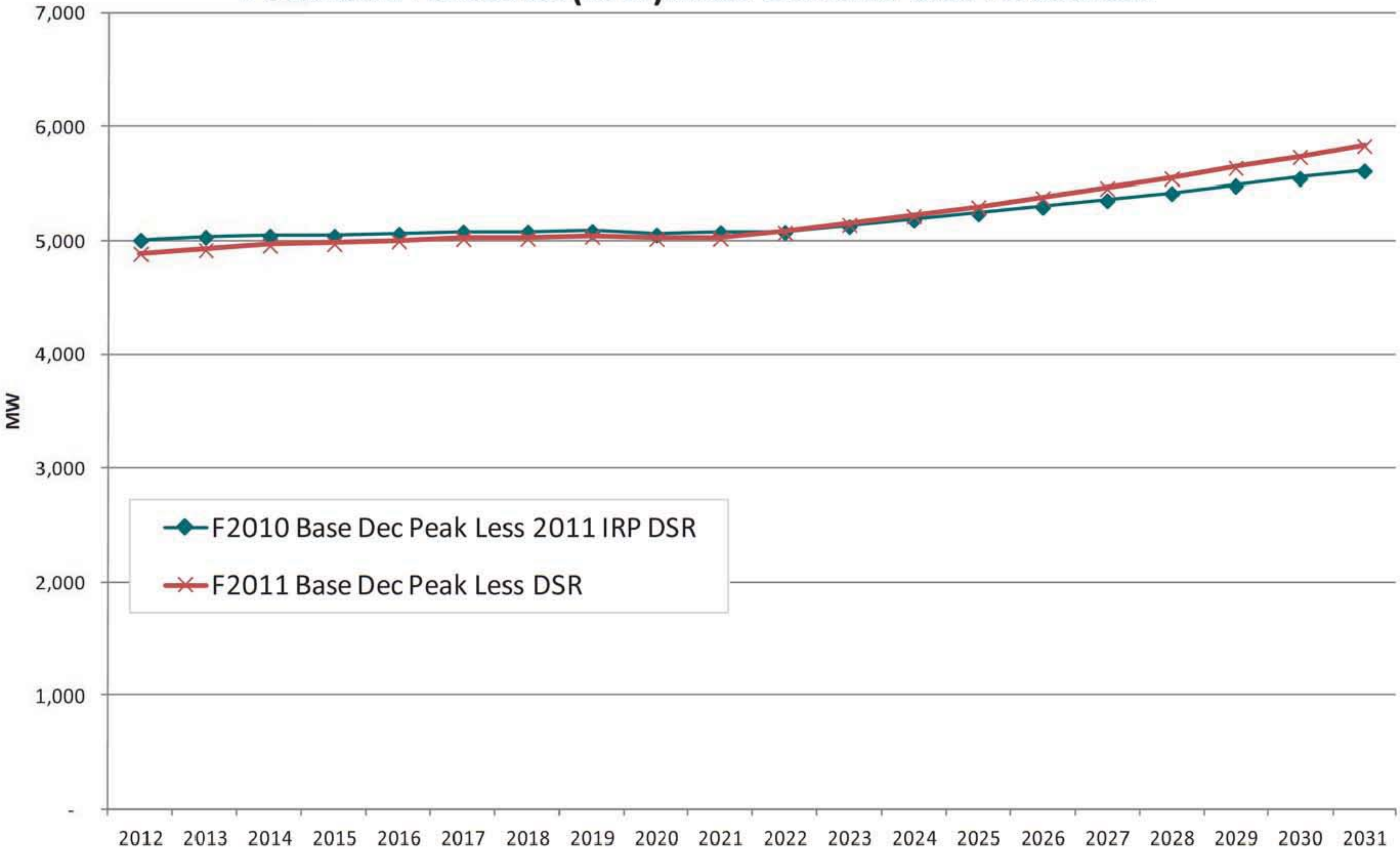
F2011 Load Forecast Slightly Down

Load Forecasts (aMW) After Demand-Side Resources



Normal Peak Load Forecasts (@ 23°F)

Peak Load Forecasts (MW) After Demand-Side Resources



2011 RFP natural gas prices

- Screening - Base
  - 3 month avg. forward prices as of April 12, 2011 (2012-2015) + Wood Mackenzie April 2011 LTV Forecast (2016-2031)
  - 2016 Transition – monthly 2016 prices are the average of 2015 and 2017 monthly prices
  - Same forward mark prices as used in 2011 GRC as-filed
- Optimization and Risk - Base
  - 3 month average forward prices as of November 7, 2011 (2012-2015) + Wood Mackenzie October 2011 LTV Forecast (2016-2031)
  - 2016 Transition – monthly 2016 prices are the average of 2015 & 2017 monthly prices

2011 RFP natural gas prices

- Low & High
  - Starting with the IRP forecasts, calculate the % that the low forecast is lower and the high forecast is higher than the Base
  - The monthly percentage multipliers are based on the rolling 8-year average prices in order to smooth out the price effects of the Alaska Gas Pipeline in the IRP base prices
  - These percentages are then multiplied by the RFP Base price to get the low and the high forecasts

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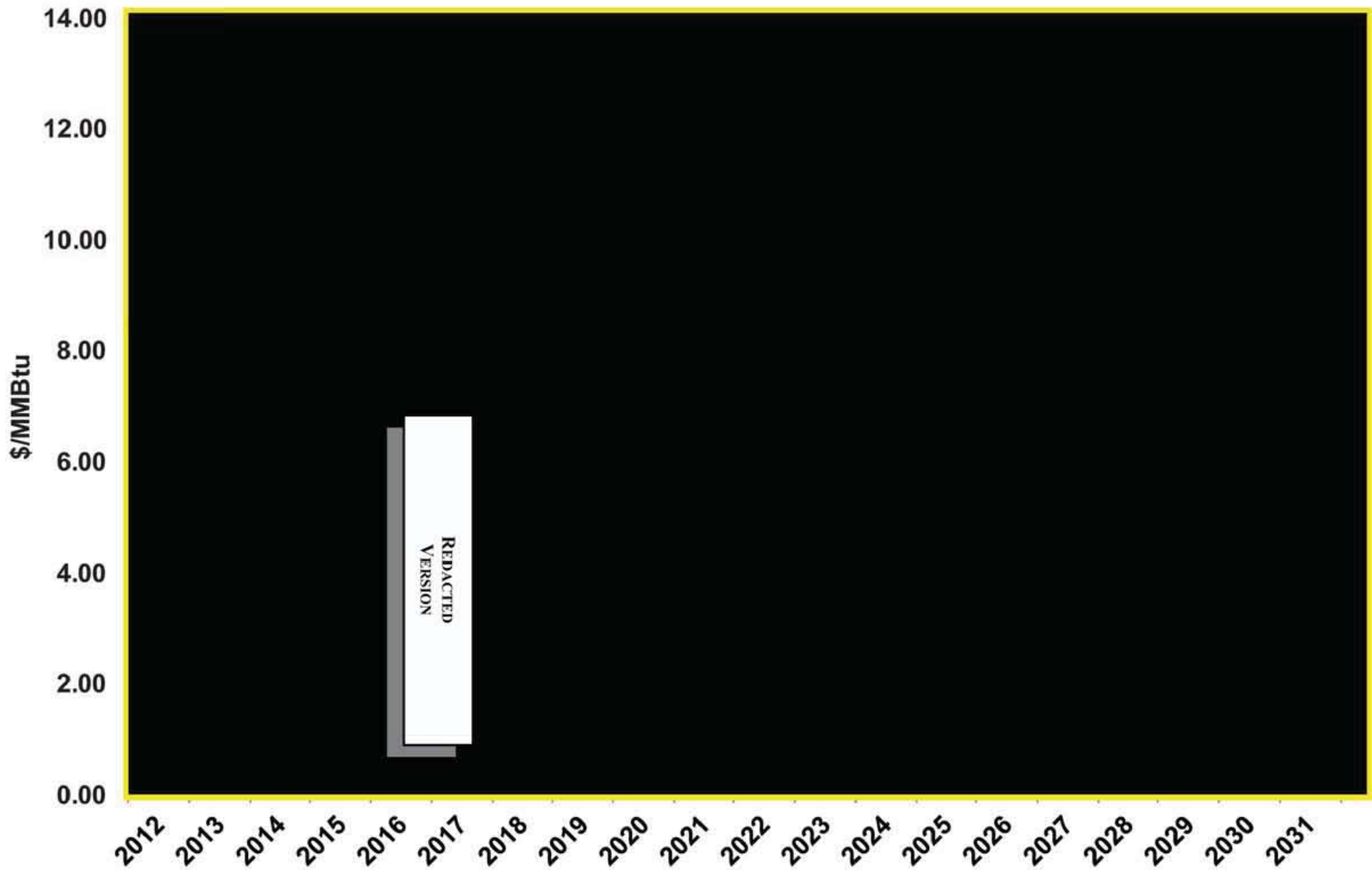
Sumas Gas Price for 2011 RFP

(nominal $/MMBtu)



[redacted]

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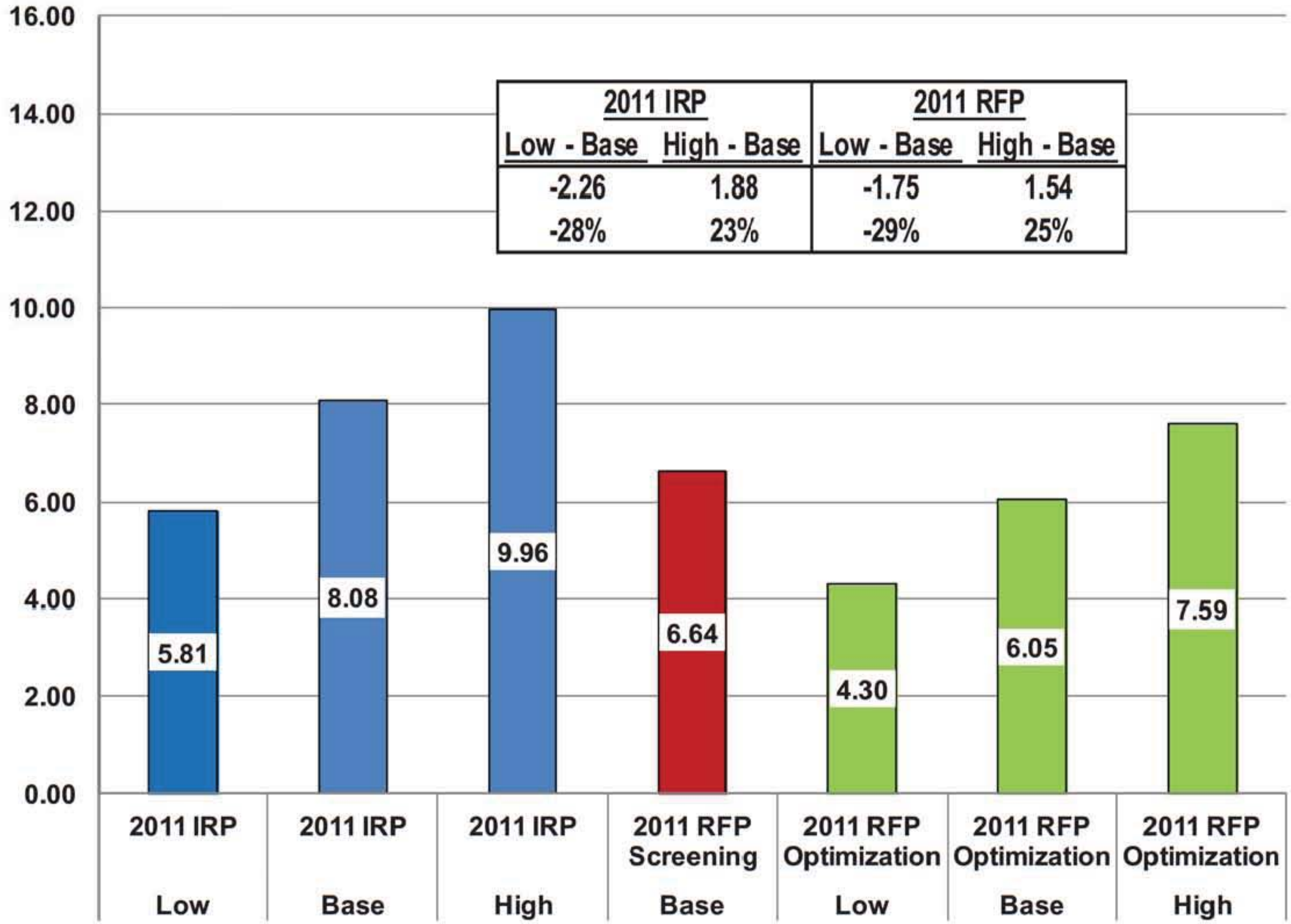
Compare Levelized Sumas Gas Prices

(nominal $)

2011 IRP		2011 RFP	
Low - Base	High - Base	Low - Base	High - Base
-2.26	1.88	-1.75	1.54
-28%	23%	-29%	25%



Comparison of price scenarios

2011 IRP Price Scenarios	20-yr Levelized
Base	$57.46
Low Growth	$41.30
High Growth	$71.42

2011 RFP Phase I Price Scenarios	20-yr Levelized
Base	$52.29

2011 RFP Phase II Price Scenarios	20-yr Levelized
Base	$48.41
Low Growth	$36.43
High Growth	$61.80

Next steps

- Power prices for
  - Base + CO_2
  - Base + No Centralia 2013
- 250 stochastic draws for Base – optimization prices
  - Power prices
  - Sumas gas prices
  - PSE load forecast
  - Hydro generation
  - Wind generation

RFP for All Generation Sources Update

Presented to Washington Utilities and Transportation Commission ("WUTC") Staff

PSE PUGET SOUND ENERGY

Resource Acquisition Team

May 23, 2012

2011 RFP update

- RFP schedule
- Capacity and renewable need
- Products requested
- Phase I screening results
- Phase II optimization, risk and due diligence results
- Draft short list
- Centralia PPA update
- Key quantitative updates
  - Quantitative metrics
  - Model updates

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RFP schedule

August 1, 2011	Draft RFP filed with WUTC
October 13, 2011	WUTC approval
October 17, 2011	Final RFP issued
November 1, 2011	Offers due to PSE
March 15, 2012	"Candidate" short list selected
Late May 2012*	Final short list selected
To follow	Commercial negotiations

**Expected date.*

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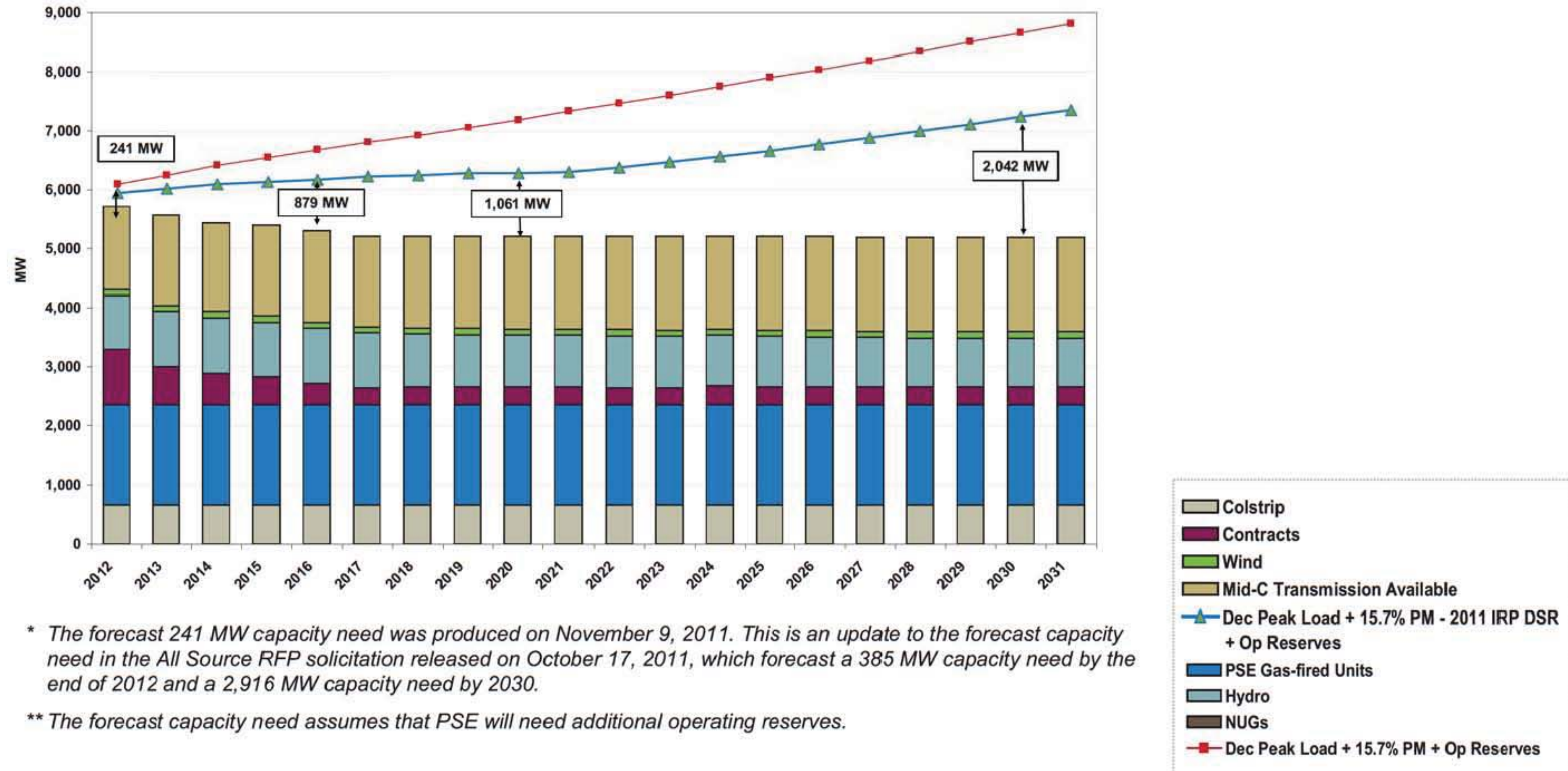
Capacity need forecast*

Unfilled Peak 1-hour Need (December MW) - Net of DSR	2012	2013	2014	2015	2016
Base F2011	241	451	653	730	879
Low F2011	212	403	586	642	770



* *The forecast 241 MW capacity need was produced on November 9, 2011. This is an update to the forecast capacity need in the All Source RFP solicitation released on October 17, 2011, which forecast a 385 MW capacity need by the end of 2012 and a 2,916 MW capacity need by 2030.*

** *The forecast capacity need assumes that PSE will need additional operating reserves.*

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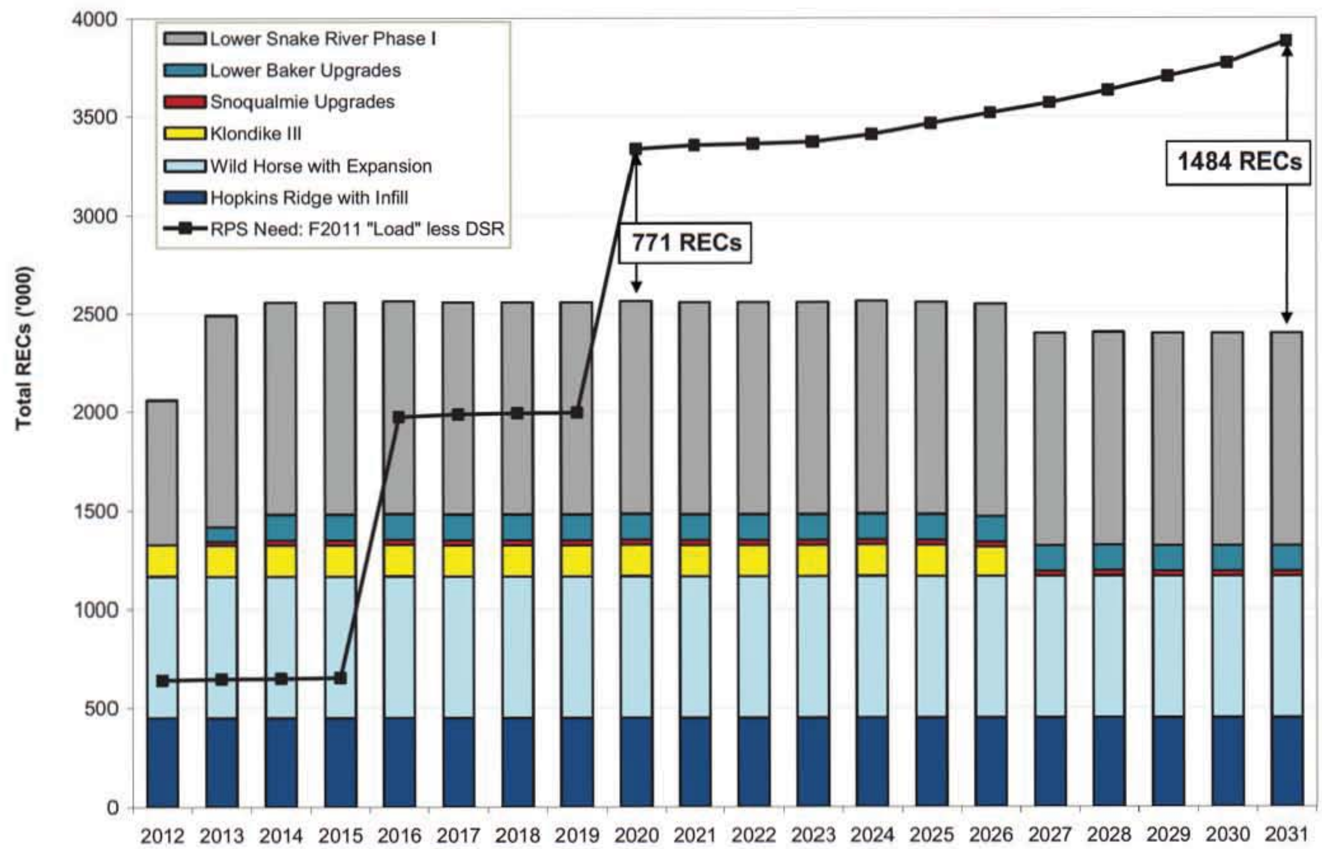
Near-term renewable targets on track to be achieved*



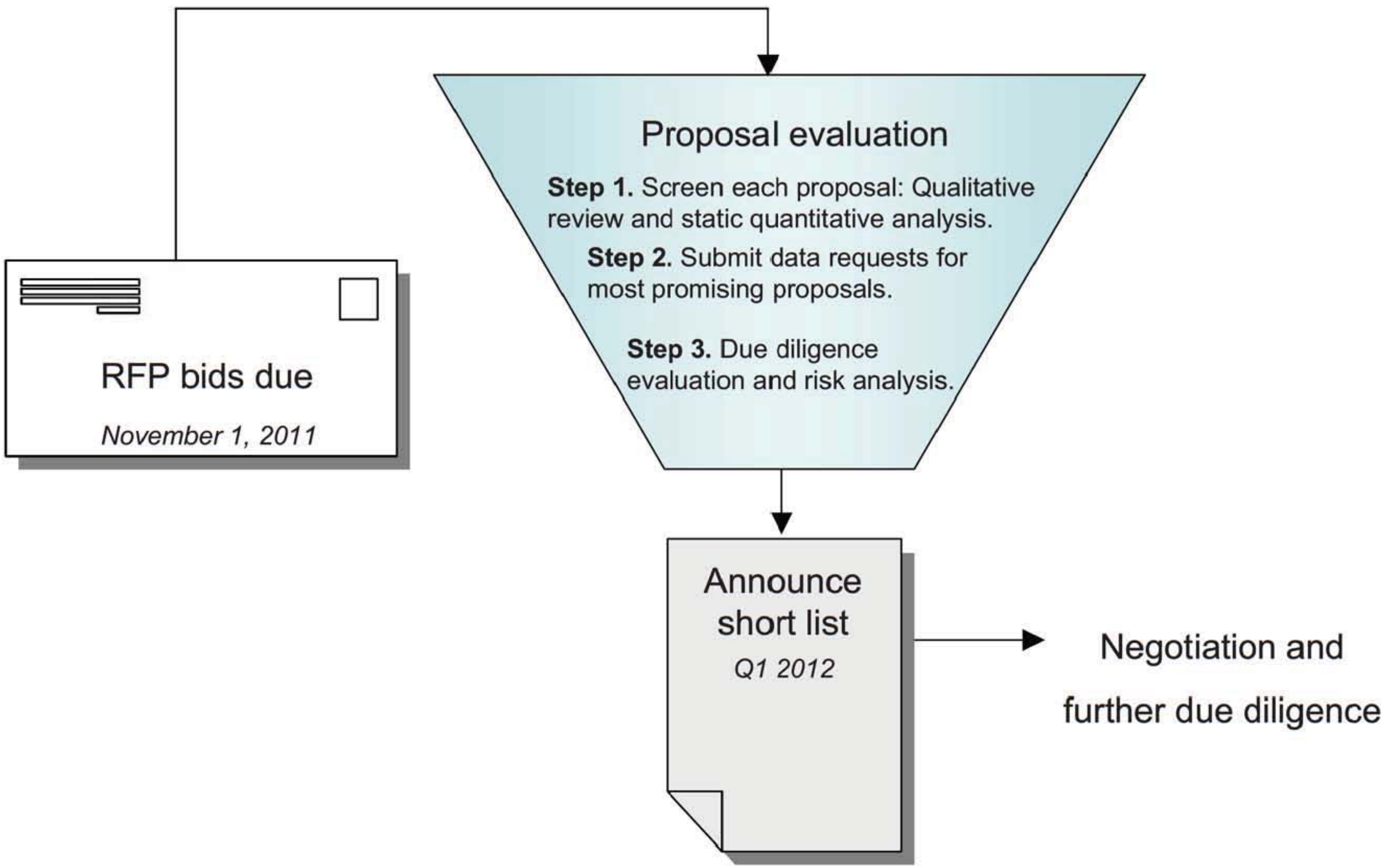
* Renewable energy credit ("REC") banking and sales are not reflected in the chart.

RFP seeks capacity resources to fill near-term need

- Approximately 250 MW capacity delivered to PSE's system on a firm basis by end of 2012. (Revised in April 2012 with draft F2012 load forecast)
- Preference for online or near-term resources. Eligible resources will be online by or before 2015.
- Preference for long-term resources with flexible contract start dates to align with PSE's need.
- Market PPAs should be delivered to BPAT.PSEI to qualify for this RFP.
- Renewable resources that are competitive with capacity resources or market.

* PSE will consider all proposals, although some may contain fatal flaws.

RFP evaluation process



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Phase I: Screening results observations

Capacity Resources

- Over 2,200 MW of operating capacity resources provide positive portfolio benefits.
- Generally <5-year and 10-year fixed price PPAs and non-unit contingent market based PPAs/exchanges have lower net costs and higher portfolio benefits as defined by the quantitative metrics used in the economic evaluation.

Renewable Resources

- An operating wind project and a biomass development project appear competitive from a quantitative basis, but qualitative risks exist.

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Capacity resources quantitative results

Project Name	PPA or Ownership	Project Start	Bool Life / Contract Term	Levelized Cost ($/MWh)	Portfolio Benefit ($000's)	PB / kW-yr ($/kW-yr)	PB / kW-yr Ranking	Net Cost / [redacted]	Net Cost / kW-yr Ranking
[redacted]	Fixed Price	2013	4	[redacted]	42,979	[redacted]	1	[redacted]	1
[redacted]	Fixed Price	2012	10	[redacted]	49,986	[redacted]	2	[redacted]	4
[redacted]	Tolling	2016	1	[redacted]	25,707	[redacted]	3	[redacted]	2
[redacted]	Fixed Price	2013	4	[redacted]	25,329	[redacted]	4	[redacted]	8
[redacted]	Fixed Price	2015	11	[redacted]	31,678	[redacted]	5	[redacted]	6
[redacted]	Fixed Price	2014	25	[redacted]	10,510	[redacted]	6	[redacted]	15
[redacted]	Tolling	2013	5	[redacted]	14,377	[redacted]	7	[redacted]	3
[redacted]	Fixed Price	2013	10	[redacted]	24,595	[redacted]	8	[redacted]	5
[redacted]	Tolling	2013	10	[redacted]	18,957	[redacted]	9	[redacted]	9
[redacted]	Fixed Price	2013	5	[redacted]	10,007	[redacted]	10	[redacted]	10
TransAlta PPA 14 year PPA	Fixed Price	2012	14	[redacted]	65,310	[redacted]	11	[redacted]	12
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	44,462	[redacted]	12	[redacted]	7
[redacted]	Ownership	2014	29	[redacted]	129,569	[redacted]	13	[redacted]	14
[redacted]	Ownership	2015	35	[redacted]	(55,414)	[redacted]	14	[redacted]	16
[redacted]	Fixed Price	2012	13	[redacted]	(202)	[redacted]	15	[redacted]	13
[redacted]	Ownership	2016	35	[redacted]	(110,872)	[redacted]	16	[redacted]	18
[redacted]	Fixed Price	2012	5	[redacted]	(4,062)	[redacted]	17	[redacted]	11
[redacted]	Tolling	2015	21	[redacted]	(238,117)	[redacted]	18	[redacted]	17
[redacted]	Ownership	2016	35	[redacted]	(131,802)	[redacted]	19	[redacted]	19
[redacted]	Tolling	2016	30	[redacted]	(340,910)	[redacted]	20	[redacted]	20
[redacted]	Tolling	2015	21	[redacted]	(146,685)	[redacted]	21	[redacted]	21
[redacted]	Tolling	2014	21	[redacted]	(51,213)	[redacted]	22	[redacted]	22
[redacted]	Fixed Price	2014	20	[redacted]	(45,232)	[redacted]	23	[redacted]	25
[redacted]	Tolling	2014	21	[redacted]	(142,039)	[redacted]	24	[redacted]	23
[redacted]	Ownership	2014	18	[redacted]	(120,596)	[redacted]	25	[redacted]	24
[redacted]	Ownership	2020	35	[redacted]	(95,885)	[redacted]	26	[redacted]	26

Metrics key:

- A lower number is better for “Net Cost/kW-yr” or “Net Cost/REC-yr”, and “Levelized Cost”.
- A higher number is better for “Portfolio Benefit”, “PB/kW-yr” or “PB/REC-yr”, and “Portfolio Benefit Ratio”.
- It is difficult to compare different technologies by “Portfolio Benefit Ratio” and “Levelized Cost”.

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Capacity resources ranked by portfolio benefit ratio

- Portfolio benefit ratio is best comparing similar technology/offer structures

Benefit Ratio Ranking - Fixed Price PPA/Must Take

Project Name	Portfolio Benefit Ratio	Benefit Ratio Ranking
[redacted]	0.36	3
[redacted]	0.20	5
[redacted]	0.18	6
[redacted]	0.87	1
[redacted]	0.08	7
[redacted]	0.58	2
[redacted]	0.31	4
TransAlta PPA 14 year PPA	0.05	8
[redacted]	(0.05)	9
[redacted]	(0.12)	10
[redacted]	(0.23)	11
[redacted]	(0.38)	12

Benefit Ratio Ranking - Baseload Tolling / Ownership

Project Name	Portfolio Benefit Ratio	Benefit Ratio Ranking
[redacted]	0.30	1
[redacted]	0.17	2
[redacted]	0.05	3
[redacted]	(0.06)	4
[redacted]	(0.27)	5
[redacted]	(0.53)	7
[redacted]	(0.33)	6

Benefit Ratio Ranking - Peaking Toll / Ownership

Project Name	Portfolio Benefit Ratio	Benefit Ratio Ranking
[redacted]	2.17	1
[redacted]	(0.11)	3
[redacted]	(0.06)	2
[redacted]	(0.36)	5
[redacted]	(0.32)	4
[redacted]	(0.72)	6
[redacted]	(0.77)	7

Metrics key:

- A lower number is better for “Net Cost/kW-yr” or “Net Cost/REC-yr”, and “Levelized Cost”.
- A higher number is better for “Portfolio Benefit”, “PB/kW-yr” or “PB/REC-yr”, and “Portfolio Benefit Ratio”.
- It is difficult to compare different technologies by “Portfolio Benefit Ratio” and “Levelized Cost”.

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Renewable resources quantitative results

Project Name	PPA or Ownership	Project Start	Bool Life / Contract Term	Levelized Cost ($/MWh)	Portfolio Benefit ($000's)	PB / REC-yr ($/REC-yr)	PB / REC-yr Ranking	Net Cost / REC-yr ($/REC-yr)	Net Cost / REC-yr Ranking
[redacted]	Renewable PPA	2013	25	[redacted]	37,755	[redacted]	1	[redacted]	5
[redacted]	Renewable PPA	2013	20	[redacted]	28,871	[redacted]	2	[redacted]	4
[redacted]	Ownership	2013	23	[redacted]	28,487	[redacted]	3	[redacted]	6
[redacted]	Ownership	2015	25	[redacted]	26,601	[redacted]	4	[redacted]	7
[redacted]	Renewable PPA	2013	15	[redacted]	16,042	[redacted]	5	[redacted]	3
[redacted]	Fixed Price	2016	25	[redacted]	39,326	[redacted]	6	[redacted]	2
[redacted]	Renewable PPA	2014	20	[redacted]	25,705	[redacted]	7	[redacted]	1
[redacted]	Renewable PPA	2015	20	[redacted]	(12,408)	[redacted]	8	[redacted]	9
[redacted]	Renewable PPA	2014	20	[redacted]	(13,487)	[redacted]	9	[redacted]	8
[redacted]	Renewable PPA	2013	21	[redacted]	(17,555)	[redacted]	10	[redacted]	10
[redacted]	Ownership	2013	20	[redacted]	(14,983)	[redacted]	11	[redacted]	12
[redacted]	Renewable PPA	2013	20	[redacted]	(19,369)	[redacted]	12	[redacted]	11

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Benefit Ratio Ranking - Renewable Proposals

Project Name	Portfolio Benefit Ratio	Benefit Ratio Ranking
[redacted]	0.16	3
[redacted]	0.14	4
[redacted]	0.12	5
[redacted]	0.07	7
[redacted]	0.10	6
[redacted]	0.96	1
[redacted]	0.73	2
[redacted]	(0.05)	8
[redacted]	(0.07)	9
[redacted]	(0.42)	11
[redacted]	(0.41)	10

Metrics key:

- A lower number is better for “Net Cost/kW-yr” or “Net Cost/REC-yr”, and “Levelized Cost”.
- A higher number is better for “Portfolio Benefit”, “PB/kW-yr” or “PB/REC-yr”, and “Portfolio Benefit Ratio”.
- It is difficult to compare different technologies by “Portfolio Benefit Ratio” and “Levelized Cost”.

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PSE PUGET SOUND ENERGY

RPS compliant capacity resources

Project Name	PPA or Ownership	Project Start	Bool Life / Contract Term	Levelized Cost ($/MWh)	Portfolio Benefit ($000's)	Portfolio Benefit Ratio	Benefit Ratio Ranking
[redacted]	Fixed Price	2014	25	[redacted]	68,886	0.45	1
[redacted]	Fixed Price	2014	25	[redacted]	39,007	0.27	2
[redacted]	Fixed Price	2012	13	[redacted]	4	0.00	3
[redacted]	Fixed Price	2014	25	[redacted]	(23,534)	(0.08)	4
[redacted]	Fixed Price	2014	20	[redacted]	(27,371)	(0.11)	5
[redacted]	Ownership	2014	25	[redacted]	(47,274)	(0.15)	6

Note: The Net Cost per kW-yr (or per REC-yr) and the Portfolio Benefit per kW-yr (or per REC-yr) are less informative metrics when a project or PPA has both a REC contribution and capacity contribution.

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Metrics Key:

- A lower number is better for "Net Cost/kW-yr" or "Net Cost/REC-yr", and "Levelized Cost".
- A higher number is better for "Portfolio Benefit", "PB/kW-yr" or "PB/REC-yr", and "Portfolio Benefit Ratio".
- It is difficult to compare different technologies by "Portfolio Benefit Ratio" and "Levelized Cost".

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PSE PUGET SOUND ENERGY

Proposal offers identified for further evaluation

Proposal / Counterparty	Size (MW)	Term	Offer(s) selected	Portfolio Benefit / kW-yr	Key Risks and Benefits
[redacted] (#11112)	[redacted]	[redacted]	[redacted]	[redacted] kW-yr	▪ Positive economic benefits ▪ No current transmission solution to PSE system due to congested [redacted] further evaluation required
[redacted] (#11124)	[redacted]	[redacted]	[redacted]	[redacted] kW-yr	▪ Positive economic benefits and no development risk ▪ Firm capacity [redacted] may help maintain grid stability [redacted] ▪ Known counterparty; low execution risk ▪ Terms related to operation of plant require further discussion with counterparty ▪ As proposed, replacement power due to unplanned outages will be supplied at Mid-C. Further negotiations required to mitigate cost/risk.
[redacted] (#11117)	[redacted]	[redacted]	[redacted]	[redacted] kW-yr	▪ Positive economic benefits and no development risk ▪ [redacted] counterparty experience has been positive; [redacted] ▪ Transmission solution to PSE's system appears likely
[redacted] (#11110)	[redacted]	[redacted]	[redacted]	[redacted] kW-yr	▪ Positive economic benefits ▪ Proposed terms very similar to previously negotiated terms; known counterparty and low execution risk ▪ Firm transmission to PSE's system
[redacted] (#11123)	[redacted]	[redacted]	[redacted]	[redacted] kW-yr	▪ Positive economic benefits; 10-yr exchange offers the greatest economic benefit ▪ Transmission solution uncertain [redacted] further evaluation required ▪ Potential benefits associated with operational flexibility

REDACTED VERSION

Many of the RFP proposals contained multiple offers. The evaluation summary tables show results for the best-ranked offer from each proposal selected for further evaluation.

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PUGET SOUND ENERGY

Proposal offers identified for further evaluation

REDACTED VERSION

Proposal / Counterparty	Size (MW)	Term	Offer(s) selected	Portfolio Benefit / kW-yr	Key Risks and Benefits
[redacted] (#11116)	[redacted]	[redacted]	[redacted]	[redacted] kW-yr	▪ Positive economic benefits ▪ The [redacted] and substantial infrastructure already in place; existing air and wastewater permits ▪ Execution risk; counterparty has many development projects but few existing resources with contracts ▪ Transmission costs uncertain [redacted] ▪ Renewable risk due to [redacted] ▪ Fuel cost variability passed on to PSE
[redacted] (#11117)	[redacted]	[redacted]	[redacted]	[redacted] kW-yr	▪ Positive economic benefits and no development risk ▪ Positive experience with counterparty; low execution risk ▪ No firm transmission solution at this time; requires further consideration
Centralia TransAlta (#11102)	Up to 500	1/1/12 – 12/31/25	▪ 14-yr coal PPA ▪ 14-yr coal PPA + gas plant own	[redacted] kW-yr	▪ Long-term flat firm power delivered to PSE's system ▪ Positive economic benefits and no development risk ▪ Coal transition power qualifies for WUTC pre-approval and equity return on PPA ▪ Proposed contract terms are inconsistent with PSE's standard terms; counterparty seems willing to negotiate
[redacted] (#11118)	[redacted]	[redacted]	[redacted]	[redacted] kW-yr	[redacted]

Many of the RFP proposals contained multiple offers. The evaluation summary tables show results for the best-ranked offer from each proposal selected for further evaluation.

Proposal offers identified for further evaluation

Proposal / Counterparty	Size (MW)	Term	Offer(s) selected	Portfolio Benefit / kW-yr	Key Risks and Benefits
[redacted] (#11103)	[redacted]			[redacted]yr	▪ Positive economic benefits. [redacted] ▪ Helps PSE meet a large and growing capacity need. ▪ Condition of equipment [redacted] ▪ Not offered with firm transmission, but solution appears likely
[redacted] (#11127)				TBD[1]	▪ No price originally proposed; but will offer a price in response to guidance from PSE on preferred structures ▪ [redacted] can offer many options and provide resource flexibility to meet PSE's needs ▪ Transmission uncertain ▪ Offer states power is delivered to PSE's system; solution uncertain; requires further evaluation
[redacted] (#11113)				n/a[2]	▪ Top ranked among renewable resources by portfolio benefit ▪ Positive economic benefits and no development risk ▪ Appears to have a transmission solution ▪ Community reaction to project requires further evaluation ▪ Technology risk associated with [redacted] turbines requires further due diligence ▪ PSE has met near-term renewable requirements; potential regulatory risk

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[1] No price proposed. Powerex will propose a price once PSE identifies its preferred offer structure(s).

[2] The Portfolio Benefit/kW-yr is a less informative metric for PPA offers with both a REC contribution and a capacity contribution. The Portfolio Benefit/kW-yr value shown for the Port Townsend Biomass proposal (previous slide) is for a capacity-only option. The evaluation summary tables do not include a Portfolio Benefit/kW-yr value for either the Kittitas Valley Wind Project or the Port Townsend Biomass offer that includes RECs. More detailed quantitative findings for these and all other proposals are included in the quantitative results tables provided in the appendix.

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Proposal offers identified for further evaluation

(Detailed summary in appendix)

- 12 of 29 proposals received evaluate favorably from qualitative and quantitative perspective.

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Counterparty	Project Name	Offer	Term (yrs)	MW
[redacted]	[redacted]	Firm energy	4	[redacted]
[redacted]	[redacted]	Firm energy	10	[redacted]
[redacted]	[redacted]	PPA Extension	5	[redacted]
[redacted]	[redacted]	Firm energy	4	[redacted]
[redacted]	[redacted]	Firm / Peak / Exchange	10	[redacted]
[redacted]	[redacted]	Project PPA	25	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
TransAlta	Centralia	PPA	14	up to 500
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	Own / Tolling	15	[redacted]
[redacted]	[redacted]	Firm / Peak / Call / Exchange	5 / 10	[redacted]
[redacted]	[redacted]	Own / PPA	15 / 20 / 25	[redacted]

1 [redacted]

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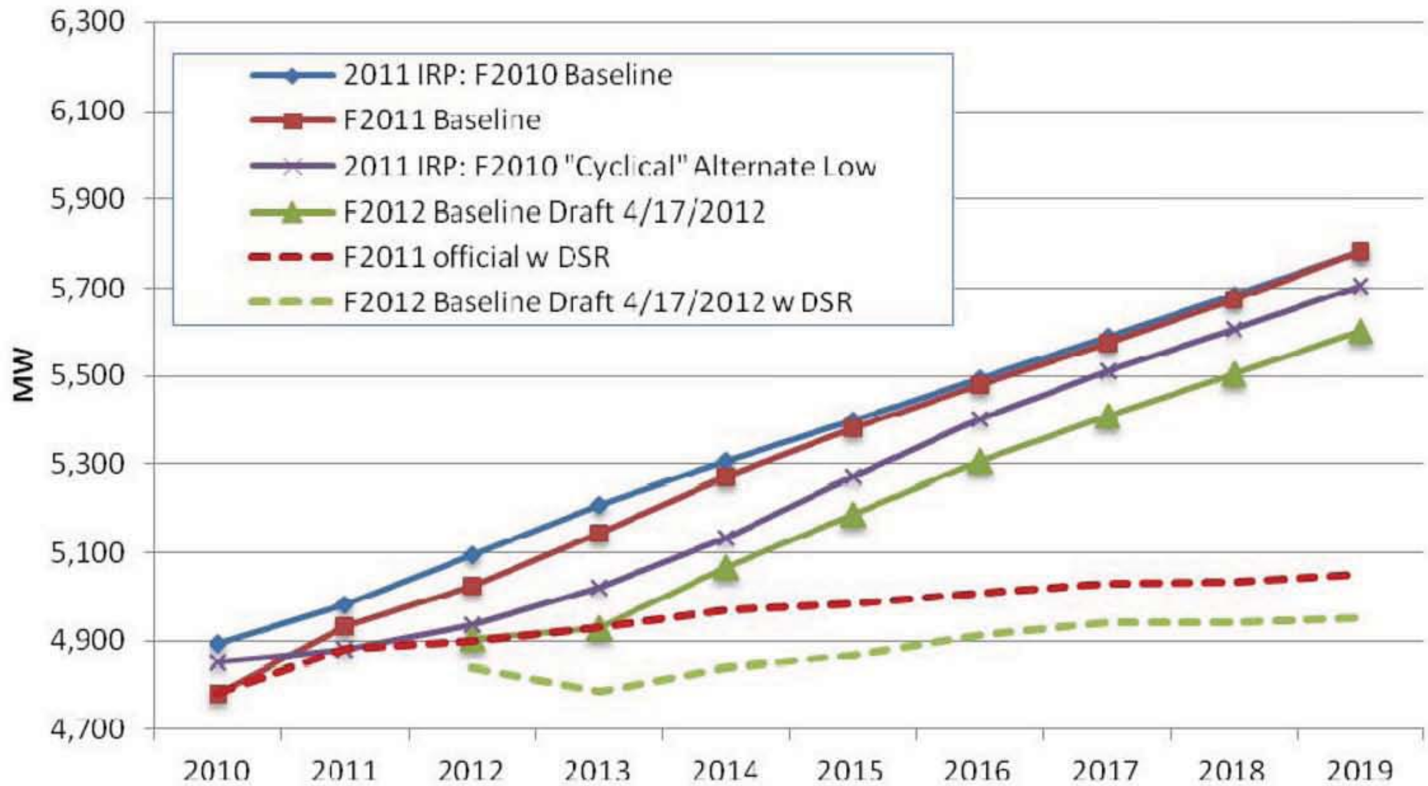
Next steps

- Perform due diligence, and scenario optimization and risk analysis
- Submit additional data requests as needed
- Continue qualitative due diligence
- Continue to discuss preferred commercial terms with counterparties

Phase II analysis

- Review key assumptions
- Qualitative analysis
- Quantitative analysis
- Draft short list

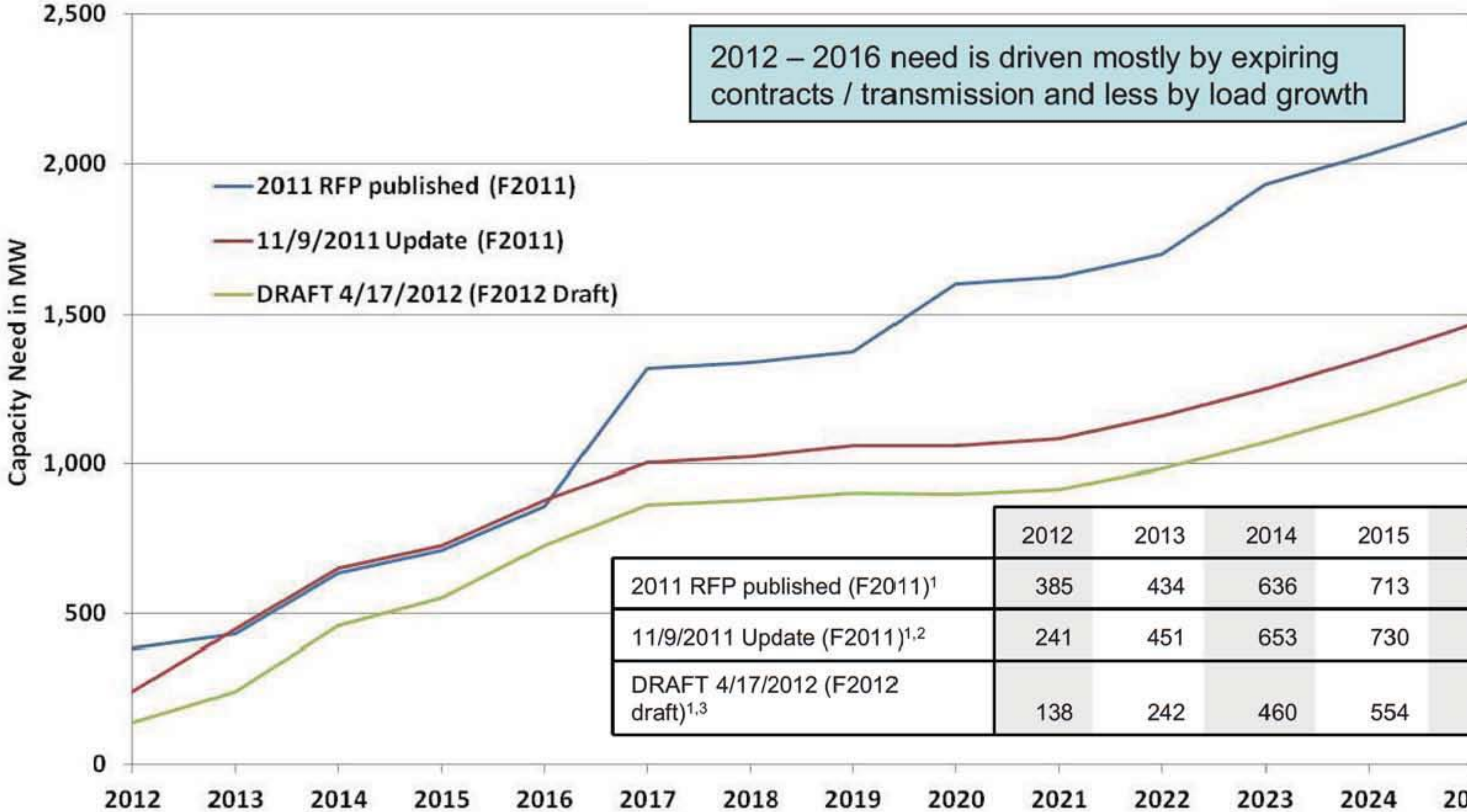
Comparison of December peak load forecasts



WUTC staff comments 2011 IRP acceptance letter: *"Due to the prolonged recession, we find the 2010-2016 portion of the Low Cyclical forecast as plausible, and urge the Company to give adequate weight to this forecast as it acquires additional resources during this time period."*

Note: F2012 baseline reflects loss of Jefferson County April 2013

2011 RFP updates to capacity need



	2012	2013	2014	2015	2016	2017
2011 RFP published (F2011)[1]	385	434	636	713	862	1,317
11/9/2011 Update (F2011)[1,2]	241	451	653	730	879	1,005
DRAFT 4/17/2012 (F2012 draft)[1,3]	138	242	460	554	728	866

Notes:
1. *Capacity need reflects need for additional operating reserves in new resources are on PSE's system*
2. *Update to need reflects addition of short-term hedges, no existing gas plant retirements, line loss update (presented to EMC on 12/15/2011 and 3/15/2012)*
3. *F2012 reflects loss of Jefferson County on 4/2013, updates of existing gas plant contribution to peak*

2011 RFP price scenarios

	WECC Demand	PSE Demand	Gas Price	Generic Resource Costs	Emissions Price
Base Case	Base	Base	Base	Base	None
Base + CO2	Base	Base	Base	Base	EPA APA Analysis
Base + New Gas*	Base	Base	New Gas	Base	None
High Prices	High	Base	High	Base	None
Low Growth	Low	Low Structural	Low	Base	None

*Base + New Gas: New gas prices as of April 2012

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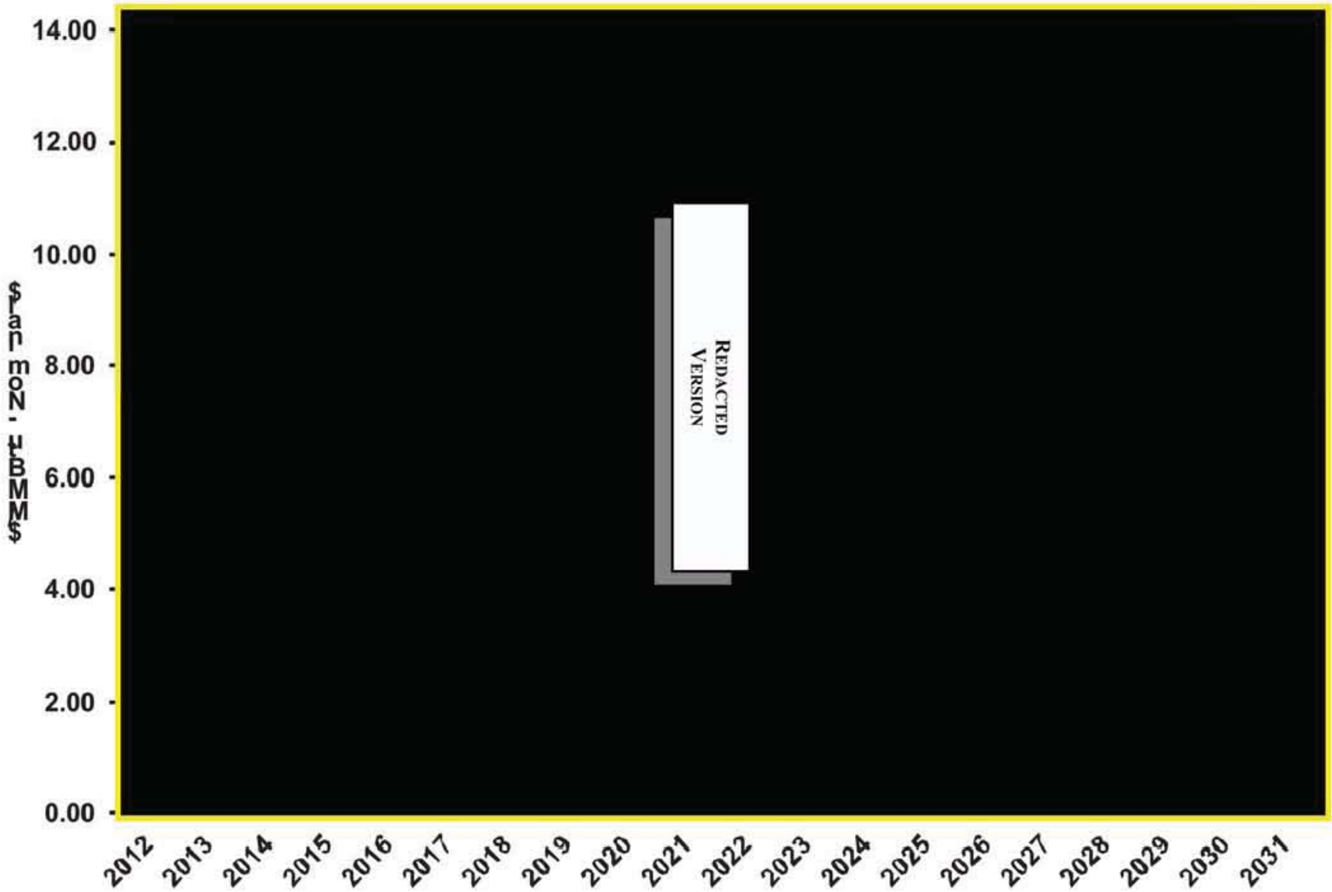
Comparison of Sumas Hub gas price forecasts



[redacted]

Over the shorter term, the relatively warm 2011-12 winter in North America reduced gas demand and diverted gas to storage reducing prices for the summer and upcoming winter.

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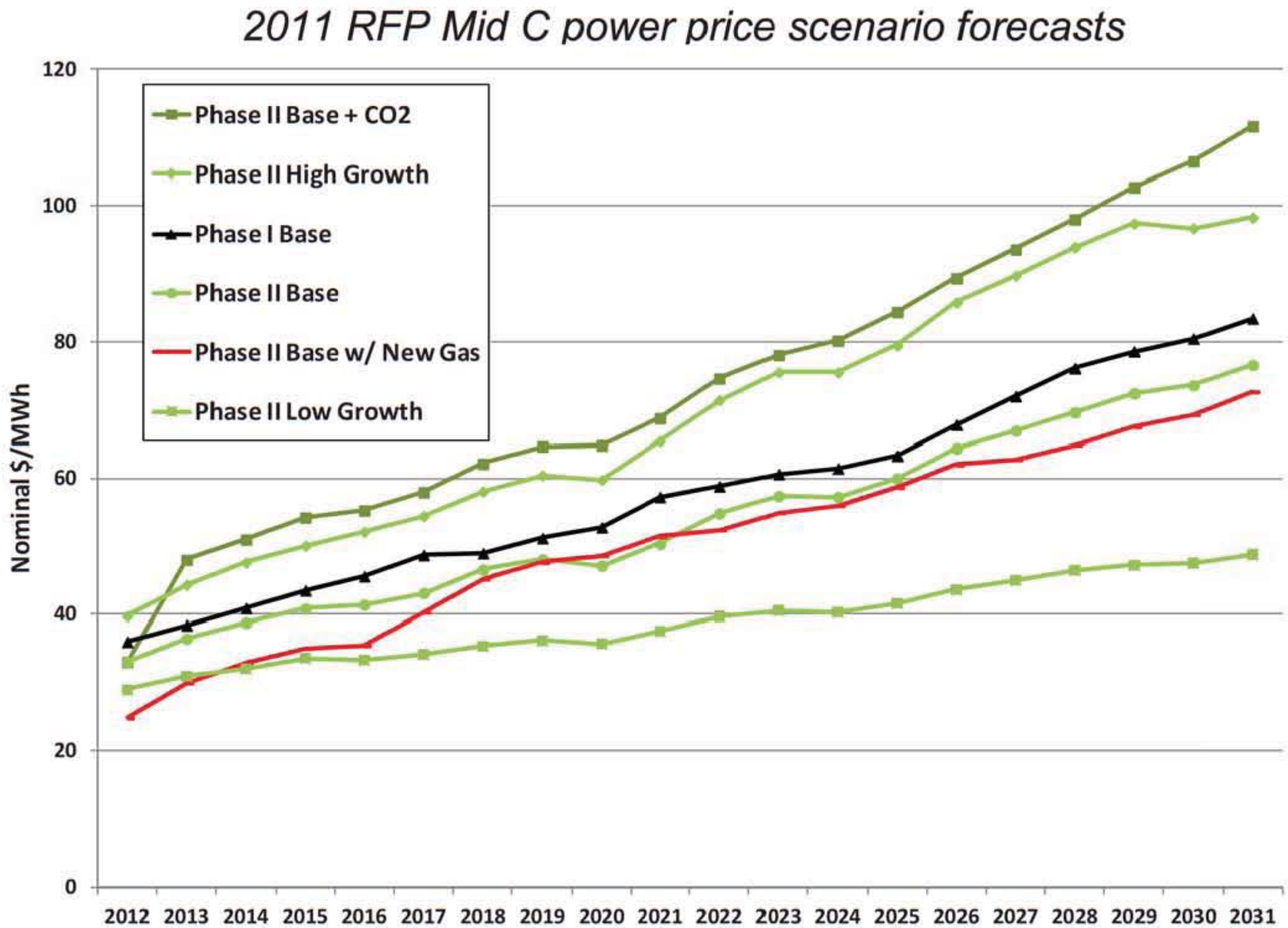
2011 RFP electric prices



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PSE PUGET SOUND ENERGY

Key factors considered for RFP short list selection

- PSE's draft F2012 load forecast
- Drop in near-term natural gas prices
- Ability of RFP offers to obtain transmission solutions
- PSE's current renewable surplus limiting renewable need until 2020 or later
- Requirements to meet Washington Emissions Performance Standard (RCW 80.80)

Phase II proposals eliminated prior to completing quantitative analysis[1]

Proposal	Rationale
[redacted]	Uncertain transmission solution; change in control risk; [redacted] limits flexibility
	No transmission solution
	No near-term renewable need; community issues
	No near-term renewable need; development risk; counterparty risk

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[1] [redacted] withdrew its offer of a market PPA during Phase II. It was not included in the quantitative analysis.

[2] Counterparty recently expressed interest in discussing terms and indicated they may potentially have additional transmission capacity.

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Individual project ranking in Base with new gas price scenario (Draft)

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Project Name	PPA or Ownership	Project Start	Portfolio Benefit	PB / kW	PB / kW Ranking	Net Cost / kW	Net Cost / kW Ranking
[redacted]	Tolling	2016	$ 29,977	[redacted]	1	[redacted]	1
Centralia PPA	Fixed Price	2012	$ 209,309	[redacted]	2	[redacted]	5
[redacted]	Fixed Price	2016	$ 14,303	[redacted]	3	[redacted]	3
[redacted]	Fixed Price	2014	$ 13,114	[redacted]	4	[redacted]	2
[redacted]	Fixed Price	2012	$ 11,288	[redacted]	5	[redacted]	6
[redacted]	[redacted]	[redacted]	$ 30,582	[redacted]	6	[redacted]	4
Self Build Peaker [redacted]	Ownership	2015	$ 13,828	[redacted]	7	[redacted]	9
[redacted]	Ownership	2014	$ 10,035	[redacted]	8	[redacted]	10
[redacted]	Fixed Price	2014	$ (1,465)	[redacted]	9	[redacted]	8
[redacted]	Fixed Price	2013	$ (6,125)	[redacted]	10	[redacted]	7

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Metrics key:

- A lower number is better for "Net Cost/kW-yr".
- A higher number is better for "Portfolio Benefit" and "PB/kW-yr".

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Optimization results (Draft)

- Selection in more scenarios is considered more favorable

Optimization Results Summary

Scenario	Base	Base + CO2	Base w/ New Gas	High Prices	Low Growth	Selected in X of 5 Scenarios
[redacted]						0
PSE Self Build Peaker					X	1
[redacted]	X	X		X	X	4
[redacted]		X	X			2
Centralia	X	X	X	X		4
[redacted]				X		1
					X	1
	X		X			2
					X	1
	X	X	X	X		4

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PUGET SOUND ENERGY

Qualitative assessment (Draft)

DRAFT for discussion purposes; subject to change based on final findings

Candidate Short List Proposals	Cost Minimization	Compatibility with Resource Need	Risk Management	Public Benefits	Strategic & Financial	Key Advantage (+) or Disadvantage (-)
Centralia, PPA **(#11102)** *TransAlta*	+	+	O	+	+	+ Ability to fit need exactly; Long-term supply; Supports State policy; Enhances company value
[redacted] (#11112)	+	-	-	O	O	- No firm transmission; short-term supply
[redacted] **(#11118)**	+	+	O	O	O	+ [redacted]
[redacted] **(#11103)**	-	-	O	O	+	- High cost; capacity need (2016)
[redacted] (#11113)	O	-	O	-	O	- Renewable need (2020); Community issues
[redacted] **(#11117)**	+	O	-	O	O	- Change in control risk; Y2016 resource
[redacted] (#11117)	O	-	-	O	O	- Change in control risk; Transmission does not match operational flexibility
[redacted] **(#11126)**	+	+	?	O	O	+/- Flexible products; however, uncertain of value for long-term; Ties up transmission at [redacted]
[redacted] **(#11116)**	-	O	-	O	O	- High cost for capacity; Development, counterparty & fuel risk
[redacted] (#11127)	?	+	?	O	O	- Price unknown
[redacted] (#11110)	+	O	-	O	O	-Short-term supply
[redacted] **(#11124)**	+	+	O	+	O	+ Asset-backed fixed price; Long-term Supply; System benefits; QF

KEY:

+	A key advantage relative to other candidate short list proposals
-	A key disadvantage relative to other candidate short list proposals
O	Neither a key advantage or disadvantage relative to other candidate short list proposals

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Preliminary short list outlook

RFP evaluation indicates that Centralia should be pursued first because

- Centralia fills immediate and longer term need while not exceeding it
- Opportunity to pursue TransAlta may be lost if delayed

	2012	2013	2014	2015	2016	2017	2018	2019	2020
Capacity (Deficit) / Surplus in MW:	(129)	(226)	(430)	(517)	(681)	(809)	(824)	(846)	(841)
Centralia PPA Capacity:	[redacted]								
[redacted]									
[redacted]									
Remaining Capacity (Deficit) / Surplus in MW:									

Note: Capacity need does not reflect need for additional operating reserves when new resources are on PSE's system. [redacted] capacity as shown is reduced by PSE's operating reserve requirement for this resource addition.

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RFP next steps

- Issue final short list to EMC and notify bidders
- Negotiate agreements with short list
- Re-evaluate updates as needed
- Seek EMC approval of any resource acquisitions
- Seek Board approval, if required, of any resource acquisitions
- Seek cost recovery as appropriate

TransAlta Centralia Generation, LLC

- Located in Lewis County, Washington
- Centralia Coal Plant is Washington State's largest baseload power source—generates 10% of Washington's power
- Coal fuel supply delivered by train from the Powder River Basin in the U.S. Midwest
- Capacity: 1340 MW
- On-line date: 1971
- 100% owned & operated by TransAlta

TransAlta Corporation

- Canada's largest publicly traded wholesale power generator & marketer with over 100 years of operating experience
- Over 8,000 MW positioned in Canada, Western U.S. and Australia
- Listed on Toronto and New York stock exchanges

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History of events (Centralia key dates)

Date	Event
Apr. 26 2010	Memorandum of Understanding ("MOU") between TransAlta and the state of Washington executed
Nov. 2010	TransAlta initiated discussions with PSE for a potential purchased power agreement ("PPA")
Apr. 2011	State Legislature passed Engrossed Second Substitute Senate Bill 5769 ("E2SSB')
Aug. 1, 2011	PSE filed draft Request for Proposals ("RFP")
Oct. 17, 2011	Utilitites and Transportation Commission ("UTC") approved draft RFP; PSE filed final RFP
Nov. 1, 2011	RFP bids were due to PSE
Dec. 23, 2011	Memorandum of Agreement ("MOA") between TransAlta and the state of Washington executed
Apr. 2012	PSE updates capacity need forecast (lower draft load forecast)
Late May 2012*	PSE issues short list
Jun. 2012*	EMC and BOD receive recommendation to enter into Centralia PPA
Jun. 2012*	Seek pre-approval and cost recovery
Dec. 31, 2012	Annual payments set forth in MOA begin, if TransAlta has secured a long-term contract

** Expected timing*

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Coal Transition Power Purchase & Sale Agreement

Seller:
- TransAlta Centralia Generation, LLC

Product:
- Firm, flat (7x24) electrical energy delivered to the Point of Delivery

Term:
- Dec 1, 2012 – Dec 31, 2025

Source:
- Centralia Transition Coal Facility (CTCF) [redacted]

Point of Delivery:
- Centralia [redacted]

Quantity:
- 125 MWh/hr; Dec 1, 2012 – Nov 30, 2013
- 225 MWh/hr; Dec 1, 2013 – Nov 30, 2014
- 425 MWh/hr; Dec 1, 2014 – Nov 30, 2015
- 498 MWh/hr; Dec 1, 2015 – Dec 31, 2022
- 400 MWh/hr; Jan 1, 2023 – Dec 31, 2024
- 300 MWh/hr; Jan 1, 2025 – Dec 31, 2025

Price:
- [redacted]/ MWh; Dec 1, 2012 – Nov 30, 2014
- [redacted]/ MWh*; Dec 1, 2014 – Nov 30, 2020
- [redacted]/ MWh*; Dec 1, 2020 – Dec 31, 2025

Termination:
[redacted]

*escalates @[redacted]per year

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PUGET SOUND ENERGY

Quantitative update

- Key updates since IRP
  - End effects
  - REC banking
- Additional metrics

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Appendix

- Key updates from the 2011 IRP
- Metrics

End effects update

- Old method: Created a terminal value at the end of the 20 year planning horizon and brought the value into the study period. The terminal cost was calculated based on remaining book cost less cash flows. Cash flows are the market revenues less fixed and variable operating costs.

- New Method: Uses a terminal value plus levelized unit replacement costs through 2065. The terminal value is calculated slightly differently based on revenue requirements less market revenues. Unit replacement costs are added as a levelized cost for the replacement plant.

Why update end effects?

- Rationale
  - Short term resources that expire or retire during the first 20 year planning horizon are replaced by generic resources, while long term resources that expire or retire in end effects are not replaced by generic resources
  - Creates bias toward long-term resources
- Impact
  - Effectively makes all generic replacement resources end in the same year and have equivalent lives
  - Removes any bias toward longer term resources
  - De minimis impact when comparing only long term resources that expired or retired in end effects period

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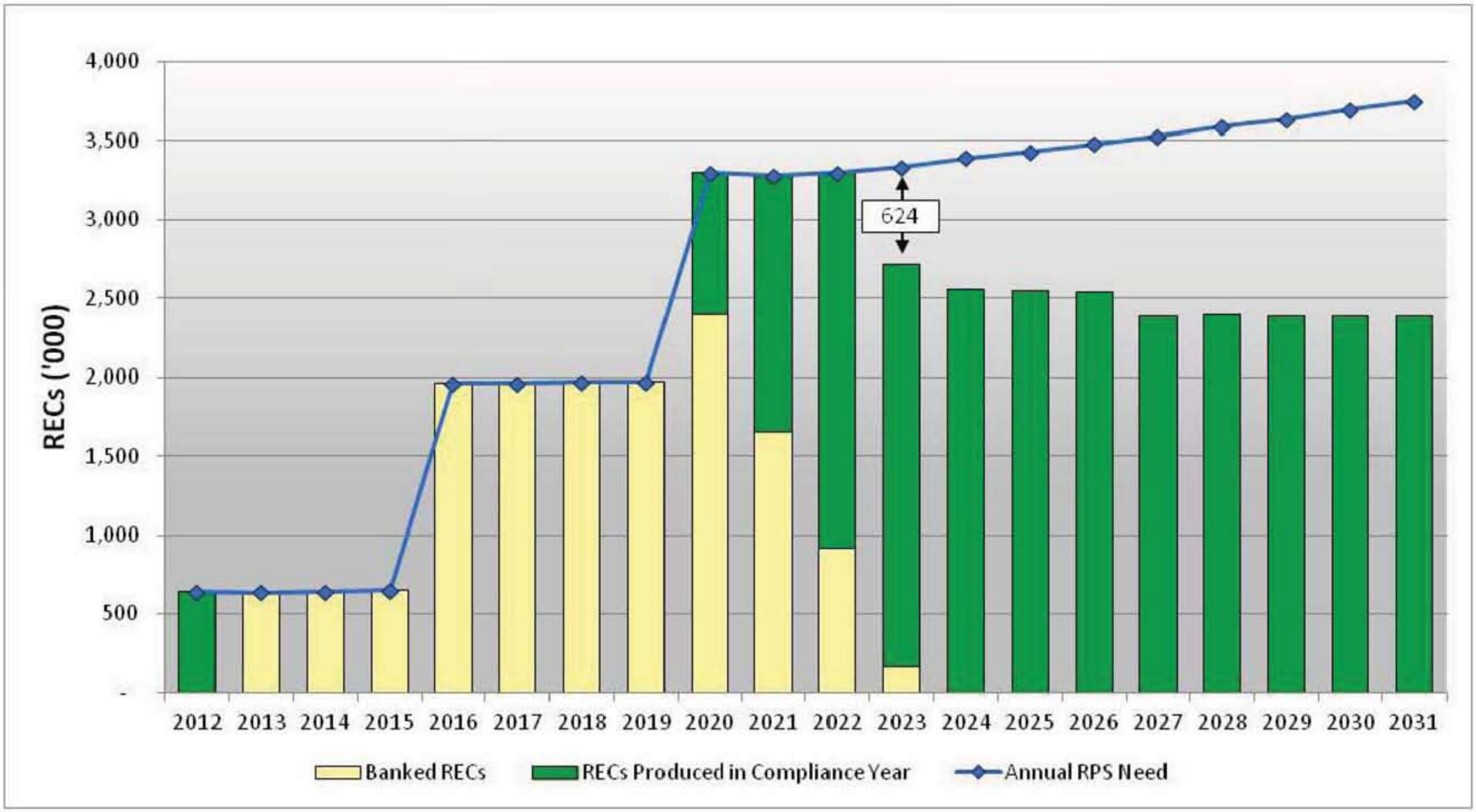
REC banking in RFP Phase II

- Phase II evaluation includes banking of RECs from existing resources -- estimated based on P50 generation
- RECs produced from apprentice labor multiplier credits are not bifurcated from underlying REC; i.e. can only be banked with the underlying REC
- Non-REC eligible generation such as hydro efficiency upgrades are not banked
- RECs not used for compliance in the year they are created, or banked for future year's use are sold at voluntary market price.

Impact of banking existing RECs on RPS need



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Appendix

- Key updates from the 2011 IRP
- Metrics

Screening metrics – application and changes

- Used by resource acquisition team to analyze alternatives meeting PSE's resource needs
  - to compare and rank resource alternatives relative to each other
  - to help identify the combination of resources that is lowest cost
- With PSE's change in focus from an energy need to a capacity need, the team has identified new metrics for the 2011 RFP.

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Goal of new screening metrics

- Accounts for projects of different sizes and levels of market revenue generation.
- New metrics may evaluate projects more similarly to how the portfolio optimization model operates.

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Additional quantitative screening metrics

Levelized net cost per unit of contribution to need ($/kW)

Levelized portfolio benefit per unit of contribution to need ($PB/kW)

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Original quantitative screening metrics

Portfolio Benefit ($) - ***difference*** between the net present value ***portfolio revenue requirement*** of a ***proposed project***, ***and*** the net present value ***portfolio revenue requirement*** of the ***generic portfolio strategy***.

Levelized Cost ($/MWh) - level annual revenue requirement equivalent to the net present value ***revenue requirement*** based on a 20-year analytic period ***divided by*** the level annual generation equivalent to the net present value of ***generation*** for the same 20 year period.

Portfolio Benefit Ratio - ***portfolio benefit divided by*** the present value of the proposed ***project revenue requirement.***

Net cost per unit of contribution to need *

- ***Net cost per unit of contribution to need*** is the **difference** between the **project revenue requirement** and the **market revenue** of the project's net generation **divided by** the **capacity contribution**.

- If a renewable project is being considered, then the numerator shown below is **divided by** its annual contribution to PSE's **renewable energy target.**

- **Net cost per unit of contribution to need ($/kW) =**

$$\frac{\text{PV (Revenue Requirement (\$))} - \text{PV (Market Revenue (\$))}}{\text{PV (Contribution to Need (kW or REC))}}$$

*calculated on a levelized basis

Portfolio benefit per unit of contribution to capacity need*

- ***Portfolio benefit per unit of contribution to capacity need* ($PB/kW)** is the project's **portfolio benefit divided by** the present value of the project's **capacity contribution**.

- If a renewable project is being considered, then the numerator shown below is **divided by** its annual contribution to PSE's **renewable energy target.**

- ***Portfolio benefit* per unit of contribution to need ($PB/kW)** =

$$\frac{\text{Portfolio Benefit (\$)}}{\text{PV(Contribution to Need (kW or REC))}}$$

*calculated on a levelized basis

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Appendix

Phase I results and proposal summary

DRAFT - PRELIMINARY

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Proposal status from screening*

ID	Project	Owner/Developer	State	Type	MW Nameplate	Status	DRAFT selection status* (3/7/12)
11102	Centralia	TransAlta	[redacted]	Coal own, 14-yr PPA, or coal PPA + CCCT own	500	Operating	Selected for further evaluation
11112	[redacted]	[redacted]	n/a	[redacted]	[redacted]	Operating	Selected for further evaluation
11118	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Selected for further evaluation
11103	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Operating	Selected for further evaluation
11113	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Operating	Selected for futher evaluation
11117	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Operating	Selected for futher evaluation
11126	[redacted]	[redacted]	n/a	[redacted]	[redacted]	Operating	Selected for further evaluation
11116	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Selected for further evaluation
11127	[redacted]	[redacted]	n/a	[redacted]	[redacted]	Operating	Selected for further evaluation
11110	[redacted]	[redacted]	n/a	[redacted]	[redacted]	Operating	Selected for further evaluation
11124	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Operating	Selected for further evaluation
11123	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not selected for further evaluation
11114	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not selected for further evaluation
11107	[redacted]	[redacted]	n/a	[redacted]	[redacted]	n/a	Not selected for further evaluation
11125	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not selected for further evaluation
11115	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not selected for further evaluation
11121	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not selected for further evaluation
11105	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not selected for further evaluation
11122	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not selected for further evaluation
11101	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not selected for further evaluation
11106	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not selected for further evaluation
11111	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not selected for further evaluation
11104	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not selected for further evaluation
11120	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not selected for further evaluation
Unsolicited	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not selected for further evaluation
11108	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not selected for further evaluation
11109	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not selected for further evaluation
Unsolicited	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Operating	Not selected for further evaluation
11119	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Development	Not selected for further evaluation

REDACTED VERSION

HIGHLY CONFIDENTIAL PER WAC 480-07-160

** PSE has not completed the RFP evaluation process. The selection status above represents screening results only, and does not represent a final short list. Such short list will be selected after PSE completes its qualitative review and optimization analyses of the selected resources.*

Appendix

Phase II results

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Additional screening metrics for individual project evaluations (Draft)

- Base with New Gas Price Scenario

Benefit Ratio Ranking - Toll PPA/Dispatchable Ownership

Project Name	Portfolio Benefit Ratio	Benefit Ratio Ranking	Levelized Cost
[redacted]	2.49	1	[redacted]
[redacted]	0.18	2	
Self Build Peake[redacted]	0.05	3	
[redacted]	0.00	4	

Benefit Ratio Ranking - Fixed/Index Price PPA

Project Name	Portfolio Benefit Ratio	Benefit Ratio Ranking	Levelized Cost
[redacted]	0.27	1	[redacted]
	0.24	2	
	0.13	3	
	0.05	4	
	(0.03)	5	
	(0.08)	6	
	(0.48)	7	

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Appendix

Evaluation criteria and models

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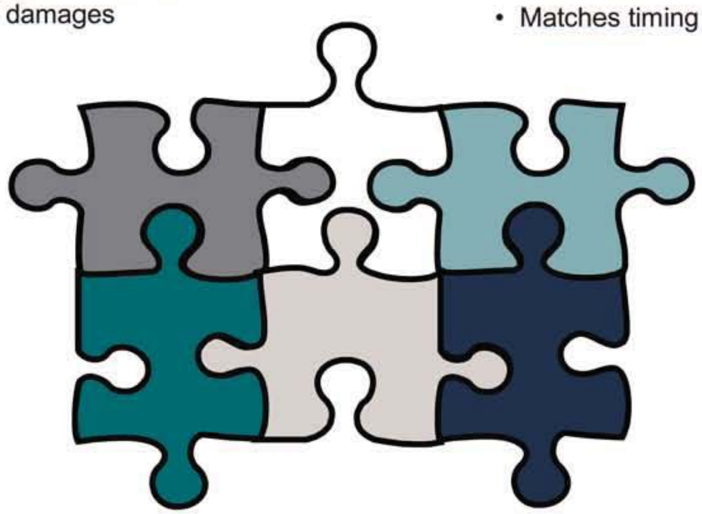
Evaluation criteria – Identify proposals with lowest reasonable cost and risk

<u>Strategic and financial</u>

- Offer viability: project and respondent's ability to deliver
- Appropriate credit support or liquidated damages offered by bidder
- No PSE credit support required

<u>Compatibility with resource need</u>

- Can be shaped to match PSE's need (gas) or resource shape matches PSE's need (wind)
- Firm delivery of capacity and energy to PSE's system.
- Matches timing of resource need; flexibility



<u>Public benefits</u>

- Economic benefit to the community
- Local support for the project
- Low environmental impact

<u>Cost minimization</u>

- Lower/ lowest portfolio revenue requirement while meeting capacity and RPS need

<u>Risk management</u>

- Commercially-proven technology with long-term reliability
- Reduces PSE's risk exposure to changes in power prices, environmental policies, fuel prices, hydro generation, etc.

See Exhibit A of the 2011 All Source RFP for complete evaluation criteria.

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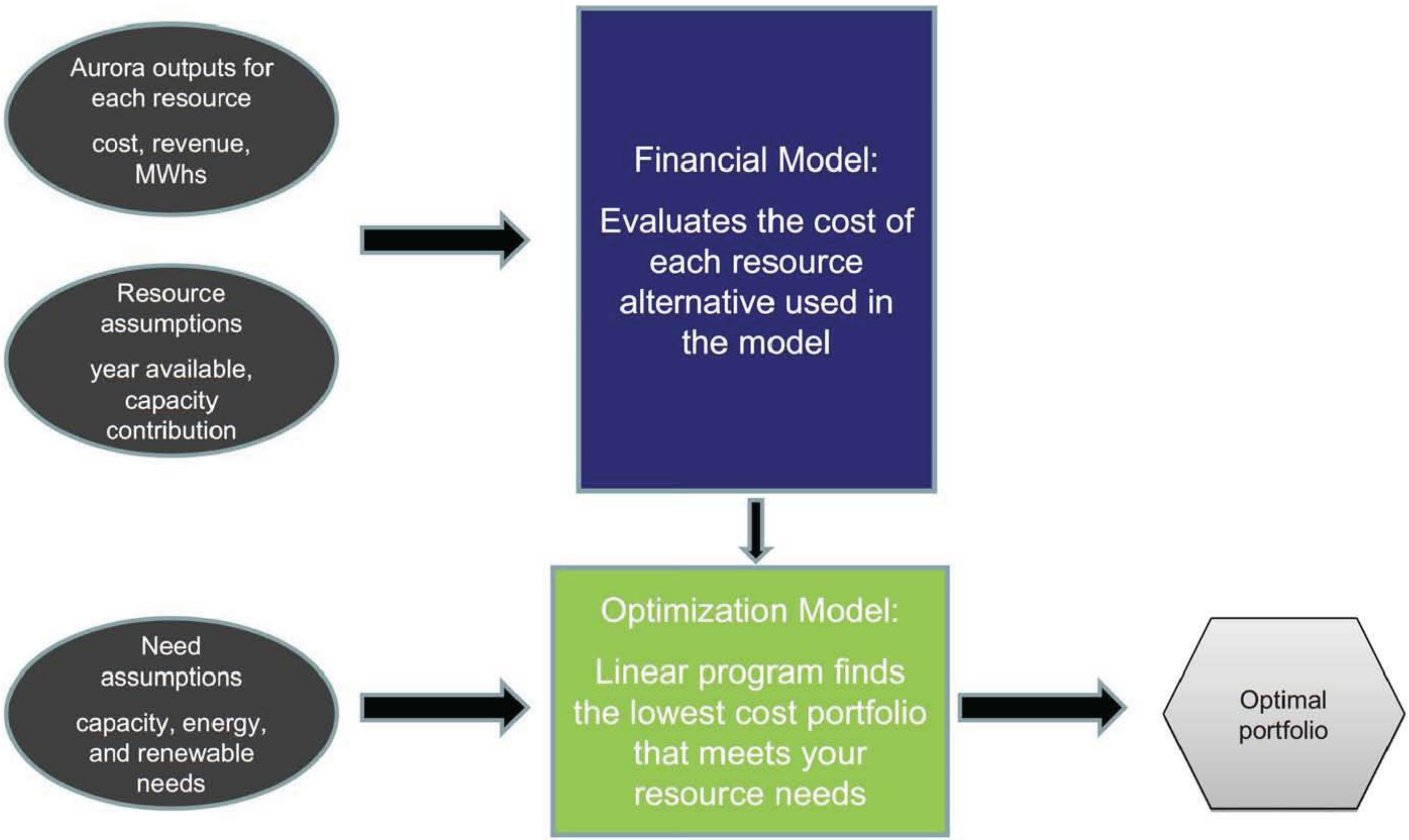
PSE PUGET SOUND ENERGY

PSM III optimization process: Step 3



Quantitative screening metrics definitions

- **Portfolio Benefit** ($): difference between the net present value portfolio revenue requirement of a proposed project, and the net present value portfolio revenue requirement of the generic portfolio strategy. (Higher is better.)

- **Levelized Cost** ($/MWh): level annual revenue requirement equivalent to the net present value revenue requirement based on a 20-year analytic period including end effects divided by the level annual generation equivalent to the net present value of generation for the 20 year period. (Lower is better.)

- **Portfolio Benefit Ratio:** *portfolio benefit* divided by the present value of the proposed project revenue requirement. (Higher is better.)

- **Net cost per unit of contribution to need** ($/kW-yr): difference between the project revenue requirement and the market revenue of the project's net generation divided by the capacity contribution. If a renewable project is being considered, then the numerator is divided by its annual contribution to PSE's renewable energy target. (Lower is better.)

- **Levelized *portfolio benefit* per unit of contribution to need** ($PB/kW-yr): a project's *portfolio benefit* divided by the present value of the project's capacity contribution. If a renewable project is being considered, then the numerator is divided by its annual contribution to PSE's renewable energy target. (Higher is better.)