

**EXHIBIT NO. ___(AS-5HC)
DOCKET NOS. UE-111048/UG-111049
2011 PSE GENERAL RATE CASE
WITNESS: ALIZA SEELIG**

**BEFORE THE
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION**

**WASHINGTON UTILITIES AND
TRANSPORTATION COMMISSION,**

Complainant,

v.

PUGET SOUND ENERGY, INC.,

Respondent.

**Docket No. UE-111048
Docket No. UG-111049**

**FIRST EXHIBIT (HIGHLY CONFIDENTIAL) TO THE
PREFILED REBUTTAL TESTIMONY OF
ALIZA SEELIG
ON BEHALF OF PUGET SOUND ENERGY, INC.**

**REDACTED
VERSION**

JANUARY 17, 2012

Addendum Summary

This addendum describes additional analyses initiated on April 22, 2010 that was not completed in time either for the April EMC meeting or for the Board documents on Lower Snake River Wind Project that were posted and sent to Board members on April 22. First, the addendum analysis evaluates the capacity of wind energy that would be cost effectively acquired before the end of 2012, even if the federal incentives of Treasury Grant and PTC were extended for any project with on line dates January 1, 2016 or January 1, 2020. The analysis is based on optimization results from the PSM III model. Second, the addendum presents updates made to the PSM III model that the quantitative team decided to make to improve the robustness of the linear optimization model, which also led to the discovery of some minor data errors and opportunities to improve logic.

Federal Incentive Sensitivity Analysis

Results of the addendum analysis indicate that LSRWP and [REDACTED] wind projects would be selected even if the federal incentives were extended. We conclude that LSRWP and [REDACTED] PPA are less costly than other alternatives and less costly than generic wind projects built just in time to meet the RPS standard (9% of load in 2016 and 15% of load in 2020).

PSM III 13.9			
Proposed Wind Projects	Trends 2010	Trends 2010 (ITC 2016)	Trends 2010 (ITC 2020)
LSRWP Phase I	X	X	X
[REDACTED]	X	X	X
[REDACTED]	X		
[REDACTED]	X		
RECs from Wind Acquisition	2,062,531	1,423,402	1,423,402
Equivalent MW Wind 30% CF	785	542	542

Considering all renewable resource builds, figure 1 displays the renewable builds with the current federal incentives. In comparison, Figure 2 displays the renewable builds if the federal incentives are extended for projects with on line dates through January 1, 2020. In both of these scenarios, LSR is an important resource to satisfy the 2016 need for renewable resources. As described above, it is cost-effective to bring resources on-line now even if the tax incentives are extended until 2020.

Addendum
 LSRWP Appendix M – Development Plan

Figure 1. PSM III- Renewable builds with current federal incentives

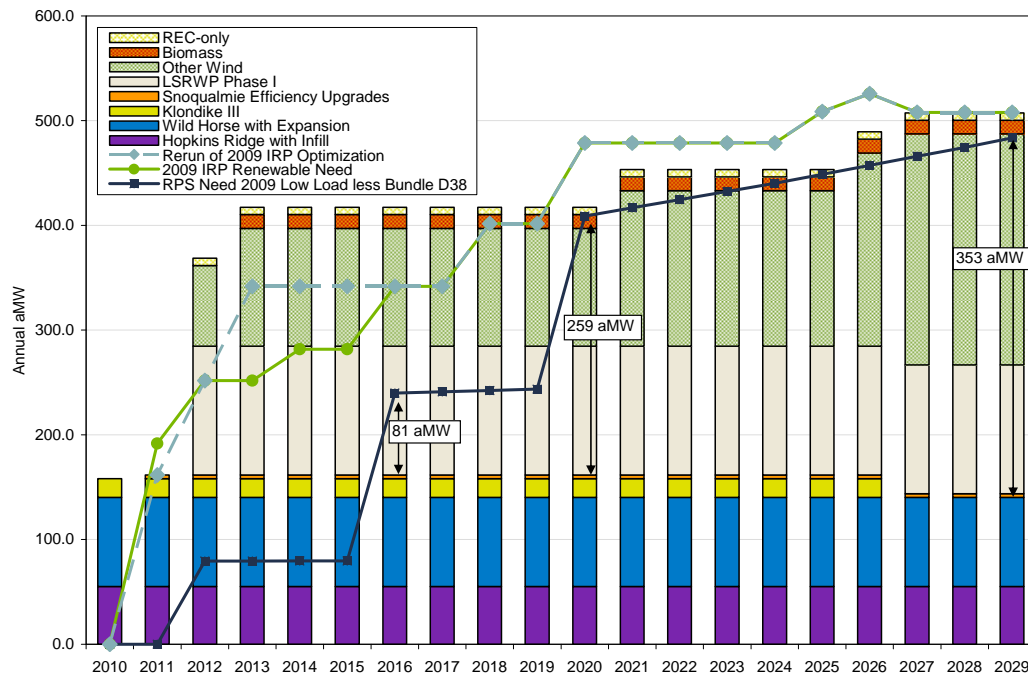
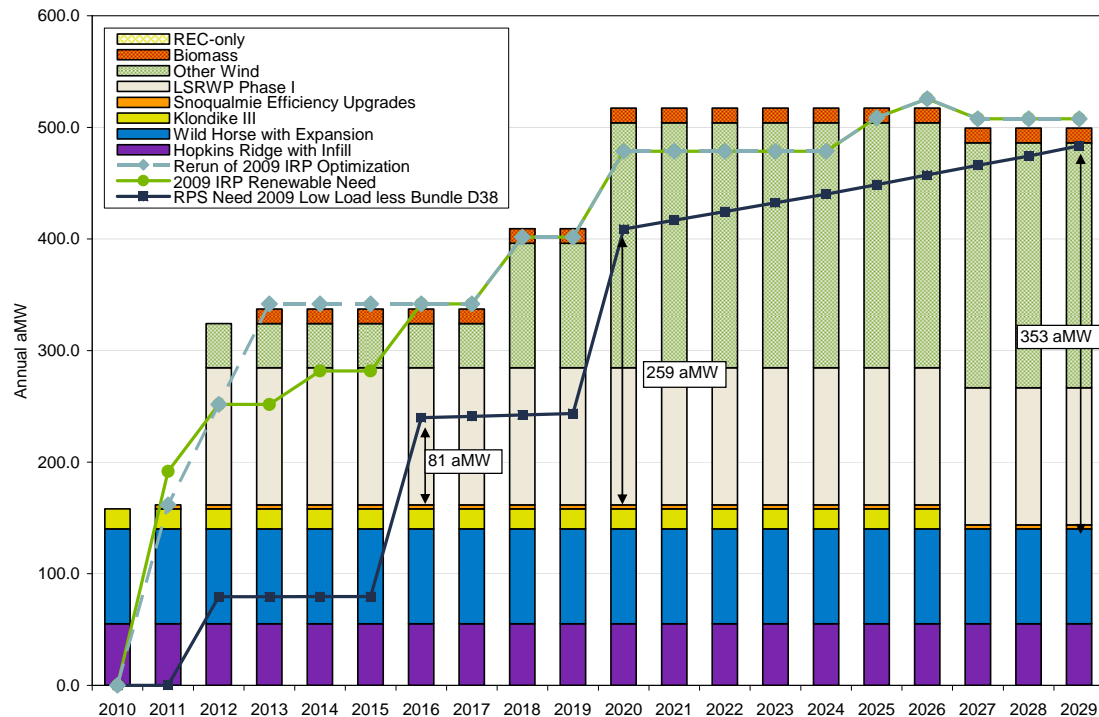


Figure 2. PSM III- Renewable builds with federal incentives extended for projects with on line dates through Jan 1, 2020.



Background

In Appendix M to the LSRWP Board Package, PSE discussed four modeling approaches that helped to quantify the capacity of wind energy that would be cost effective to acquire before the end of 2012. The fourth approach was the portfolio analysis work done to analyze wind proposals for the 2010 RFP. PSE’s Portfolio Screening Model III, used to conduct its Request for Proposals (RFP) Phase II analysis, indicates that it is cost effective to acquire renewable generation earlier than needed to meet the RPS targets, shown in Figure 1. The five future scenarios discussed in the LSR Board Exhibits (is Exhibits plural or possessive?) Comparative Analysis (Exhibit N) and Development Plan (Exhibit M) output an optimal REC potential of 132 MW to 987 MW of equivalent wind assuming a standardized 30% capacity factor.

Original Exhibit M	Scenario Optimizations				
	Proposed Wind Projects	Trends 2010	BAU	GW	LG
LSRWP Phase I	X	X	X		X
██████████	X	X	X	X	X
██████████████████	X	X	X		X
██████████			X		
██████████	X		X		
RECs from Wind Acquisition	2,283,884	1,954,858	2,593,988	346,265	1,954,858
Equivalent MW Wind 30% CF	869	744	987	132	744

Updates to PSM III v 13.6

The addendum analysis started using PSM III v13.6 which was the optimization model used to prepare the Board Documents. In the process of reviewing the model for incentive extension, we discovered several data and logic issues. The corrections made in PSM III are as follows:

PSM III 13.6 Hand testing found more optimal solutions (lower overall portfolio cost) with ██████████ being selected instead of ██████ in some scenarios. Identified the problem as related to non linear if functions imbedded in the spreadsheet logic.

PSM III 13.7 Analysts reviewing draft runs with extension of federal incentives discovered two data errors in PSM III v 13.6.

Corrected Wind Acquisition end effects to include input variable costs. The result was to reduce the end effect benefits of ██████████ and

LSRWP. This was not an error in the PSM used for RFP Phase 1 screening. The leveled costs and portfolio benefits were correct.

Also corrected LSRWP production payment for proper cost escalation; the AURORA data was entered incorrectly. This is also not a problem in RFP Phase 1 analysis.

PSM III 13.8 In an attempt to improve the optimization logic, analysts removed if functions affecting Acquisition inputs of Wind Acquisition and Wind PPA. Logic was replicated without using if statements.

PSM III 13.9 Continued to remove unnecessary if functions. The following are the sections where unnecessary if statements affecting Acquisitions were removed: book depreciation on tax basis, depreciation factor table, calculation of tax depreciation on capital additions, PTC calculations in income statements. Also removed if functions that made values equal to zero if they were beyond the model end date for production payments, transmission (gas and electric), VOM, FOM, insurance and other, and property tax.

Updated the End Effects calculation to use escalation with inflation rather than using a trend function that tended to exaggerate the relative difference between market prices and costs.

The change in the end effects reduced long-term revenues for resources that run significantly beyond the model time horizon. One impact of this change was the model selected more generic simple cycle gas turbines, SCCT, and fewer generic combined cycle gas turbines, CCGT. Another affect was to an overall increase in Portfolio costs because end effect revenues to offset costs are lower.

Detailed results for the wind resource options in PSM III 13.9 are contained in the following table. Conclusions from comparing PSM III v13.9 with the previous PSM III v13.6:

- No wind was selected in the Low Growth scenario. The RPS need was met with the [REDACTED] biomass proposal and a REC only proposal.
- [REDACTED] was selected in two additional scenarios, Trends 2010 and BAU.
- [REDACTED] was not selected in Trends 2010.

PSM III 13.9 Proposed Wind Projects	Scenario Optimizations				
	Trends 2010	BAU	GW	LG	LG With Base Capital Costs ⁽¹⁾
LSRWP Phase I	X	X	X		X
[REDACTED]	X	X	X		X
[REDACTED]		X	X		X
[REDACTED]	X	X	X		X
[REDACTED]	X	X	X		
RECs from Wind Acquisition	2,062,531	2,593,988	2,593,988	-	2,283,884
Equivalent MW Wind 30% CF	785	987	987	-	983

Footnote (1). The PSM III v13.9 model results originally did not select LSRWP. The model was re-run assuming LSRWP and the portfolio costs were lower by an incremental \$39 million. The better portfolio including LSRWP is shown above.