EXHIBIT NO. ___(MM-1HCT)
DOCKET NO. UE-13____
2013 PSE PCORC
WITNESS: MICHAEL MULLALLY

BEFORE THE
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION, **Complainant,** **v.** **PUGET SOUND ENERGY, INC.,** **Respondent.**	**Docket No. UE-13____**

PREFILED DIRECT TESTIMONY (HIGHLY CONFIDENTIAL) OF MICHAEL MULLALLY ON BEHALF OF PUGET SOUND ENERGY, INC.

REDACTED VERSION

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PUGET SOUND ENERGY, INC.

PREFILED DIRECT TESTIMONY (HIGHLY CONFIDENTIAL) OF MICHAEL MULLALLY

CONTENTS

I. INTRODUCTION 1

II. PSE'S EVALUATION OF RESOURCE ALTERNATIVES 3

A. Overview 3

B. Evaluation Process Used for the 2011 RFP 5

III. 2011 RFP EVALUATION 10

A. Determination of Need for Resources 10

B. 2011 RFP Phase 1 Evaluation Results 14

C. 2011 RFP Phase 2 Evaluation Results 16

D. Sensitivity Analyses 20

E. Short List Selection 23

IV. REEVALUATION OF OFFERS 24

A. Reevaluation of Offers in July 2012 24

1. Developments in June and July of 2012 24

2. Reevaluation Process 27

3. Key Findings of the Reevaluation Process 31

B. Reevaluation of Offers in September 2012 33

V. ACQUISITION OF THE FERNDALE GENERATING STATION 37

A. Facility Description 37

B. Due Diligence 38

1. Commercial and Legal Due Diligence 38

2. Environmental Due Diligence....40
3. Insurance Due Diligence....42
4. Technical Due Diligence....43
5. Operations and Maintenance Due Diligence....49
6. NERC/WECC Compliance Due Diligence....50
C. Board Approval of the Acquisition....50
D. Project Acquisition Process....51
E. Principal Agreements....52
1. Asset Acquisition Agreement....52
2. Steam Agreement....57
3. Lease and Easement....58
4. Agreement for Industrial Water Purchase....59
5. Agreement for Natural Gas Service....60
6. O&M Agreement....61
7. Interconnection Agreement....62
F. Project Acquisition Costs....62
VI. THE SALE OF THE ELECTRON PROJECT AND THE ELECTRON PPA....65
A. Quantitative Analysis of the Electron Project Alternatives....65
B. Quantitative Analysis of the Purchase Price for the Sale of the Electron Project and the Power Prices Under the Electron PPA....67
C. Overview of the Electron PPA....71
VII. CONCLUSION....72

PUGET SOUND ENERGY, INC.

PREFILED DIRECT TESTIMONY (HIGHLY CONFIDENTIAL) OF MICHAEL MULLALLY

I. INTRODUCTION

Q. Please state your name, business address, and position with Puget Sound Energy, Inc.

A. My name is Michael Mullally. My business address is 10885 N.E. Fourth Street Bellevue, WA 98004. I am employed by Puget Sound Energy, Inc. ("PSE") as a Senior Energy Resource Planning Acquisition Analyst.

Q. Have you prepared an exhibit describing your education, relevant employment experience, and other professional qualifications?

A. Yes, I have. It is Exhibit No. ___(MM-2).

Q. What are your duties as Senior Energy Resource Planning Acquisition Analyst?

A. As a Senior Energy Resource Planning Acquisition Analyst, one of my roles is to review, analyze, and negotiate submittals into PSE's generation Request for Proposals ("RFP") process. I participated in the negotiations that resulted in the acquisition of the Ferndale Cogeneration Station and the sale of the Electron Hydroelectric Project.

Q. What is the nature of your prefiled direct testimony in this proceeding?

A. This prefiled direct testimony describes the 2011 RFP process and the quantitative and qualitative evaluation of (i) the acquisition of the Ferndale Cogeneration Station and (ii) the sale of the Electron Hydroelectric Project. This prefiled direct testimony demonstrates the thorough and robust qualitative and quantitative analyses PSE undertook, consistent with the analyses PSE has undertaken for other resource acquisitions in the past. PSE's analyses of each of the acquisitions of the Ferndale Cogeneration Station and the Electron Project Purchased Power Agreement ("PPA") took into account decreasing gas prices, power prices and changes to PSE's forecasted load that occurred between PSE's Integrated Resource Plan ("IRP") and the RFP evaluation process. This prefiled direct testimony demonstrates that each of the acquisitions—the Ferndale Cogeneration Station and the Electron Project PPA—is the lowest reasonable cost and lowest reasonable risk resource that meets the capacity needs of PSE and its customers.

Q. Has PSE prepared a document that summarizes the qualitative and quantitative analyses undertaken by PSE with respect to the 2011 RFP?

A. Yes. Please see Exhibit No. ___(MM-3HC) for a copy of the 2011 RFP Evaluation Document and Appendices, which summarizes the qualitative and quantitative analyses undertaken by PSE with respect to the 2011 RFP. Please see Exhibit No. ___(MM-4HC) for a copy of the July 2012 Memorandum regarding Evaluation of New and Revised Offers.

II. PSE'S EVALUATION OF RESOURCE ALTERNATIVES

A. Overview

Q. How does PSE acquire new resources?

A. PSE may acquire new resources to meet the needs of customers in several ways. 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 ("self-build"); or

3) by purchasing power through negotiated contracts.

If PSE identifies a need, it will issue an RFP after publication of its IRP, which occurs every two years. In between RFPs, PSE is actively involved in the marketplace discussing and evaluating potential resource opportunities. In fact, several of the proposals that are typically submitted in the RFP are opportunities that PSE has followed closely and has an understanding of the key benefits and risks associated with the project and/or proposal. Furthermore, PSE is also actively evaluating the cost to develop its own self-build resources, most typically renewables, such as wind and solar, and natural gas-fired generation, such as combined-cycle and peakers. This knowledge of the marketplace and costs is critical in informing the IRP process and allows PSE to be commercially astute with any opportunities that come to us whether through unsolicited proposals or through the RFP process.

Q. Did PSE issue a RFP?

A. Yes. After PSE's IRP was published on May 30, 2011, PSE submitted a draft RFP to the Commission. The Commission accepted the RFP with no comments or conditions, and PSE issued the final RFP on October 17, 2011, seeking proposals from all generation resources by November 1, 2011. *See* Exhibit No. ___(RG-4).

Q. How many responses did PSE receive to its 2011 RFP?

A. PSE received 27 proposals from many different generation sources in response to the 2011 RFP. Some proposals included multiple offers from one or more generating sources. PSE also evaluated two additional proposals submitted outside the 2011 RFP ("Unsolicited Proposals"). *See* Exhibit No. ___(MM-3HC) at page 43 for a list of all proposals received.

Q. Did PSE consider self-build resource options in response to the 2011 RFP?

A. Yes. PSE evaluated a self-build simple-cycle gas turbine ("SCGT") peaker project with two different technology options. *See* Exhibit No. ___(MM-3HC) at page 19 for a discussion of PSE's self-build options.

Q. How did PSE organize and document its efforts during the 2011 RFP processes?

A. From October 2011 until the completion of the 2011 RFP in June 2012, PSE staff responsible for the 2011 RFP evaluation met regularly to review, discuss, and document findings and recommendations.

During the course of the evaluation process, PSE staff regularly presented updates to PSE's management on the status of the evaluation and any preliminary conclusions. Furthermore, PSE staff made periodic updates to the Staff of the Washington Utilities and Transportation Commission on the 2011 RFP evaluation process and results.

PSE's evaluation process and conclusions, reached at various stages of its analysis, are further explained below, and were documented in reports and presentations prepared during the course of the evaluation. *See generally* Exhibit No. ___(MM-3HC) and Exhibit No. ___(MM-4HC).

B. Evaluation Process Used for the 2011 RFP

Q. Please describe the 2011 RFP evaluation process.

A. PSE divided the 2011 RFP evaluation processes into two phases. In Phase 1, PSE conducted the initial screening and fatal flaw analysis and produced a list of the most promising resources (the "Candidate Short List"). In Phase 2, PSE subjected the resources on the Candidate Short List to additional due diligence, commercial discussions, and additional analytical modeling.

Q. Please describe the role of the 2011 RFP evaluation team.

A. PSE's Resource Acquisition department guides a cross-functional evaluation team (the "2011 RFP evaluation team") in screening and eliminating proposals with high costs, unacceptable risks, or feasibility constraints. The 2011 RFP evaluation team consists of staff from specific functional/technical areas within

PSE (also referred to as "working groups") that led the evaluation from each working group's area of expertise (e.g., transmission, environmental, real estate, and quantitative analysis).

The working groups screen each proposal according to the evaluation criteria set forth in Exhibit No. ___(MM-3HC) at page 47. PSE reviewed both the qualitative and quantitative attributes of a proposal, including price, development and construction status, commercial terms, environmental impacts, permitting issues, real estate, technical considerations, operating characteristics, transmission and interconnection, community impacts and project-specific economic analysis. *See generally* Exhibit No. ___(MM-3HC) at page 20.

Q. What evaluation criteria did PSE use during the evaluation process?

A. 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 Exhibit No. ___(MM-3HC) at page 21 for a discussion of the primary evaluation criteria.

Q. How did PSE apply the qualitative criteria?

A. For each proposal, individual working groups sought particular information related to their areas of expertise to identify any fatal flaws or areas of concern, as well as any associated benefits. These working groups documented their findings with the teams. For example, members of the commercial and development

working group met weekly to discuss the proposals with certain key elements in mind, such as the viability of the project, counterparty risk, commercial terms and whether the development timeline was realistic. Other working groups asked different questions, such as:

- Does the project have permits, fuel supply agreements and transmission and interconnection agreements in place? If not, can they reasonably be obtained in time to meet the commercial online date?
- Does the project proponent have site control?
- What are the operational or technology risks?
- Are there risks associated with public opposition or sensitive environmental habitat?
- What are the costs associated with the proposal, and how do the benefits and costs compare with other proposals?

See also Exhibit No. ___(MM-3HC) at page 21.

Q. How did PSE apply the quantitative criteria for Phase 1?

A. PSE used the Portfolio Screening Model (the "Screening Model") to identify proposals with prohibitively high costs. Please see the prefiled direct testimony of Aliza Seelig, Exhibit No. ___(AS-1HCT), for a discussion of the Screening Model and an overview of the quantitative analysis employed by PSE for the 2011 RFP.

Q. How did the working groups work together to discuss the risks and merits of each individual proposal?

A. The RFP evaluation team regularly met to discuss the risks and merits of the proposals. To ensure a thorough discussion of each proposal, team members were encouraged to ask questions and to discuss the findings of other groups. Based on the combined findings of the working groups, the RFP evaluation team made recommendations to either continue to evaluate proposals in greater detail or cease due diligence on a proposal due to fatal flaws, high risks or unfavorable economics.

Following the weekly meeting, working groups submitted data requests to bidders seeking answers to outstanding questions or concerns related to proposals not eliminated during the initial screening. Once a working group completed its evaluation of a particular proposal, they prepared a memo or submitted comments to the RFP evaluation team summarizing their findings, with particular attention paid to the merits and risks of the proposal and any outstanding questions or areas of concern.

Q. Did the RFP evaluation team identify a list of the most promising resources for further quantitative analysis and targeted qualitative evaluation?

A. Yes. Upon completing the initial screening, the RFP evaluation team identified the most promising resources for further quantitative analysis and more targeted qualitative evaluation in Phase 2 (i.e., the Candidate Short List). The selected proposals were generally those identified as having a positive portfolio benefit

and showed to have less risk compared to other proposals. *See, e.g.,* Exhibit No. ___(MM-3HC) at page 41 (Candidate Short List).

Q. What further qualitative analysis did PSE employ for those proposals selected for the candidate short list?

A. PSE subjected the proposals selected for the Candidate Short List to more rigorous examination during Phase 2 again using the evaluation criteria discussed above. This second phase is typified by greater interaction with the bidders in order to gain a deeper understanding of the qualitative risks and benefits of the proposals and their ability to execute and perform as proposed. The working groups had an opportunity to contact bidders regarding outstanding or unclear data request responses, discuss commercial terms and explore any other open issues.

Q. What further quantitative analysis did PSE employ for those proposals selected for the candidate short list?

A. The quantitative working group employed its portfolio optimization model ("Optimization Model") to perform more in-depth quantitative due diligence and designed to evaluate the proposals' performance within PSE's portfolio. Please see Exhibit No. ___(AS-1HCT) for a discussion of the Optimization Model and an overview of the quantitative analysis employed by PSE for the 2011 RFP.

Q. Did the 2011 RFP evaluation team develop a recommended short list?

A. Yes. The 2011 RFP evaluation team held a final working group meeting to review their findings and to recommend a final short list. Those proposals

selected for the recommended short list were those with the lowest reasonable cost and risk that best complement PSE's resource and timing needs. Please see Exhibit No. ___(MM-3HC) at page 59 for an executive summary of findings that outlines the qualitative risks and advantages, quantitative metrics, as well as each proposal's selection status and the rationale for that selection status.

III. 2011 RFP EVALUATION

A. Determination of Need for Resources

Q. How did PSE determine its need for capacity and renewable resources?

A. PSE determined its need for capacity and renewable resources based on the analyses performed for PSE's 2011 Integrated Resource Plan (the "2011 IRP"), which PSE filed with the Commission in May 2011. Please see Exhibit No. ___(RG-3) for a copy of the 2011 IRP.

Q. Please describe how the 2011 IRP guides PSE's efforts to acquire resources.

A. The 2011 IRP guides PSE's efforts to acquire new resources at the lowest reasonable cost, as directed by RCW 19.280. Each biennial IRP provides an updated customer demand forecast and an analysis of the costs and risks involved in securing new energy supplies to meet identified shortfalls.

Q. What capacity need did the 2011 IRP identify?

A. The 2011 IRP identified a need for 917 MW of additional supply-side and demand-side capacity resources by 2012, 1,478 MW by 2016, and 2,595 MW by 2020. *See* Exhibit No. ___(RG-3) at page 7.

Q. Did PSE use the capacity identified in the 2011 IRP for purposes of the 2011 RFP?

A. No. At the time of the publication of the 2011 RFP, PSE showed its need for supply-side resources only and included updates to reflect the F2011 load forecast and resources added after publication of the 2011 IRP. The projected need for electrical resource capacity at the time of publication of the 2011 RFP was 385 MW by 2012:

Projected Need for Electric Resource Capacity (October 2011)

Year	2012	2013	2014	2015	2016
Projected Need (MW)	385	434	636	713	862

Q. Did PSE continue to update its capacity need throughout the 2011 RFP?

A. Yes. 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 updated its capacity need in November 2011, which resulted in a projected need for electric resource capacity of 241 MW by 2012:

[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.

Projected Need for Electric Resource Capacity (November 2011)

Year	2012	2013	2014	2015	2016
Projected Need (MW)	241	451	653	730	879

Furthermore, PSE delayed finalizing the short list selection to reflect the new load forecast information (F2012) that PSE was developing internally. Pursuant to this F2012 load forecast, the projected need for electric resource capacity was 138 MW by 2012:

Projected Need for Electric Resource Capacity (F2012 Load Forecast)

Year	2012	2013	2014	2015	2016
Projected Need (MW)	138	242	460	554	728

Q. Why did PSE delay the short list selection to reflect the new F2012 load forecast?

A. PSE delayed the short list selection to reflect the new F2012 load forecast because PSE wanted the 2011 RFP evaluation to reflect the latest updates (both for load forecast and gas price forecast) even if it meant a delay in moving forward with commercially advantageous proposals. Thus, the 2011 RFP would reflect contemporaneous information and avoid the potential risk of acquiring surplus capacity beyond PSE's need.

Q. Were there other reasons that PSE delayed its final 2011 RFP analysis?

A. Yes. PSE was also commercially aware of stagnant power prices in the marketplace resulting from the economic outlook. Thus, PSE also delayed the final 2011 RFP analysis to incorporate the most recent gas price forecast received

in April. Indeed, the gas price forecast showed a lower than expected future power price, which resulted in a shift in the competitiveness of resources and established a more contemporaneous price forecast baseline.

Q. What renewable need did the 2011 IRP identify?

A. 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. By the time PSE filed its final RFP in October 2011, PSE's updated renewable resource outlook reflected a need of approximately 771,000 Renewal Energy Credits ("REC") in 2020. Updates to PSE's forecast continue to predict that PSE has sufficient renewable resources to achieve its near-term compliance targets under the Washington renewable portfolio standards ("RPS"). Exhibit No. ___(MM-3HC) at page eight depicts the final 2011 RFP renewable outlook, which PSE prepared using the F2012 load forecast and updated REC banking assumptions.

Q. How did PSE evaluate renewable resources?

A. Because the 2011 IRP identified a near-term capacity need but not a near-term renewable need, PSE determined that any renewable offer would need to be competitive with capacity offers to be selected.

B. 2011 RFP Phase 1 Evaluation Results

Q. What was the purpose of Phase 1 evaluation?

A. The Phase 1 evaluation screened resource proposals to find the most cost effective and viable projects available to meet PSE's near-term capacity need so that PSE could quickly focus on a more detailed qualitative due diligence and robust quantitative analytical process.

Q. What types of resources did PSE evaluate in Phase 1 of the 2011 RFP?

A. PSE evaluated 29 proposals in Phase 1 of the 2011 RFP--many of which included multiple offers--from a very diverse mix of generation fuel types, including hydro, biomass, wind, natural gas, and battery storage. Please see Exhibit No. ___(MM-3HC) at page 16 for a summary of the overall resource mix and number of MWs proposed.

Q. What observations were made during the Phase 1 evaluation?

A. More than 2,200 MW of operating capacity from eleven proposals evaluated favorably in the 2011 RFP screening analysis and provided positive portfolio benefits to meet PSE's near-term and long-term capacity need. Generally, existing thermal resources were more competitive and had fewer risks than new greenfield development proposals. Resources that avoided third-party transmission services typically had economic advantages and avoided the risk of uncertain transmission provider practices.

Although some shorter term proposals evaluated favorably in Phase 1 and seemed to be aligned with short-term market forecast, the evaluation team was concerned about the exposure remaining at the end of the offered term. Thus, PSE wanted to further evaluate the risks of short term resources versus long term capacity resources to fulfill its need.

Q. How many proposals were eliminated in Phase 1?

A. 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.

Of the 18 proposals eliminated during Phase 1, 17 were development resources with higher costs and more significant qualitative risks than existing alternatives. See Exhibit No. ___(MM-3HC) at pages 24 for a summary of the proposals eliminated from Phase 1 and pages 59-74 for the Phase 1 quantitative results.

Q. Did PSE select any renewable resource proposals for further consideration in Phase 2?

A. Yes, PSE selected the two most favorable renewable resource offers from Phase 1 to compare with existing capacity alternatives in Phase 2—an operating wind project and a biomass project in development.

Q. What proposals did PSE select for further consideration in Phase 2?

A. Upon completion of the Phase 1 screening, PSE selected a candidate short list comprised of twelve proposals for further evaluation. The selected proposals represent the most attractive offers from several resource types when both qualitative and quantitative factors are considered together. They included both shorter-term offers, longer-term offers, and a mix of ownership and PPAs. Please see Exhibit No. ___(MM-3HC) at page 25 for a summary of the proposals selected for Phase 2 evaluation.

C. 2011 RFP Phase 2 Evaluation Results

Q. What analysis did PSE undertake in the Phase 2 of the 2011 RFP?

A. PSE performed additional quantitative and qualitative review of the "Candidate Short List." PSE sent data requests to bidders to obtain information about project operating and maintenance history; plant performance data; status of environmental permits; updates about emissions performance; transmission service requests; and for the new development projects, information about development progress. Discussions were also held with bidders to help clarify

and understand the terms and pricing of the proposals. These data requests and discussions helped PSE refine the quantitative and qualitative analyses, and further, actually led to bidders revising and updating pricing on their proposals. Revisions and updated pricing are summarized for the following resources:

- [redacted] **(#11124)** – [redacted];
- **Coal Transition PPA (#11102)** – [redacted];
- [redacted] **(#11117)** – [redacted]; and
- [redacted] **(#11126)** – [redacted].

Q. Did PSE's consideration of data responses, discussions with bidders and other ongoing qualitative review result in the elimination of any proposals in Phase 2?

A. Yes. Consideration of data responses, discussions with bidders and other ongoing qualitative review led the team to eliminate four proposals due to risks PSE was not willing to accept given that other proposals presented much lower risk profiles.

In addition to the four eliminated proposals, PSE eliminated the [redacted] (#11103) because [redacted]

[redacted]. PSE also eliminated the [redacted] (#11102) because [redacted] [redacted]. PSE continued to evaluate the [redacted] (#11103) and the stand-alone Centralia 14-year PPA option (#11102) throughout Phase 2.

In addition to the above offers and options, PSE eliminated the [redacted] (#11127) proposal in Phase 2 because the bidder never provided pricing and eventually withdrew the proposal.

Please see Exhibit No. ___(MM-3HC) at page 27 for a summary of the rationale that led to the elimination of these proposals.

Q. After the elimination of the proposals described above, which proposals were selected for further consideration in the Phase 2 evaluation?

A. PSE further considered the seven proposals presented in Table 1 below through a rigorous quantitative analysis, including portfolio optimization, scenarios analysis, sensitivity analysis, and risk analysis; and PSE continued to scrutinize these proposals through the qualitative assessment.

Table 1. Proposals Selected for Further Consideration in the Phase 2 Evaluation

Proposal	Term (yrs)	MW
[redacted] (#11124)	[redacted]	[redacted]
[redacted] (#11117)	[redacted]	[redacted]
[redacted] (#11110)	[redacted]	[redacted]
[redacted] (#11126)	[redacted]	[redacted]
Centralia Coal Transition PPA (#11102)	14	Up to 500
[redacted] (#11118)	[redacted]	[redacted]
[redacted] (#11103)	[redacted]	[redacted]

Q. Please describe the purpose of the Phase 2 quantitative evaluation.

A. PSE designed the Phase 2 quantitative evaluation 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, PSE ranked the proposal offers in the scenario that best reflects the most current assumptions for PSE's peak demand, power prices, and gas prices.

Q. Which resources fared best in the scenario optimization results?

A. The Coal Transition PPA (#11102) and the [redacted] (#11117) were least cost in four of five scenarios. Although each scenario is not necessarily equally weighted, selection across more scenarios is considered more favorable because the proposal is demonstrating that it is least cost across a wide range of possible futures. Furthermore, the "Base with New Gas" scenario represents the most current forecast of natural gas and power prices, and both the

Coal Transition PPA and [redacted] (#11117) are least cost in this scenario.

Please see Exhibit No. ___(MM-3HC) at figure 13 on page 28 for the optimization results for the five scenarios considered in the 2012 RFP.

D. Sensitivity Analyses

Q. Did PSE conduct sensitivity analyses as part of its 2011 RFP Phase 2?

A. Yes. PSE conducted sensitivity analyses as part of its 2011 RFP Phase 2 analyses. Although the scenario analyses identify the least cost resources, such analyses do 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. PSE posed the following questions in these analyses:

1. [redacted] the Coal Transition PPA (#11102) [redacted]?
2. Would a [redacted] (#11118) price reduction change selections?
3. Would a [redacted] (#11124) [redacted] change selections?
4. Would a [redacted] (#11103) [redacted] change selections?
5. Could PSE rely on short-term market purchases until 2015?
6. How would a portfolio without the Coal Transition PPA compare to a portfolio with the Coal Transition PPA?

To answer the sensitivity analyses questions posed above, PSE staff studied one change at a time in its analysis.

Q. What were the results of these sensitivity analyses?

A. From the Coal Transition PPA (#11102) [redacted], the Coal Transition PPA (#11102) would [redacted].

From the [redacted] (#11118) [redacted], the [redacted] (#11118) [redacted].

From the [redacted] (#11124) [redacted], the [redacted] (#11124) [redacted] (#11124) was selected with Coal Transition PPA (#11102).

From the [redacted] (#11103) [redacted], the [redacted] (#11103) [redacted].

The sensitivity performed to determine if PSE could rely on short term market purchases demonstrated that the Coal Transition PPA (#11102) remained least cost in three of five scenarios.

The sensitivity comparing portfolios with and without Coal Transition PPA demonstrated that when the Coal Transition PPA is included in the portfolio it

lowers portfolio costs in four of five scenarios. Furthermore, the sensitivity showed that the Coal Transition PPA (#11102) provides the biggest portfolio benefits when gas and power prices are higher.

Please see Exhibit No. ___(MM-3HC) at pages 27-29 for a discussion of, and results from, these sensitivity analyses.

Q. What does PSE conclude from the sensitivity analyses conducted?

A. Generally, PSE's quantitative analysis demonstrates that the valuation of resource alternatives is close in terms of economics and performance in PSE's portfolio. Small changes to price, volume, timing, or PSE's capacity need impact the combination of resources that are being selected. However, the qualitative analysis indicated there are key risks that may not be overcome by economics alone. All things being equal, PSE prefers lower risk propositions when economics are relatively close or insignificant. Ultimately, it is a combination of the quantitative results *and* the qualitative findings that determine PSE's resource strategy.

Q. Did PSE consider a risk analysis that considered a range of portfolio costs varying natural gas prices, power prices, hydro generation, wind generation, and peak and energy loads?

A. Yes. For the same portfolios with and without the Coal Transition PPA (#11102) discussed above, 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 resource alternatives. Also, to test the robustness of the choice of portfolios with and without Coal Transition PPA (#11102), 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.

Q. What were the results of the risk analysis?

A. The risk analysis demonstrates that the portfolio with the Coal Transition PPA (#11102) reduces both costs as well as risk.

For the portfolio optimization test of the risk analysis results, the Coal Transition PPA (#11102), in combination with other resource acquisitions or generic resources, was least cost in about 56 percent of the 250 optimal portfolios.

Please see Exhibit No. ___(MM-3HC) at pages 33-35 for a discussion and the results from the risk analysis.

E. Short List Selection

Q. What resources did PSE select for its 2011 RFP short list?

A. PSE selected three resources for its 2011 RFP short list:

(i) the Coal Transition PPA (#11102), which contained a long-term fixed price, ramped to match PSE's capacity need, reflected the public policy resource preference of the State of Washington, and had strong public support;

(ii) the [redacted] (#11117), a [redacted]; and

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

Please see Exhibit No. ___(MM-3HC) at pages 39 for a summary of the primary qualitative and quantitative findings that led to PSE's short list selection decisions at the end of Phase 2.

IV. REEVALUATION OF OFFERS

A. Reevaluation of Offers in July 2012

1. Developments in June and July of 2012

Q. Did PSE recommend proceeding with the three resources on its 2011 RFP short list to its Energy Management Committee and Board of Directors?

A. On June 12, 2012, the RFP evaluation team recommended to the EMC that PSE pursue three resource proposals based on the results of PSE's 2011 RFP analysis. The three resources were:

- the Coal Transition Power PPA (#11102);
- the [redacted] (#11117); and
- the [redacted] (#11124).

The analysis indicated that the three selected resources represented the lowest cost portfolio with the lowest risk compared to other alternatives in the 2011 RFP.

See Exhibit No. ___(MM-3HC) at pages 187 for the EMC presentation on the recommendation of the short list.

a. PSE Received Three Revised Offers in June 2012

Q. Did PSE proceed with the three resources on its 2011 RFP short list?

A. No. After PSE notified bidders of their selection status in the 2011 RFP, PSE received three revised offers by June 22, 2012, from the following three bidders that were not selected to the short list in the 2011 RFP:

- [redacted] (#11103-r);
- Ferndale Ownership (#11118-r); and
- [redacted] (#11117-r).

Additionally, shortly after the short list recommendation to the EMC the evaluation team identified a new transmission risk for the Coal Transition Power PPA (#11102) that could limit PSE's ability to purchase contract volumes in excess of 380 MW.

Q. How did PSE respond to these developments in mid-June 2012?

A. Given the revised proposals, PSE decided to delay any recommendations to the Energy Management Committee and the Board of Directors with respect to pursuing the Coal Transition Power PPA (#11102) and the other two short list selections, to ensure PSE could make the best decision in light of changing circumstances. The RFP evaluation team reevaluated the revised offers to determine if the short list should be updated. This reevaluation involved further qualitative assessment and a re-run of the quantitative analytics. In addition, PSE manually constructed portfolios to analyze the comparison of the Ferndale Ownership (#11118-r) offer and the Coal Transition Power PPA. This also

allowed time for PSE to consider the impacts of limited PSE transmission transfer capability for the Coal Transition Power PPA (#11102).

Q. What were the results of the initial reevaluation of the optimization analysis?

A. With the revised offers, the portfolio optimization analysis showed that the Coal Transition Power PPA (#11102) would be least cost in only one of five scenarios compared to the four of five scenarios in which it previously was selected as least cost. With this analysis and the risks around the transmission capability beyond 380 MW, PSE discontinued its pursuit of the Coal Transition Power PPA (#11102).

b. TransAlta Centralia Revised the Commercial Structure of the Coal Transition Power PPA (#11102-r) in Early July 2012

Q. How did TransAlta Centralia respond to the notification that PSE was discontinuing its pursuit of the Coal Transition Power PPA (#11102)?

A. On July 5, 2012, TransAlta revised the commercial structure of the Coal Transition Power PPA (#11102-r) by reducing the contract volumes and pushing out to a later start date. PSE then reevaluated the revised commercial structure along with the other revised offers.

Q. Please summarize the revised offers received by PSE in June and July of 2012.

A. [redacted] reduced the purchase price of the [redacted] (#11103-r) offer from $[redacted] million to $[redacted] million. Tenaska

proposed the Ferndale Ownership (#11118-r) offer at a purchase price of $84 million; the original 2011 RFP offer was [redacted] (#11118). [redacted] restructured the [redacted] (#11117-r) offer to a [redacted]. TransAlta revised the Coal Transition Power PPA (#11102-r) offer to include a later start—December 1, 2014, rather than December 1, 2012—and a reduced volume with a maximum volume of 380 MW.

See Exhibit No. ___(MM-4HC) at Figure 1 on page 3 for a table showing a summary of the revised offers.

2. Reevaluation Process

Q. How did PSE proceed with the reevaluation process?

A. For the reevaluation, PSE considered both the quantitative and qualitative merits of each revised offer. Specifically, PSE took the following steps to perform the reevaluation:

- performed optimization analysis with revised offers in five scenarios to reexamine short-list;
- performed a qualitative review of the revised offers;
- manually constructed portfolios to compare:
  - Ferndale Ownership (#11118-r),
  - Coal Transition Power PPA (RFP Volumes) (#11102),

- Ferndale Ownership (#11118-r) combined with Coal Transition Power PPA (revised volumes) (#11102-r); and

- performed risk analyses on manually constructed portfolios.

a. Reevaluation Process: Qualitative Analyses

Q. What was the result of the qualitative analysis PSE conducted on the revised offers?

A. As shown in Exhibit No. ___(MM-4HC) at Figure 6 on page 8, evaluation of the revised proposals continued to show more qualitative risks than advantages for both the [redacted] (#11103-r) and the [redacted] (#11117-r) offers. PSE identified more advantages than risks for both the Coal Transition Power PPA (revised volume) (#11102-r) offer and the Ferndale Ownership (#11118-r) offer.

b. Reevaluation Quantitative Process

i. Screening Model Results

Q. Did PSE analyze the revised offers with the Screening Model?

A. Yes. To be consistent with the Phase 1 analysis, the evaluation team performed the Screening Model analysis with the revised offers along with the other Phase 2 resources. The relative ranking of each proposal from the Screening Model can be seen at Exhibit No. ___(MM-4HC) at page 18.

ii. Optimization Model Results

Q. Did PSE analyze the revised offers with the Optimization Model?

A. Yes. Although the Screening Model results show relative rankings, it has the following relative limitations:

- the Screening Model represents the results of only one scenario—Base with New Gas;
- the Screening Model uses the PSM I simple dispatch logic;
- the Screening Model includes additional transmission costs on market purchases that the PSM III and IRP did not include.

Therefore, PSE reevaluated the revised proposals in the Optimization Model to see how they might affect the 2011 RFP decisions.

Please see Exhibit No. ___(MM-4HC) at page 4 for the results of the optimization analysis with the revised offers received by PSE. (Although PSE previously eliminated the [redacted] (#11117) offer due to qualitative risks, PSE decided to reevaluate the revised offer with the lowered prices in order to see if the revised pricing would warrant accepting the additional risks associated with the proposal.

Q. What could PSE conclude from the results of the reevaluation quantitative analyses?

A. With the elimination of the [redacted] (#11117) due to qualitative risks, the Coal Transition Power PPA (#11102-r) is lowest cost in four out of five scenarios. Even keeping the [redacted]

(#11117) as a resource alternative in the portfolio optimization analysis, the difference in portfolio cost of the "Base with New Gas" scenario is only $9.28 million dollars (or approximately 0.09%) less than the portfolio with the Coal Transition Power PPA (#11102-r). This differential in portfolio costs was insufficient for PSE to accept the additional risks associated with the [redacted] (#11117).

iii. Manual Portfolio Results

Q. Did PSE undertake further quantitative analyses to verify the results?

A. Yes. The evaluation team also constructed manual portfolios to demonstrate the quantitative merits of potential portfolios while minimizing surpluses created by the model. PSE constructed the following manual portfolios in the Optimization Model to better identify the costs and risks of specific portfolios:

- Ferndale Ownership (#11118-r),
- Combined Coal Transition Power PPA (revised volumes) (#11102-r) and Ferndale Ownership (#11118-r), and
- Coal Transition Power PPA (RFP volumes) (#11102).

Please see Exhibit No. ___(MM-4HC) at pages 19-20 for the resources included in the manually constructed portfolios and their surpluses.

After manually constructing portfolios, the team considered each portfolio's costs in the five scenarios consistent with the 2011 RFP analysis. Exhibit No. ___(MM-4HC) at Figure 7 on page 12 demonstrates the Ferndale Ownership

(#11118-r) offer and the Coal Transition Power PPA (New Volumes) (#11102-r) offer provide the lowest cost portfolio in four of five scenarios.

iv. Risk Analysis

Q. Did PSE perform risk analyses consistent with the approach used in the 2011 RFP?

A. Yes. 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 manually constructed portfolios. Please see Exhibit No. ___(MM-4HC) on pages 15-16 for results of these risk analyses. This shows that the Ferndale Ownership (#11118-r) and the Coal Transition Power PPA (New Volumes) (#11102-r) offers provide a lower cost and lower risk portfolio compared to either the Coal Transition Power PPA (Original Volumes) (#11102-r) offer or the new Ferndale Ownership (#11118-r) option alone.

3. Key Findings of the Reevaluation Process

Q. What did PSE conclude from the 2011 RFP after reevaluating those revised offers received by PSE in June and July of 2012?

A. Taking into consideration the quantitative and qualitative analysis, PSE concluded that the Ferndale Ownership (#11118-r) offer and the Coal Transition Power PPA (New Volumes) (#11102-r) offer are least cost and least risk. The Ferndale Ownership (#11118-r) offer is a low cost existing resource that is well-known to PSE and provides system benefits. At the new term and volumes, the Coal Transition Power PPA (New Volumes) (#11102-r) is a least-cost resource that

provides PSE customers a hedge against higher prices that no other resource has been able to offer for the duration and at the price offered by TransAlta.

Although the revised [redacted] (#11117) offer seems competitive from a cost perspective with the least-cost offers identified, there are numerous risks to reaching a binding agreement and the project does not have the ability to provide system benefits such as load management and wind-integration. The [redacted] (#11103-r) offer, although offered at a lower purchase price, greatly exceeds PSE's current capacity need in the near-term, thereby making such offer less cost-competitive.

Exhibit No. ___(MM-4HC) at Figure 11 on page 15 shows the selected resources from the reevaluation to meet PSE's needs. Since a combination of the Ferndale Ownership (#11118-r) offer and the Coal Transition Power PPA (New Volumes) (#11102-r) offer fits closely with PSE's near-term need, the [redacted] (#11124) is no longer needed until 2017. PSE believes it is better to first pursue the Ferndale Ownership (#11118-r) and the Coal Transition Power PPA (New Volumes) (#11102-r) offers prior to beginning negotiations for the [redacted] (#11117).

B. Reevaluation of Offers in September 2012

Q. Did PSE subsequently re-evaluate the acquisition of the Ferndale Generating Station to the viable alternatives described in the final 2011 RFP results?

A. Yes. In September 2012, PSE re-evaluated the acquisition of the Ferndale Generating Station to the viable alternatives described in the final 2011 RFP results. Such re-evaluation reaffirmed that the acquisition of the Ferndale Generating Station is a least cost and least risk resource alternative.

Q. Did PSE receive any competitive new or revised offers subsequent to the re-evaluation conducted in July 2012?

A. No. PSE did not receive any competitive new or revised offers since the re-evaluation of revised offers presented to PSE's Board of Directors on July 24, 2012. PSE conducted further due diligence for the Ferndale Generating Station, and PSE updated its analysis based on the due diligence findings and then-current price forecasts.

Q. Did PSE change any assumptions regarding the Ferndale Generating Station based on the additional due diligence conducted by PSE subsequent to the re-evaluation conducted in July 2012?

A. Yes. PSE changed certain assumptions regarding the Ferndale Generating Station based on the additional due diligence conducted by PSE subsequent to the re-evaluation conducted in July 2012. The key changes to the assumptions regarding the Ferndale Generating Station for the updated analysis include the following:

- The Ferndale Generating Station's winter capacity evaluated at 290 MW compared to 284 MW based on performance testing in August 2012 and a new interconnection study that accommodated the maximum generation output of the facility up to 300 MW.

- The useful life of the Ferndale Generating Station was determined to be 27 years compared to the assumption of 19 years in the 2011 RFP based on technical due diligence and the expected plan and budget from PSE's Energy Operations group.

- O&M cost projections were higher compared to the assumptions in the 2011 RFP. Further, the operation costs included in the analysis are based on PSE operating the facility; however, PSE was considering a third-party operator.

Q. Did PSE update any other assumptions?

A. Since the 2013 IRP process began, PSE evaluated the Ferndale Generating Station and the alternatives using the "2013 IRP Base" gas and power prices (PSE's most current long-term price forecast) and the "2011 RFP Phase II Base w/ New gas price" scenario (PSE's April 2012 forecast, which was most current at the end of the RFP). The "2013 IRP Base" prices are lower than the "2011 RFP Phase II Base w/ New gas" price scenario. Other updates included use of the proposed $622/kW capacity cost equivalent to calculate the equity return for the Coal Transition PPA compared to the $934/kW used in the RFP analysis.

Another key update to the analysis includes the recently updated self-build peaker cost from PSE's engineering consultant, Black and Veatch ("B&V"), which are approximately $945/kW (in 2015 dollars) for a 2015 build compared to $1,005/kW used in the 2011 RFP.

Q. Was the Ferndale Generating Station selected in the "2013 IRP Base" gas and power price scenario?

A. Yes. The Ferndale Generating Station was selected as lowest cost in the optimal portfolio when all viable options were available in the "2013 IRP Base" gas and power price scenario, as was also the case in the "2011 RFP Base w/ New gas" scenario analysis. These results are shown in Table 2 below.

Table 2. 2013 IRP Base Power and Gas Prices Scenario Results

	All Optimized	No Ferndale Own	No Centralia
Ferndale Own	X		X
Coal Transition (Centralia) PPA	X		
[redacted] (#11117)	X	X	X
PSE Self Build Peaker			X
[redacted] (#11124)			X
[redacted] (#11110)			X
[redacted] (#11123)			
[redacted] (#11123)			X
[redacted] (#11123)	X	X	
[redacted] (#11103)		X	
Portfolio Cost ($000)	**$9,493,027**	**$9,868,097**	**$9,536,635**
Increase from Optimized ($000)	**–**	**$375,070**	**$43,608**

Notes:

- Ferndale Generating Station costs and operational characteristics updated for due diligence findings
- Coal Transition PPA equity return based on $622/kW capacity cost equivalent compared to $934/kW used in the 2011 RFP.

Q. Was the Ferndale Generating Station selected in the "2011 RFP Phase II Base with New Gas" scenario?

A. Yes. Re-evaluation in the "2011 RFP Phase II Base with New Gas" scenario continued to show the selection of the acquisition of the Ferndale Generating

Station and the Coal Transition PPA as the lowest cost portfolio as illustrated in Table 3 below.

Table 3. 2011 RFP Phase II Base With New Gas Price Scenario Results

	All Optimized	No Ferndale Own	No Centralia
Ferndale Own	X		X
Coal Transition (Centralia) PPA	X		
[redacted] (#11117)	X	X	X
PSE Self Build Peaker			X
[redacted] (#11124)			X
[redacted] (#11110)			X
[redacted] (#11123)			
[redacted] (#11123)			X
[redacted] (#11123)	X	X	
[redacted] (#11103)		X	
Portfolio Cost ($000)	**$9,752,629**	**$10,144,885**	**$9,855,476**
Increase from Optimized ($000)	**–**	**$392,256**	**$102,847**

Notes:

- Ferndale Generating Station costs and operational characteristics updated for due diligence findings
- Coal Transition PPA equity return based on $622/kW capacity cost equivalent compared to $934/kW used in the 2011 RFP.

Both the "2011 RFP Phase II Base with New Gas" scenario and the "2013 IRP Base" scenario show the same selections in the optimization and the two sensitivities performed.

Q. What did PSE conclude from the quantitative re-evaluation conducted by PSE in September 2012?

A. PSE concluded from the quantitative re-evaluation conducted by PSE in September 2012 that the acquisition of the Ferndale Generating Station was attractive under both higher and lower price scenarios. The results from the re-evaluation, however, no longer showed the selection of the [redacted] (#11124).

Q. Did PSE re-evaluate the qualitative analyses of options in September 2012?

A. Yes. PSE re-evaluated qualitative factors of available resources in September 2012. The qualitative re-evaluation of alternatives other than the Ferndale Generating Station in September 2012 did not change, and the qualitative re-evaluation of the Ferndale Generating Station reaffirmed its selection.

V. ACQUISITION OF THE FERNDALE GENERATING STATION

A. Facility Description

Q. Please describe the Ferndale Generating Station.

A. The Ferndale Generating Station is a conventional dual-fuelled (natural gas as the primary fuel and diesel fuel as the backup fuel) 2x1 ("two-on-one") combined cycle power plant with two combustion turbine generators and one steam turbine generator. The plant is rated at approximately 245 MW ISO base load (no duct firing, no process steam), approximately 270 MW with duct firing (ISO, no process steam), and approximately 290 MW winter rating (23° F, with duct firing, no process steam).

Tenaska Washington Partners, L.P. ("Tenaska Washington") developed the Ferndale Generating Station, and the facility commenced operations on April 8, 1994. Tenaska Washington sold the output of the Ferndale Generating Station to PSE pursuant to a long-term power purchase agreement for 245 MW of firm electricity ("PURPA PPA"). Effective June 1, 2001, Tenaska Washington entered into an excess power agreement with PSE to share in the margins generated by

PSE when the Ferndale Generating Station generated energy in excess of the contracted capacity of 245 MW. At the same time, Tenaska Washington Partners enhanced the Ferndale Generating Station with a gas turbine inlet cooling system to increase summer capacity. The PURPA PPA expired in accordance with its terms on December 31, 2011.

B. Due Diligence

Q. What due diligence did PSE conduct with respect to the Ferndale Generating Station?

A. PSE conducted a review of legal, commercial, environmental, real estate, insurance, operations and maintenance, and technical concerns related to the Ferndale Generating Station.

1. Commercial and Legal Due Diligence

Q. Please describe the commercial and legal due diligence conducted by PSE.

A. PSE and its outside counsel reviewed the various contracts pertaining to the ownership and operation of the Ferndale Generating Station, such as interconnection, transportation, operations and maintenance, water supply, and similar types of agreements. In the course of these investigations, PSE discovered no significant liabilities and ensured that all necessary assignments and consents were in place.

Q. Please describe the real estate due diligence conducted by PSE.

A. The real estate due diligence included title review and a survey of the entire site to confirm the site is contiguous, without significant encroachments, and that no additional real property interests are necessary for the Ferndale Generating Station.

The Ferndale Generating Station is located in unincorporated Whatcom County, just west of Ferndale, Washington. The facility is adjacent to the Phillips 66 petroleum refinery and was constructed on a ground lease granted to Tenaska Washington by the predecessor to Phillips 66. The ground lease consisted of approximately sixteen acres of land, which is bordered on the East by Lake Terrell Road and is surrounded on the remaining three sides by other property held by Phillips 66.

The ground lease for the facility was granted in 1992 and was set to expire in 2041, unless a renewal is negotiated with Phillips 66. The lease was set up with an annual payment of one dollar, with other consideration being provided to the refinery through a steam agreement. This steam agreement obligated Tenaska Washington to provide tolled steam (if requested by Phillips 66) to the refinery when the Ferndale Generating Station is operating and make certain payments to Phillips 66. The ground lease for the Ferndale Generating Station was burdened by various typical easements for utilities, which included natural gas, water, and power lines, as well as an easement owned by PSE for the Terrell Substation.

2. Environmental Due Diligence

Q. Please describe the environmental due diligence conducted by PSE.

A. PSE engaged consultant URS Corporation ("URS") to help perform the environmental due diligence review, which consisted of a site visit, interviews with Ferndale Generating Station employees, review of available environmental documentation provided to PSE by Tenaska Washington (including environmental agency correspondence, permit applications, final permits, environmental plans and policies, etc.) at the plant, review of Department of Ecology and Northwest Clean Air Agency ("NWCAA") files pertaining to the Facility and interviews with representatives of each of NWCAA and the Public Utility District No. 1 of Whatcom County, Washington ("Whatcom County PUD"). Together with PSE, URS also interviewed NWCAA staff.

Neither PSE nor URS identified significant contamination issues as a result of the environmental due diligence. The facility appeared to be properly sited and constructed and was visually in good condition. The facility had programs in place to address air emissions, wastewater discharge, stormwater discharges, solid waste management, hazardous materials handling and hazardous waste management.

The existing water supply was provided by the Whatcom County PUD under an agreement which was set to expire in 2014. URS staff contacted Whatcom County PUD to determine whether there are any known issues that would prevent Whatcom County PUD from entering into a new water supply agreement with

PSE and were told that Whatcom County PUD had offered a 20-year extension to Tenaska Washington and would be willing to sell water to PSE.

The Ferndale Generating Station operates under an existing Title V Operating Permit (issued and recently updated in 2012 by NWCAA). The permit conditions allow a significant amount of operating flexibility for the facility's historic operations, including flexibility for startups. It appeared unlikely that PSE would need or want to modify the permit within the foreseeable future.

Tenaska Washington records indicated a very limited number of minor Notices of Violation ("NOV") and excess emission reports. There were no significant past or ongoing issues observed in Tenaska Washington's records. NWCAA staff confirmed this information and indicated that the facility had a "sterling compliance record" and excellent rapport with NWCAA staff.

The State of Washington's greenhouse gas ("GHG") emissions performance standard ("EPS") law (RCW 80.80.40), and related rule (WAC Chapter 173-407) apply to the Ferndale Generating Station after change of ownership from Tenaska Washington to PSE. PSE worked with B&V to assess compliance with Washington's then-existing 1,100 lb-CO2/MWh EPS, which is an annual average limit. When the Facility operates optimally in its original "designed and intended mode" (e.g., 2x1 baseload at 240 MW), emission rates equal approximately 960 lb-CO2/MWh. When the Facility operates less efficiently, at lower loads, with duct firing or while burning diesel, higher emission rates occur. PSE's and B&V's test results indicated that compliance with the 1,100 lb-CO2/MWh annual

average EPS may somewhat limit PSE's cycling (i.e. startups and lower load operations) and other future operational modes. On October 3, 2012, PSE filed a petition for an Emissions Performance Determination with the Commission in Docket No. UE-121594 that requested an order determining that the Ferndale Generating Station complies with the GHG EPS standards in RCW 80.80. On November 2, 2012, the Commission issued an order finding that the Ferndale Generating Station meets the GHG EPS of 1,100 pounds of CO2 per MWh.[3]

3. Insurance Due Diligence

Q. Please describe the insurance due diligence by PSE.

A. PSE's Insurance Risk Management group and FM Global, PSE's insurance provider, evaluated the Ferndale Generating Station by reviewing documents provided by Tenaska Washington. Coincidentally, FM Global was the property insurer for the facility.

The review found that the various programs at the Ferndale Generating Station were well established and reduced the overall risk factors. The Ferndale Generating Station had an excellent preventive maintenance and unit inspection program and an ingrained culture to strive for a highly reliable and safe operation. Neither PSE nor FM Global identified notable findings based on the review of documentation provided by Tenaska Washington.

[3] *In the Matter of the Petition of Puget Sound Energy, Inc., For a Determination of Emissions Compliance*, Docket No. UE-121594, Order 02 (Nov. 2, 2012).

4. Technical Due Diligence

Q. Please describe the combustion turbines at the Ferndale Generating Station.

A. As stated above, the Ferndale Generating Station uses two GE Frame 7EA Model MS 7111 combustion turbines. GE 7EA gas turbines are mature, well-understood machines with millions of hours of operation by similar units installed around the world. The GE 7EA gas turbines at the Ferndale Generating Station are very similar to the GE 7EA turbine used by PSE at its Sumas Generating Facility.

The GE 7EA combustion turbine and generator form a large frame, industrial-type machine with an axial flow, multi-stage compressor and power turbine on a common shaft. Each gas turbine is directly coupled to an electric generator located on the outlet side of the turbine.

As of August 2012, both gas turbines had accumulated just over 80,000 fired hours and approximately 240 starts. The average run time of over 330 hours per start demonstrates a more conservative run scheme than is typical for PSE's fleet, with relatively less cycling. Tenaska Washington followed the recommended maintenance intervals.

Q. Please describe the heat recovery steam generators ("HRSG") at the Ferndale Generating Station.

A. The Ferndale Generating Station incorporates two HRSGs, which produce steam at three pressure levels: high pressure, intermediate pressure, and low pressure. The HRSGs are of conventional design, each with its own exhaust stack 180 feet high and 14 feet in diameter.

Q. Please describe the steam turbine at the Ferndale Generating Station.

A. Steam generated by the HRSGs flows to a non-reheat controlled extraction, uncontrolled admission condensing steam turbine manufactured by GE. The steam turbine is nominally rated at 96 MW and is coupled to a GE 3-phase, air-cooled 13.8 kV generator.

Q. Please describe the cooling tower and circulating water system at the Ferndale Generating Station.

A. The condenser circulating water system is equipped with three 50 percent capacity pumps that circulate water through a three-cell, forced draft, wood cooling tower equipped with two-speed fans. Two auxiliary cooling water pumps take water from the cooling tower basin to provide cooling water to the closed loop cooling water system heat exchangers.

Q. Please describe the electric transmission arrangements for the Ferndale Generating Station.

A. The Ferndale Generating Station is relatively close to PSE's loads in Whatcom County. This proximity provides local reliability benefits in the event of transmission outages elsewhere in the Whatcom County and system operation benefits when other generation in the county is not running. Additionally, the Ferndale Generating Station provides reliability benefits to PSE and to the region when there are heavy south-to-north flows from the United States to British Columbia and during Puget Sound Area and Northern Intertie transmission congestion events. Dispatch of the facility can also offset flows across the

Northern Cascade Mountain transmission facilities during winter months, thereby reducing the risk of transmission curtailments.

The Ferndale Generating Station interconnects with PSE's transmission system at PSE's Terrell Substation. Consistent with PSE's Open Access Transmission Tariff ("OATT"), Tenaska Washington signed a standard Large Generator Interconnection Agreement ("LGIA") with PSE in June 2009. PSE Transmission Contracts studied a request consistent with PSE's OATT to increase the generation capacity of the Ferndale Generating Station and determined that the facility can operate up to 300 MW winter and 285 MW summer. Upon purchase of the facility, PSE replaced the LGIA between PSE and Tenaska Washington with a new LGIA between PSE Marketing and PSE Transmission Contracts that reflected a stated generation capacity of 300 MW winter and 285 MW summer.

PSE designated the Ferndale Generating Station as a new Network Resource in accordance with PSE's Designated Network Resource process to secure network transmission capacity on PSE's transmission system. For off-system sales, PSE Marketing will follow PSE's undesignation procedures and purchase Point-to-Point transmission service to the extent that it is available. Off-system sales of energy may be limited from time to time when Point-to-Point transmission service is not available on other PSE posted transmission paths.

Q. Please describe the gas transportation arrangements for the Ferndale Generating Station.

A. As stated above, the Ferndale Generating Station is a dual-fuel facility (natural gas and distillate). There is on-site fuel storage for approximately 2.05 million gallons of distillate. Gas and transportation requirements are 52,000 MMBtu/day for 270 MW baseload (winter rating) and a total of 58,900 MMBtu/day including the additional 25 MW of duct-fire capacity.

The Ferndale Generating Station interconnects to the Westcoast Energy Inc. ("Westcoast") system by Cascade Natural Gas Company's ("Cascade") distribution system. The Cascade distribution system delivery pressure is a minimum of 350 pounds per square inch gage ("psig") and a maximum pressure of 700 psig. Through Cascade's connection to Westcoast, the Ferndale Generating Station has the ability to access gas from British Columbia directly at the Sumas/Huntingdon trading hub. PSE will also hold capacity on Westcoast for approximately one half the plant requirements to allow purchase of supplies at the Station 2 trading hub, enhancing price diversity and physical access.

Although the plant can run on distillate, PSE will secure firm gas pipeline capacity to support the full output of the facility. The option of running the facility on distillate allows greater flexibility to the entire PSE fleet by allowing gas supply destined for the Ferndale Generating Station to be diverted to other PSE plants without distillate back-up. PSE maintains a moderate distillate inventory at the facility to support this flexibility.

Under ownership of Tenaska Washington, the Ferndale Generating Station held 52,000 MMBtu/day of firm gas transportation under a special contract on the Cascade system, which expired on June 18, 2013, but could be renewed for up to ten years. PSE has determined that pricing under the new standard form Cascade transportation agreement is more advantageous than an extension and modification of the existing special contract. Cascade retired the special contract for 52,000 MMBtu/day in favor of a new "standard" firm transportation agreement, effective upon closing of the transaction.

To provide the additional firm transportation of 6,900 MMBtu per day to the Facility, Cascade also agreed to an amendment of the existing agreement with PSE for firm gas transportation to PSE's nearby Whitehorm Generating Station, at no additional cost. That agreement, which provides firm service of 24,000 MMBtu per day to a plant requiring over 43,000 MMBtu per day –when running on pure gas- will be amended to allow a diversion, at PSE's daily option of up to 6,900 MMBtu per day of firm service to the Ferndale Generating Station.

Q. Please describe the fuel supply arrangements for the Ferndale Generating Station.

A. PSE's natural gas price exposure will be tied to contracts forwardly traded at the Sumas trading point that interconnects the Westcoast Energy Inc. pipeline with the Cascade distribution system. The heat rate optionality inherent in this power plant, and thus its dispatch protocol, will depend on the relationship between natural gas prices at Sumas and power prices at the Mid-C. The plant's heat rate

driven dispatch characteristics will be added to PSE's existing portfolio, which is currently modeled in its risk system. Based on forward market heat rates, the model would assign monthly probabilistic run rates and gas supply requirements for the plant ranging from near zero to close to the maximum capacity of 58,200 MMBtu per day for two years forward.

Although Sumas is not a liquid trading point, there is enough liquidity to effectively trade fixed financial natural gas contracts for the next two to three years forward, based on the probabilistic run assumptions. Since the facility is an efficient power generator with a medium heat rate vis-à-vis other power plants in the region, the plant is likely to be dispatched predominately from July through February annually when market heat rates tend to be highest. PSE would expect to see an increase in its natural gas short position in these months that will be managed through a combination of financial and physical gas purchases.

With the volatility of market heat rates, a flexible gas management strategy is required to manage the cross-commodity risk. In the case where heat rates rise, PSE will keep and exercise the financial and physical hedges. In the case where heat rates fall, rendering the Ferndale Generating Station uneconomic, PSE would sell the financial gas contract and purchase power at Mid-C. These hedges reduce the uncertainty of both the financial cost and physical supply. Purchasing the financial gas hedge and the underlying physical natural gas supply at an index (floating) price may force PSE to not only sell off the financial gas hedge, when heat rates collapse, but also the physical supply. This adds operational risk,

particularly if heat rates are highly volatile in a particular month and the financial hedge is taken on and off numerous times.

To further mitigate gas price risk, PSE will obtain firm capacity on the Westcoast system for approximately 50 percent of the Facility's gas supply demand. This capacity will give PSE access to gas at the "Station 2" trading hub in northern British Columbia as an alternative to exclusive reliance on supplies transported by third parties to the Sumas hub. This approach of purchasing financial gas hedges and diversifying gas source is consistent with current PSE portfolio management practices.

5. Operations and Maintenance Due Diligence

Q. Please describe the operations and maintenance due diligence conducted by PSE.

A. The Ferndale Generating Station staff consists of four management positions, two administrative support workers, fourteen craft workers, and one technician. The four management positions were exempt salaried employees, the seventeen other employees were non-exempt, compensated at an hourly rate. The labor force at Ferndale was nonunion.

The PSE thermal operations group evaluated multiple options to staff the plant in a manner similar to Tenaska Washington and ultimately opted to hire North American Energy Services on a short term basis to operate and maintain the facility.

6. NERC/WECC Compliance Due Diligence

Q. Please describe the compliance due diligence conducted by PSE.

A. The Ferndale Generating Station is subject to the North American Electric Reliability Corporation ("NERC")/Western Electricity Coordinating Council ("WECC") Reliability Standards applicable to Generator Owners and Generator Operators. Derived from Federal Energy Regulatory Commission ("FERC") Orders 693 and 706, these reliability standards have been in effect since June 2007. Tenaska Washington registered as a Generator Owner and Generator Operator in the NERC Registry (NCR # 05418) and was subject to applicable regional standards within the WECC Region. In April 2007, WECC audited Tenaska Washington and found the facility to be compliant with all 38 NERC requirements and two WECC regional requirements applicable to it at that time (Order 693 standards only). The next WECC audit is anticipated to occur in 2016.

C. Board Approval of the Acquisition

Q. Was PSE able to finalize contracts for acquisition of the Ferndale Generating Station?

A. Yes. Negotiations with Tenaska Washington produced definitive agreements for PSE's acquisition of the Station. At the September 27, 2012, meeting of PSE's Board of Directors, PSE management recommended that the Board approve the acquisition as set forth in the summary documentation to the Board of Directors. Please see Exhibit No. ___(RG-6HC) for a copy of the presentation to the PSE

Board of Directors, dated September 27, 2012 regarding the Ferndale Generating Station. The Board approved the recommendation, and PSE executed the necessary agreements and closed on the transaction on November 15, 2012.

D. Project Acquisition Process

Q. Please describe the process resulting in PSE's acquisition of the Ferndale Generating Station.

A. PSE and Tenaska Washington entered into a non-binding Letter of Intent and Term Sheet. Please see Exhibit No. ___(MM-5) for copies of the non-binding Letter of Intent and Term Sheet for the Ferndale Generating Station. This Letter of Intent and Term Sheet formed the basic terms upon which PSE would be willing to proceed to negotiate Definitive Agreements.

PSE and Tenaska Washington executed the Asset Acquisition Agreement, dated as of October 3, 2012, following approval from PSE's Board of Directors. Please see Exhibit No. ___(MM-6C) for a copy of the Asset Acquisition Agreement, dated as of October 3, 2012, between PSE and Tenaska Washington.

Q. Has FERC approved the acquisition of the Ferndale Generating Station?

A. Yes. On November 8, 2012, FERC issued its "Order Authorizing Disposition of Jurisdictional Facilities and Acquisition of Generating Facilities." Please see Exhibit No. ___(MM-7) for a copy of such FERC order.

Q. Have PSE and Tenaska Washington closed the sale of the Ferndale Generating Station?

A. Yes. The transaction closed on November 15, 2012.

E. Principal Agreements

1. Asset Acquisition Agreement

Q. Please describe the structure of the Asset Acquisition Agreement.

A. Pursuant to the terms and conditions of the Asset Acquisition Agreement, Tenaska Washington sold, and PSE purchased, all assets relating to the operation of the Ferndale Generating Station at the closing on November 15, 2012. Please see Exhibit No. ___(MM-6C) for a copy of the Asset Acquisition Agreement.

Q. What was the purchase price under the Asset Acquisition Agreement?

A. PSE paid a purchase price of $84,000,000 at closing. Tenaska Washington placed $8,4000,000 of the purchase price in an escrow account at closing to secure Tenaska Washington's indemnification obligations to PSE. The escrowed amount will be reduced to $1,680,000 upon the conclusion of the survival of certain of such obligations and will be fully released after 36 months.

Q. What representations and warranties are contained within the Asset Acquisition Agreement?

A. The Asset Acquisition Agreement contains representations and warranties typical for transactions of this type. Among other things, the representations and warranties in the Asset Acquisition Agreement relate to:

(i) organizational and authority matters;

(ii) matters requiring third party consents;

(iii) absence of brokers;

(iv) solvency;

(v) condition and sufficiency of the purchased assets;

(vi) certain matters related to the acquired real property and the acquired contracts;

(vii) compliance with law and permits;

(viii) environmental matters;

(ix) litigation, tax, insurance, intellectual property and employments matters;

(x) historical financial information; and

(xi) credit support obligations.

Please see Exhibit No. ___(MM-6C).

Q. What covenants are contained within the Asset Acquisition Agreement?

A. The Asset Acquisition Agreement contains various covenants agreed to by PSE and Tenaska and Washington, including, among other things, covenants related to:

(i) efforts to obtain regulatory approvals and third party consents necessary to consummate the transaction;

(ii) conduct and operation of the Ferndale Generating Station and activities related to the acquired assets prior to closing;

(iii) PSE's access to the Ferndale Generating Station site and books and records prior to closing;

(iv) furnishing financial and plant accounting data sufficient to meet FERC accounting requirements;

(v) risk of loss in the event of casualty or condemnation prior to closing; and

(vi) provision of transitional services if required by PSE.

Please see Exhibit No. ___(MM-6C).

Q. Please describe the tax provisions of the Asset Acquisition Agreement.

A. The Asset Acquisition Agreement provides that any real estate excise tax imposed on the sale of the acquired assets shall be shared equally between PSE and Tenaska Washington. Tenaska Washington was responsible for any sales and use tax imposed on the transaction. Please see Exhibit No. ___(MM-6C).

Q. Were there any conditions to closing of the Asset Acquisition Agreement?

A. Yes. The Asset Acquisition Agreement contained mutual conditions to closing, including the following:

(i) no laws or injunctions prohibiting the transaction;

(ii) receipt of FERC approval;

(iii) expiration of the Hart-Scott-Rodino waiting period; and

(iv) all third party consents and approvals being obtained.

Please see Exhibit No. ___(MM-6C).

In addition, the Asset Acquisition Agreement contains conditions to closing that ran in favor of PSE, including the following:

(i) Tenaska Washington's representations and warranties remain true and correct, except as would constitute a material adverse effect;

(ii) no greenhouse gas standard shall have been implemented that establishes an emissions rate that is less than the Ferndale Generating Station can meet utilizing reasonable assumptions regarding dispatch under PSE ownership;

(iii) receipt by PSE of a Commission order declaring that the Ferndale Generating Station and the transaction are in compliance with the greenhouse gas standard;

(iv) counterparties to certain project documents, including the Lease, Steam Agreement, and gas transportation agreement, shall have agreed to amendments and/or new agreements; and

(v) PSE shall have received a title policy or irrevocable title commitment.

Please see Exhibit No. ___(MM-6C).

Q. What indemnification provisions are included in the Asset Acquisition Agreement?

A. The Asset Acquisition Agreement provides a right of indemnification to all parties with respect to claims arising out of the transaction. All claims for indemnification arising out of breaches of representations and warranties must be made within a period anticipated to be no more than fifteen months after closing, except for claims relating to tax and environmental representations and warranties which may be made within 36 months after the closing. Please see Exhibit No. ___(MM-6C).

Q. Does the Asset Acquisition Agreement include limitations of liability?

A. Yes. The Asset Acquisition Agreement provides that a party seeking indemnification will have no reimbursable claim for indemnification until having incurred losses exceeding $525,000, but indemnification is from the first dollar after the threshold is reached. Further, PSE's recovery for breaches of Tenaska Washington's representations and warranties is limited exclusively to the escrowed amount on deposit. Please see Exhibit No. ___(MM-6C).

Q. Please describe the termination provisions of the Asset Acquisition Agreement.

A. In addition to voluntary termination provisions, the Asset Acquisition Agreement provides that it may be terminated under certain circumstances, including the following:

(i) by either party, if the closing has not occurred by December 31, 2012, which date shall be extended by 60 days if closing has not occurred due to the failure to obtain certain regulatory approval or third party consents;

(2) by a party in the event of a material breach by the other party; and

(3) by either party in the event of a material adverse effect on Tenaska Washington or the assets to be acquired.

Please see Exhibit No. ___(MM-6C).

2. Steam Agreement

Q. What is the Steam Agreement?

A. Prior to its acquisition by PSE, the Ferndale Generating Station provided steam to the Phillips 66 Refinery pursuant to the Steam Agreement (the "Steam Agreement") between Tenaska Washington and the Phillips 66 Company ("Phillips 66"). Phillips 66 agreed to certain amendments to the Steam Agreement that became effective upon closing of the Asset Acquisition Agreement. Please see pages 137-144 of Exhibit No. ___(MM-6C) for a copy of the Consent and Amendment Agreement, which amends the Steam Agreement.

Q. When does the amended Steam Agreement terminate?

A. The Steam Agreement expires in 2041, coterminous with the expiration of the Lease described below.

Q. What are the terms of steam deliveries under the amended Steam Agreement?

A. [redacted].

Q. What are the payment terms under the amended Steam Agreement?

A. [redacted].

Q. Does the amended Steam Agreement contain a buyout option?

A. Yes. [redacted].

3. Lease and Easement

Q. Please describe the Lease for the Ferndale Generating Station?

A, As described above, the Ferndale Generating Station is located on an approximately 16-acre site wholly within the boundaries of the approximately 850-acre site of the Phillips 66 Refinery. Prior to PSE's acquisition of the Ferndale Generating Station, Tenaska Washington leased the facility site pursuant to a Lease ("Lease"), between TWP and Phillips 66. Phillips 66 agreed to certain amendments to the Lease that became effective upon the closing. Please see pages 95-136 of Exhibit No. ___(MM-6C) for a copy of the Consent and Amendment Agreement, which amends the Lease.

Q. What is the term of the Lease?

A. The Lease expires in 2041, coterminous with the expiration of the Steam Agreement (described above).

Q. What is the rent under the Lease?

A. [redacted].

Q. Does the the Lease contain provisions for facility removal and remediation of the facility site?

A. Yes. [redacted].

PSE was responsible for funding an escrow account at closing to secure PSE's removal and remediation obligations discussed above. The amount placed in escrow was approximately $1.6 million, subject to change from time to time based upon updated estimates of the cost to perform PSE's removal and remediation obligations.

4. Agreement for Industrial Water Purchase

Q. Please describe the Agreement for Industrial Water Purchase.

A. Prior to PSE's acquisition of the Ferndale Generating Station, Whatcom County PUD provided the facility with industrial water pursuant to the Agreement for

Industrial Water Purchase ("Industrial Water Purchase Agreement") between Tenaska Washington and Whatcom County PUD. PSE assumed Tenaska Washington's obligations under the Industrial Water Purchase Agreement at closing.

Q. What is the term of the Industrial Water Purchase Agreement?

A. The Industrial Water Purchase Agreement expires December 31, 2014. Whatcom County PUD has expressed an interest in extending the agreement on a long-term basis.

Q. What are the key commercial terms of the Industrial Water Purchase Agreement.

A. Under the Industrial Water Purchase Agreement, Whatcom County PUD must provide the Ferndale Generating Station up to two million gallons per day of industrial water pursuant to standard utility rates. PSE can change delivery quantity with consent of Whatcom County PUD.

5. Agreement for Natural Gas Service

Q. Please describe the Agreement for Natural Gas Service.

A. Cascade provides the Ferndale Generating Station with firm natural gas transportation pursuant to the Agreement for Natural Gas Service Firm Transportation. PSE took assignment of this agreement (a special contract requiring Commission approval when implemented in 1991) to reserve the firm

capacity. PSE entered into a new Agreement for Natural Gas Service ("Gas Service Agreement") at closing that superseded and replaced the prior agreement.

Q. What is the term of the Gas Service Agreement?

A. The Gas Service Agreement expires on September 30, 2037, with additional year-to-year renewals until terminated by either party.

Q. What are the key commercial terms of the Gas Service Agreement?

A. Under the terms of the Gas Service Agreement, Cascade must provide firm gas transportation for up to 52,000 MMBtu/day. [redacted].

Cascade will charge standard rate schedule 663 pricing under the Gas Service Agreement. Variable costs would total from $0.05 to 0.15 per MMBtu depending on monthly usage and fixed costs total $78,500/month.

6. O&M Agreement

Q. Please describe the O&M Agreement.

A. PSE and NAES Corporation ("NAES") entered into an O&M Services Agreement, dated as of October 12, 2012 (the "O&M Agreement"). The term of the O&M Agreement is [redacted].

Under the O&M Agreement, PSE has retained NAES to provide certain O&M services as more particularly described in the O&M Agreement. PSE pays NAES

a fee of [redacted] for these services, and PSE will reimburse NAES for certain "Home Office Costs" reasonably incurred by NAES in performing the services under the O&M Agreement.

7. Interconnection Agreement

Q. Pleas describe the Interconnection Agreement for the Ferndale Generating Station.

A. The Ferndale Generating Station interconnects to the PSE transmission system pursuant to the LGIA. Upon purchase of the Ferndale Generating Station, the then-existing LGIA between Tenaska Washington and PSE was terminated and a new LGIA between PSE Marketing and PSE Transmission Contracts was executed.

Based on the results of a recent System Impact Study, the new LGIA will allow the Ferndale Generating Station to operate with an increase of the maximum output limits to 300 MW winter and 285 MW summer.

F. Project Acquisition Costs

Q. Please describe the acquisition costs for the Ferndale Generating Station.

A. PSE's purchase price for the Ferndale Generating Station was $84,000,000 or approximately $290 per kW. There were additional acquisition costs as indicated in Table 4 below, which resulted in a total acquisition cost of approximately $87,993,973.

Table 4. Ferndale Generating Station Acquisition Costs

Ferndale Generating Station	Project Costs
Facility Purchase Price	**$84,000,000**
Real Estate Excise Tax (REET) 50%	[redacted]
Facility Improvements	[redacted]
IT	[redacted]
Security	[redacted]
Interconnection & Transmission	[redacted]
NERC/WECC Testing	[redacted]
Signage	[redacted]
Operating Standards Upgrades	[redacted]
Transaction & Due Diligence	[redacted]
Documentation	[redacted]
Due Diligence	[redacted]
Hart-Scott-Rodino filing	[redacted]
Alta Survey	[redacted]
Title Insurance	[redacted]
Total Acquisition Costs	**$87,993,973**

Q. Please describe the line item Additional Acquisition Costs.

A. Additional Acquisition Costs contains costs PSE incurred to complete the transaction, bring the Ferndale Generating Station up to PSE's operating standards and pay a portion of the Real Estate Excise Tax ("REET"). The REET is a Washington State tax levied on the portion of property classified as "real" in which a controlling interest of the property is transferred. The combined tax rate for Whatcom County and Washington State is 1.78%. PSE and Tenaska Washington agreed that PSE would bear a portion of the REET.

When PSE purchases or constructs a generating facility and before the facility is placed into service for operation by PSE, PSE ensures that the plant meets PSE's Operating Standard. The Operating Standard defines PSE's policy for continued

safe and reliable operations of PSE's generating facilities. PSE identified some necessary upgrades.

Transaction and due diligence costs are PSE's internal costs for due diligence and negotiations, title insurance, third party expert consultants and legal fees associated with the transaction. Please see the discussion above regarding the due diligence efforts undertaken by PSE.

The category "Transaction & Due Diligence Costs" reflects (i) the costs paid by PSE to third parties who assisted in PSE's due diligence efforts for the acquisition and (ii) the legal fees paid to the law firm Bracewell & Giuliani for negotiating, drafting and documenting the definitive agreements for the acquisition.

Q. What does PSE project its production O&M expenses will be for the Ferndale Generating Station during the rate year?

A. PSE anticipates total O&M costs of $6.9 million for the Ferndale Generating Station during the rate year. The projected O&M costs during the rate year are provided in the workpapers in support of Exhibit No. ___(LEO-1T).

Q. Did PSE prepare a projected balance sheet, income statement, and statement of cash flows associated with the Ferndale Generating Station?

A. Yes. Please see pages 72-96 of Exhibit No. ___(RG-6HC) for the projected balance sheet, income statement, and statement of cash flows associated with the Ferndale Generating Station.

VI. THE SALE OF THE ELECTRON PROJECT AND THE ELECTRON PPA

A. Quantitative Analysis of the Electron Project Alternatives

Q. Did PSE perform a quantitative analysis of the Electron Project alternatives?

A. Yes. PSE's Resource Acquisition team evaluated the potential rebuild or sale of the Electron Project on a quantitative basis. Please see the Prefiled Direct Testimony of Mr. Paul K. Wetherbee, Exhibit No. ___(PKW-1CT), for a discussion of PSE's analyses with respect to the Electron Project and the various alternatives considered by PSE. PSE then compared the financial benefits and costs with other generation alternatives received in response to the 2011 RFP.

Q. What model did PSE use to evaluate the Electron Project alternatives?

A. The Resource Acquisition team used the Screening Model to perform the analysis.

Q. What were the results of the Screening Model for Electron Project alternatives?

A. Table 5 below shows how the potential rebuild alternatives of the Electron Project, the potential sale (and ten-year PPA) of the Electron Project, and other 2011 RFP resources ranked relative to each other.

Table 5. Screening Model Results with Electron Project Alternatives

Project/ Scenario	PB/ kW-yr	PB/ kW-yr Rank	Net Cost/ kW-yr	Net Cost/ kW-yr Rank	Benefit Ratio	Benefit Ratio Rank	20-Year Levelized Cost	Portfolio Benefit
Electron Sale and PPA	[redacted]	1	$(16)	1	0.49	2	[redacted]	$24,999
Long-term redevelopment (100 CFS MIF)	[redacted]	2	$11	2	0.32	3	[redacted]	$42,617
Long-term redevelopment (130 CFS MIF)	[redacted]	3	$32	3	0.27	4	[redacted]	$36,707
Long-term redevelopment (160 CFS MIF)	[redacted]	4	$59	6	0.22	7	[redacted]	$29,583
TransAlta PPA	[redacted]	5	$61	7	0.23	6	[redacted]	$333,189
[redacted]	[redacted]	6	$53	5	0.20	8	[redacted]	$49,986
[redacted]	[redacted]	7	$39	4	2.17	1	[redacted]	$25,707
[redacted]	[redacted]	8	$64	9	0.18	9	[redacted]	$25,329
[redacted]	[redacted]	9	$64	8	0.26	5	[redacted]	$44,462
[redacted]	[redacted]	10	$146	10	0.05	10	[redacted]	$129,569
Short-term redevelopment (100 CFS MIF)	[redacted]	11	$261	11	(0.09)	11	[redacted]	$(8,707)
Short-term redevelopment (130 CFS MIF)	[redacted]	12	$286	12	(0.12)	12	[redacted]	$(11,814)
Short-term redevelopment (160 CFS MIF)	[redacted]	13	$319	13	(0.15)	13	[redacted]	$(15,552)

REDACTED VERSION

REDACTED VERSION

The analysis demonstrated that the long-term rebuild alternatives and the sale of the Electron Project were attractive options relative to other 2011 RFP proposals. The short-term rebuild alternatives were less attractive than other 2011 RFP proposals.

B. Quantitative Analysis of the Purchase Price for the Sale of the Electron Project and the Power Prices Under the Electron PPA

Q. Please describe the evaluation process for the Electron Hydro, LLC ("Electron Hydro") bid.

A. PSE evaluated the Electron Hydro bid in multiple ways. First, the sale of the Electron Project (i) avoided projected costs associated with retirement of the Electron Project of approximately $28.9 million and (ii) provided cash inflows associated with the purchase price of $13.7 million. Additionally, PSE analyzed the Electron PPA as a standalone item with the Optimization Model. Although prices for the Electron PPA are slightly higher than the prices in the Coal Transition PPA, the Optimization Model chose the Electron PPA along with other smaller resources to meet PSE's needs and delay by several years the build-out of generic natural gas-fired peaking plants.

Q. Did Electron Hydro offer other pricing options besides the one that was selected?

A. Yes. Electron Hydro offered a "menu" of four options with different combinations of asset purchase and PPA prices. Please see Table 6 below for the

range of Electron Hydro options and the quantitative results associated with each such option.

Table 6. Electron Hydro Options

Options	Purchase Price / (Retirement Cost)	PPA Price	Optimization Model Portfolio Costs (Capacity)	Net Costs w/ Stranded Costs (Energy)
Retirement	$(28.6 M)	Market	$11,934 M	$111 M
Option 1	$11.0 M	$51.95/MWh	$11,868 M	$97 M
Option 2	$13.7 M	$55.50/MWh	$11,872 M	$102 M
Option 3	$15.0 M	$57.40/MWh	$11,877 M	$107 M
Option 4	$15.8 M	$59.00/MWh	$11,876 M	$106 M

Q. What did PSE conclude from the results of the Optimization Model?

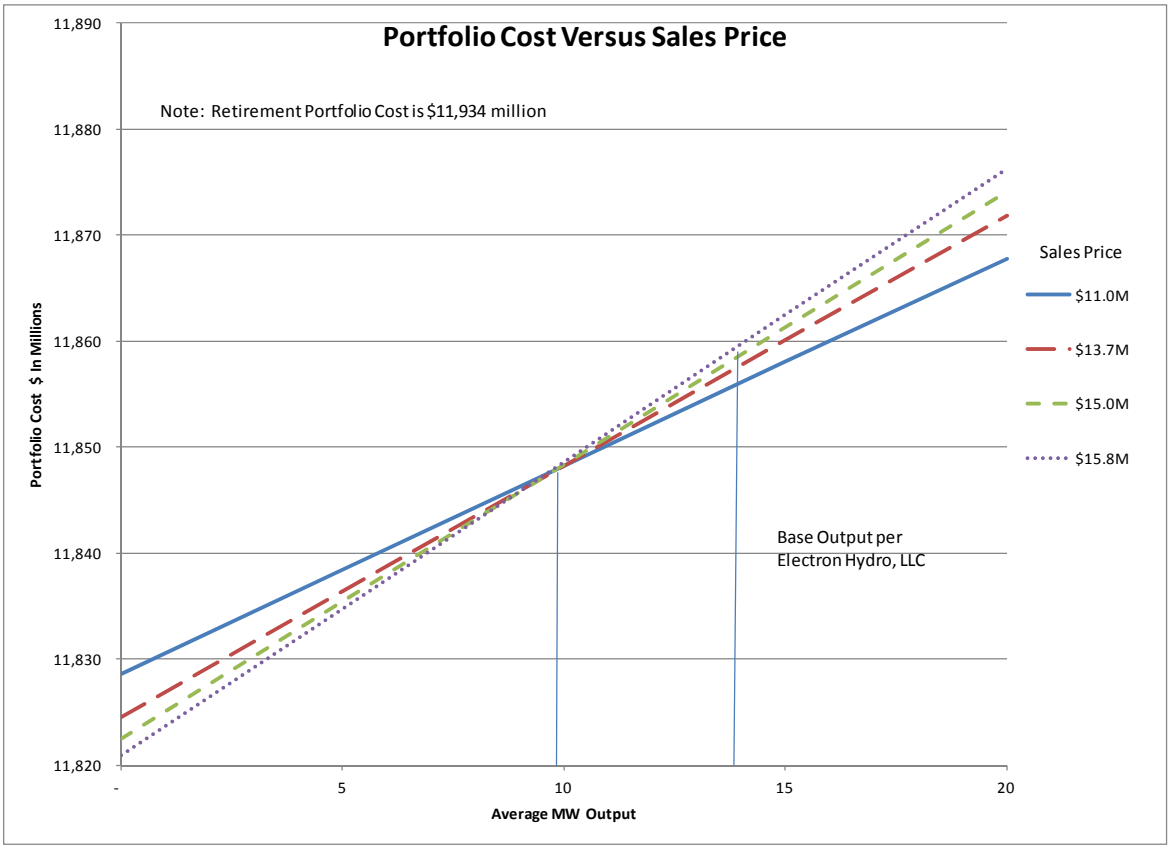
A. The results of the Optimization Model indicated that each of the four Electron Hydro offers was more favorable than the retirement option. Among the four Electron Hydro offers, those with a lower purchase price and lower PPA price resulted in lower total portfolio costs. Among the offers from Electron Hydro, in other words, the reduction in portfolio cost associated with a lower PPA price more than off-sets the increase in portfolio cost associated with a lower purchase price.

Q. What generation assumptions did PSE make in producing the analysis of the four Electron Hydro options presented in Table 6 above?

A. In the analyses of the four Electron Hydro options presented in Table 6 above, PSE assumed that Electron Hydro would be able to deliver on its estimate of 14.5 average-MW ("aMW") when the plant is fully functional. It has been approximately 10 years since the Electron Project has produced at this level, however, and the estimate from Electron Hydro did not appear to account for

maintenance outages. Therefore, PSE did a sensitivity analysis to estimate the effect of varying generation output on the four pricing options. Results of the sensitivity analysis are shown in Figure 2 below.

Figure 2. Electron Hydro Pricing Options Sensitivity to Project Output



Q. What did PSE conclude from the sensitivity analyses represented in Figure 1 above?

A. The results of the sensitivity analyses indicated that (i) lower PPA prices perform better at higher levels of production and (ii) higher PPA prices perform better at lower levels of production. In terms of portfolio cost, PSE would be indifferent between the four pricing options with Electron Project output of just under 10 aMW.

PSE concluded that the pricing risk associated with the Electron Project is directly correlated with the future output of the project. In other words, PSE would prefer a lower purchase price combined with a lower PPA price if PSE could be certain that the output of the Electron Project would be higher than 10 average MW. Conversely, PSE would prefer a higher purchase price combined with a higher PPA price if PSE could be certain that the output of the Electron Project would be low.

Q. Is PSE certain whether future output from the Electron Project will be high or low?

A. No. Given the unique challenges associated with the redevelopment of the Electron Project, PSE cannot predict whether the Electron Project will have high or low output. Therefore, PSE elected to proceed with negotiations associated with the prices offered in Option 2, which had a purchase price of $13.7 million and an initial PPA price of $[redacted]/MWh. This middle path allowed PSE to (i) receive the higher purchase price in the event that Electron Project generation falls short of the estimate from Electron Hydro but (ii) pay a lower PPA price in the event that the Electron Project meets or exceeds Electron Hydro's generation estimate.

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JUNE 7, 2013

C. Overview of the Electron PPA

Q. What product does PSE propose to purchase under the terms of the Electron PPA?

A. Under the Electron PPA, PSE will purchase the entire net electrical output of the Electron Project (i.e., the total electrical energy output of the Electron Project reduced by any amounts of electric power and energy used in connection with the operation of the Electron Project and losses, if any, from the Point of Delivery to the meters) during the operating period.

Q. At what price would PSE purchase the contract product?

A. The contract price increases over time. The initial price in 2013 is $[redacted]/MWh, with annual increases based on a yearly percentage increase of [redacted]%. Please see Table 7 below for the Electron PPA contract annual prices.

REVISED
JUNE 7, 2013

Table 7. Electron PPA Contract Prices

PPA Year	Escalation Rate	Purchase Price ($/MWh)
2012 (Baseline)	[redacted]	[redacted]
2013	[redacted]	[redacted]
2014	[redacted]	[redacted]
2015	[redacted]	[redacted]
2016	[redacted]	[redacted]
2017	[redacted]	[redacted]
2018	[redacted]	[redacted]
2019	[redacted]	[redacted]
2020	[redacted]	[redacted]
2021	[redacted]	[redacted]
2022	[redacted]	[redacted]
2023	[redacted]	[redacted]
2024	[redacted]	[redacted]
2025	[redacted]	[redacted]
2026	[redacted]	[redacted]
2027	[redacted]	[redacted]
2028	[redacted]	[redacted]
2029	[redacted]	[redacted]
2030	[redacted]	[redacted]
2031	[redacted]	[redacted]
2032	[redacted]	[redacted]
2033	[redacted]	[redacted]

Q. Where will the energy be delivered?

A. Output from the Electron Project under the Electron PPA will be delivered to PSE's Electron Heights Substation.

VII. CONCLUSION

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JUNE 7, 2013

Q. Please summarize your conclusions.

A. PSE conducted the 2011 RFP to address resource deficiencies outlined in PSE's 2011 IRP. A wide variety of resources were made available to PSE both during and after this process to help address the projected need. Ultimately, the Ferndale

Generating Station and the Electron PPA were the only resources meeting PSE's criteria to address need at lowest reasonable cost available.

Q. Does that conclude your prefiled direct testimony?

A. Yes, it does.