Exhibit No. ___ HCT (DN-1HCT)
Dockets UE-111048/UG-111049
Witness: David Nightingale
Redacted Version

BEFORE THE WASHINGTON STATE UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION, Complainant, v. PUGET SOUND ENERGY, INC., Respondent.	DOCKET UE-111048 DOCKET UG-111049 *(Consolidated)*

TESTIMONY OF

DAVID NIGHTINGALE

STAFF OF WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

Prudence of Lower Snake River Wind Project, Phase 1 and Klamath Power Purchase Agreement

December 7, 2011

HIGHLY CONFIDENTIAL PER PROTECTIVE ORDER
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TABLE OF CONTENTS

I. INTRODUCTION 1

II. SCOPE AND SUMMARY OF TESTIMONY 3

III. DISCUSSION 7

A. Used and Useful for Service 7

B. The Prudence of PSE's Acquisition of LSR Phase 1 and the Klamath Seasonal PPA 8

1. Prudence Standard 8

2. Application of the Prudence Standard – LSR Phase 1 10

a. The Need for the Resource; Evaluation of the Alternatives; Cost 10

b. Participation of the Company's Board of Directors 26

c. Documentation of the Company's Decision-Making Process 27

d. Commission Policy on Acquisition of Renewables 27

e. Conclusion on LSR Phase 1 Prudence 32

3. Application of the Prudence Standard-Klamath Seasonal PPA 33

a. The Need for the Resource; Evaluation of Alternatives; Cost 33

b. Participation of the Company's Board of Directors 36

c. Documentation of the Company's Decision-Making Process 36

d. Conclusion on Klamath Seasonal PPA Acquisition Prudence 36

I. INTRODUCTION

Q. Please state your name and business address.

A. My name is David Nightingale. My business address is the Richard Hemstad Building, 1300 South Evergreen Park Drive SW, Olympia, Washington, 98504-7250.

Q. By whom are you employed and in what capacity?

A. I am employed by the Washington Utilities and Transportation Commission ("Commission") as a Senior Regulatory Engineering Specialist in the Energy Section of the Regulatory Services Division. I have held that position since February 2009.

Q. What are your duties as a Senior Regulatory Engineering Specialist?

A. My duties involve the analysis of resource acquisition prudence, integrated resource planning, requests for proposals for acquisition of new resources, greenhouse gases emissions performance standard compliance, compliance with the energy conservation and renewable portfolio standards of the Energy Independence Act ("EIA"), and energy conservation program development and implementation. In addition, I represent Staff in various advisory and oversight roles for energy planning, including participation on the Integrated Resource Plan Advisory Group and Conservation Resources Advisory Group ("CRAG") for Puget Sound Energy, Inc. ("PSE" or the "Company").

Q. Please describe your education and relevant employment experience before you joined the Commission in 2009.

A. I hold a Bachelor of Arts degree in Business Administration from Western Washington University, Bellingham. I also hold a Bachelor of Science degree in Energy Engineering from the University of Washington, Seattle, where my studies focused on fluid dynamics, thermodynamics, and alternative energy. I performed research and designed projects, including testing residential conservation standards in four fully-instrumented model homes (this research led to the technical justification for what became the Super Good Cents programs), cost-effectiveness of residential solar hot water heating, and design of a small wind turbine system on Orcas Island.

From 1987 to 1991, I worked for RW Beck and Associates, an engineering consulting firm in Seattle. My responsibilities included county and state waste and recycling system planning, landfill development, and waste-to-energy (renewable biomass) project evaluation and analysis for clients in Washington and Alaska.

From October 1991 through January of 2009, I worked for the Washington State Department of Ecology in various capacities; as a planner, engineer, technical unit supervisor, statewide technical-lead, and policy staff. My projects included technical review and regulatory compliance of renewable biomass projects, such as landfill gas to energy projects, variously-fueled pyrolysis plants and proposals, and fluidized-bed and mass-burn waste-to-energy plants. I was also responsible for technical review and regulatory assistance for coal combustion products recycling and disposal options for TransAlta's Centralia power generation plant, as well as

combustion products disposal for Avista's Kettle Falls wood-fueled electric generating plant.

Q. Have you previously presented testimony before the Commission?

A. Yes. I testified before the Commission in Docket UE-090704 regarding greenhouse gas emissions compliance and prudence of the Mint Farm combustion turbine resource acquisition and Wild Horse wind resource expansion by PSE. I also testified in Docket UE-090205 regarding greenhouse gas emissions compliance and the prudence of PacifiCorp's acquisition of the Chehalis combustion turbine generating facility.

I have presented Staff recommendations to the Commission in open public meetings on issues involving integrated resource plans ("IRP"), requests for proposals ("RFP"), conservation targets and tariffs, and other matters.

II. SCOPE AND SUMMARY OF TESTIMONY

Q. Please explain the purpose of your testimony.

A. My testimony addresses the prudence of PSE's acquisition of the Klamath Winter Power Purchase Agreement ("Klamath Seasonal PPA"), and the Company's development of the Lower Snake River Wind Project, Phase 1 ("LSR Phase 1").

Q. Please summarize your conclusions on the issues addressed in your testimony.

A. I conclude that the Company's acquisition of LSR Phase 1 and the Klamath Seasonal PPA are prudent under Commission-established standards and, for LSR Phase 1, the

criteria set forth in the Commission's recent policy statement concerning acquisition of renewable resources.[1]

Q. Please briefly describe the Lower Snake River, Phase 1 project.

A. The LSR Phase 1 adds 343 MW name plate capacity of wind energy to PSE's existing portfolio.[2] The LSR Phase 1 is located on the western edge of Garfield County, Washington, and connects to the PSE load through BPA's transmission system.[3] It consists of 149 Siemens 2.3 MW wind turbines spread over nearly 2160 acres of leased land straddling US Highway 12.[4] LSR Phase 1 is on target to become operational in February 2012, a few months ahead of the original schedule of April 2012.[5]

Q. Please briefly describe the Klamath Seasonal PPA.

A. The Klamath Seasonal PPA is a contract between PSE and Iberdrola Renewables, executed on March 10, 2011 for the purchase of winter peaking power for a minimum amount of 14 MW up to a maximum of 100 MW. The power will be delivered to PSE's system from a cogeneration plant near Klamath Falls, Oregon beginning January 1, 2012 and ending February 29, 2016.[6] The first delivery term covers January through February 2012. The remaining delivery terms span the first

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[1] *In the Matter of the Washington Utilities and Transportation Commission's Inquiry on Regulatory Treatment for Renewable Energy Resources*, Docket UE-100849, Report and Policy Statement Concerning Acquisition of Renewable Resources by Investor-Owned Utilities (January 3, 2011) ("Renewable Policy Statement").
[2] Exhibit No. __ (RG-1HCT), page 3.
[3] LSR Phase 1 represents the first phase of development of the Lower Snake River Project. The entire project consists of a wind resource potential of over 1,200 MW of nameplate capacity in Columbia and Garfield Counties.
[4] Exhibit No. __ (RG-1HCT), pages 41-44.
[5] Exhibit No. __ (RG-13HC), page 22, Table 6.
[6] Exhibit No. __ (RG-26C).

day of November (staring 2012) through the last day of February (four months after the start of each delivery term) through 2016. PSE can dispatch this resource to meet winter peaking needs up to 44 percent of the hours during each of these delivery terms and can vary the quantities of power multiple times per day as needed.[7]

Q. What information did you evaluate in conducting your analyses in this case?

A. I reviewed the direct testimony and exhibits of PSE witnesses Harris, Mills, Garratt, and Seelig, and PSE's responses to numerous data requests from Staff, Public Counsel, the Industrial Customers of Northwest Utilities, the NW Energy Coalition, and the Sierra Club. I also attended IRP Advisory Group meetings during the development of the 2009 IRP, reviewed the Company's 2009 IRP and update, its RFPs and subsequent analyses, the transaction documents, Board of Director's presentations and excerpts from meeting minutes, and other related documents.

I visited the LSR Phase 1 project site twice. On November 10, 2010, I observed the final stages of the turbine foundation construction and energy collection system underground cable installation, and on April 29, 2011, on-site delivery and assembly of turbine components, and the ongoing LSR Phase 1 and BPA substations construction.

Finally, a number of working sessions were held with PSE staff to review the Draft All Sources RFP, RFP analyses, methodology and findings of their analyses of resource alternatives, and LSR Phase 1 progress reports.

[7] Exhibit No. __ (RG-26C), pages 4 and 10.

Q. Please briefly describe what IRPs and RFPs are, and how they are related.

A. The IRP forecasts a utility's likely future resource needs for the next 20 years, as well as a projection of the most advantageous types and quantities of resources to acquire to meet those needs given various assumptions about future conditions. Various scenarios are modeled in order to discover likely differences in the best path forward based on different assumptions about the future. The differences in modeling results provide contingency planning information and can reveal the magnitude of sensitivities to different variables. In addition to a plan of acquisition for generating resources, the IRP also calls for a blend of demand-side management (conservation, efficiency and demand-response) and market purchases to serve the needs of a company's customers. The utility develops its IRP in consideration of a balanced acquisition of both supply and demand–side resources through a public process.

The IRP examines the current portfolio of resources and then models additional generic resources to strategically examine alternatives and provide direction to the acquisition process where specific resources are evaluated. In that way, the generic results of the IRP inform the resource acquisition process of specific resources.

One of the first steps in the resource acquisition process is issuing an RFP to seek resource specific bids from resource suppliers. In this instance, PSE issued an RFP on January 12, 2010 for All Generation Sources and Demand Side Resources.[8] These IRP and RFP results and processes will be discussed later in my testimony.

[8] Exhibit No. __ (RG-5).

III. DISCUSSION

A. Used and Useful for Service

Q. What is the importance of the "used and useful for service" issue?

A. It is my understanding that in order for a resource to be included in rate base for ratemaking purposes, the resource must be "used and useful for service" in Washington State.[9] The Commission has stated that the phrase "used and useful for service in this state" means "to benefit the ratepayers of Washington, either directly (*e.g.*, flow of power from a resource to customers) and/or indirectly (*e.g.*, reduction of cost to Washington customers through exchange contracts or other tangible or intangible benefits)."[10] The Commission also has stated that "the [c]ompany must demonstrate tangible and quantifiable benefits to Washington of resources in the system before we will include the resources in rates."[11]

Q. Are LSR Phase 1 and the Klamath Seasonal PPA used and useful for service in Washington?

A. Yes. The Klamath facility that is dedicated to supporting the PPA is operating and the LSR Phase 1 facility is undergoing final testing. Both are scheduled to directly provide a "flow of power from a resource to customers." LSR Phase 1 and the Klamath facility are both connected to PSE's system through BPA's transmission

[9] RCW 80.04.250.
[10] *WUTC v. PacifiCorp, d/b/a Pacific Power & Light Co.*, Docket UE-050684, Order 04 at ¶ 50 (April 17, 2006).
[11] *Id.* at ¶ 68.

infrastructure. Both facilities will be operational to provide power to the Company's service territory during the rate year associated with this proceeding.

In the prudence discussion that follows, I describe additional analyses that address the question of benefits to ratepayers that are tangible and have been quantified by PSE and verified during my review of the relevant documents.

B. Prudence of PSE's Acquisition of LSR Phase 1 and the Klamath Seasonal PPA

1. Prudence Standard

Q. What is the relevant standard to assess the Company's acquisition of the LSR Phase 1 and Klamath Seasonal PPA resources?

A. The Commission applies a "prudence" standard when it determines whether a specific resource acquisition decision by a utility was appropriate, and therefore the ratepayers can be required to support that asset through rates. Overall, the prudence standard is a reasonableness standard:

> The Commission has consistently applied a reasonableness standard when reviewing the prudence of decisions relating to power costs, including those arising from power generation asset acquisitions. The test the Commission applies to measure prudence is what would a reasonable board of directors and company management have decided given what they knew or reasonably should have known to be true at the time they made a decision. This test applies both to the question of need and the appropriateness of the expenditures. The company must establish that it adequately studied the question of whether to purchase these resources and made a reasonable decision, using the data and methods that a reasonable management would have used at the time the decisions were made.[12]

[12] *WUTC v. Puget Sound Energy, Inc.*, Docket UE-031725, Order 12 at ¶ 19 (April 7, 2004) (footnotes and related citations omitted).

Q. What factors does the Commission use to evaluate the prudence of a utility's electric resource acquisition?

A. There is no single set of factors. For example, in Cause U-83-26, the Commission applied thirteen factors, which the Commission characterized as "unique" and stated that "[a]dditional factors may be considered in subsequent cases as dictated by the facts."[13] In subsequent cases, the Commission has generally focused on the following four factors:

1) *The Need for the Resource* - The utility must first determine whether new resources are necessary. Once a need has been identified, the utility must determine how to fill that need in a cost-effective manner. When a utility is considering the purchase of a resource, it must evaluate that resource against the standards of what other purchases are available, and against the standard of what it would cost to build the resource itself.[14]

2) *Evaluation of Alternatives* - The utility must analyze the resource alternatives using current information that adjusts for such factors as end effects, capital costs, dispatchability, transmission costs, and whatever other factors need specific analysis at the time of a purchase decision. The acquisition process should be appropriate.[15]

3) *Communication With and Involvement of the Company's Board of Directors* - The utility should inform its board of directors about the purchase decision and its costs. The utility should also involve the board in the decision process.[16]

4) *Adequate Documentation* - The utility must keep adequate contemporaneous records that will allow the Commission to evaluate the Company's decision-making process. The Commission should be able to follow the utility's decision process; understand the elements that the utility used; and determine the manner in which the utility valued these elements.[17]

[13] *WUTC v. The Wash. Water Power Co.*, Cause U-83-26, Fifth Supplemental Order at 15-16 (January 19, 1984).
[14] *WUTC v. Puget Sound Power & Light Co.*, Docket UE-921262, *et al.*, Nineteenth Supplemental Order at 11 (September 27, 1994).
[15] *WUTC v. Puget Sound Energy, Inc.*, Docket UE-031725, Order 12 at ¶ 20 (April 7, 2004).
[16] *Id.*
[17] *Id.* at ¶ 20.

In my opinion, it is appropriate to apply all four of these factors in this case, as well as additional considerations from the Renewable Policy Statement with respect to LSR Phase 1.

2. Application of the Prudence Standard- LSR Phase 1

a. The Need for the Resource; Evaluation of Alternatives; Cost

Q. Does the Company adequately support the need for LSR Phase 1 and demonstrate that this plant was the appropriate resource to acquire to meet that need?

A. Yes. The direct testimony and exhibits of Company witnesses Garratt, Seelig, Mills, and Harris provide support for the need. I confirmed their analysis through my independent evaluation of available information.

In short, LSR Phase 1 fulfills a need specified in the Company's 2009 IRP, albeit in advance of the procurement schedule required by the renewable energy portfolio standards ("RPS") of the Energy Independence Act ("EIA"),[18] and the Company considered many alternative wind resource options as part of its 2010 RFP evaluation process. The 2009 IRP demand forecast showed that, after accounting for reduced load from demand-side resources in order to meet the RPS requirements for renewables generation, there were additional renewable energy needs for 81 aMW by 2016 (about 270 MW nameplate wind capacity over 2009 levels) and 261 aMW

[18] Qualified renewable energy or renewable energy credits must equal a mandated percent of the Company's load; specifically, 3 percent starting in 2012, 9 percent starting in 2016, and 15 percent starting in 2020. RCW 19.285.040(2)(a).

of additional renewable resources by 2020 (about 870 MW nameplate wind capacity over 2009 levels).[19]

The 2009 IRP indicated that, if cost-effective wind resources were available, a faster acquisition of those resources would be preferable. The anticipated availability of federal tax incentives for renewables available at the time of the IRP was part of the analysis of wind resources cost-effectiveness. However, the 2009 IRP went beyond examination of meeting the RPS needs. The IRP projected a need in 2012 for energy and capacity by acquisition of new nameplate capacity resources in the following amounts:

- 205 MW of demand-side resources,
- 300 MW of wind,
- 275 MW of combined-cycle combustion turbines with duct firing, and
- 160 MW of gas-fired peakers.[20]

The assumptions and analysis in the IRP resulted in estimated needs for nameplate capacity of additional cost-effective wind resources of approximately 300 MW by 2012, 600 MW by 2016, and 1,000 MW by 2020.[21] The IRP model used incremental blocks of 100 MW nameplate wind resources as the generic block size for planning purposes.

LSR Phase 1 also provides energy and some capacity as identified in the 2010 "All Sources" RFP. Specifically, the RFP identified a need starting in 2012 for 676 MW of new resources based on updated forecasts of the 2009 IRP.[22] LSR Phase

[19] Exhibit No. __ (RG-3), page.81.
[20] Exhibit No. __ (RG-5), page.7.
[21] Exhibit No. __ (RG-3), page 10, Figure 1-4 and Exhibit No. __ (RG-16HC), page 5.
[22] Exhibit No. __ (RG-5), page 6.

1 has a nameplate capacity of 343 MW and, as such, matches the 2012 magnitude of wind resource to be acquired in the IRP (i.e., 300 MW of wind capacity) if cost-effective opportunities were available.[23]

Therefore, given the EIA's requirements for acquiring specified levels of renewable resources, the Company has provided adequate support for the need for a renewable wind resource of the approximate size of LSR Phase 1 in the planning process to be on-line in 2012. Additional analysis was performed, as described below, to judge whether LSR Phase 1 was the best available resource to fill that need at an advantageous acquisition cost in the 2012 timeframe.

Q. Were there any special financial considerations that affected the Company's decision on the timing of the purchase of wind resources prior to the RPS need?

A. Yes, the limited-time availability of US Treasury cash grants and an expiring state sales tax exemption were significant factors in the timing of the acquisition of wind resources by the Company. Consideration of these opportunities was evaluated by the Company in the 2009 IRP as well as during the RFP processes.

Q. What was the nature of the Treasury cash grant program?

A. On February 17, 2009, President Obama signed the American Recovery and Reinvestment Act of 2009 (Public Law 111-5). Section 1603 of the Act's tax title appropriates funds for payments to persons who place in service specified energy

[23] Subsequent to the final 2009 IRP, the Company re-evaluated its planning reserve margin methods and in January 2010 published the 2009 IRP Addendum. This revised the capacity need from 676 MW to 934 MW in 2012. Exhibit No. __ (RG-4), page 9.

property if construction of the property began between January 1, 2009 and December 31, 2010, and the facility is placed in service after 2011 and before the credit termination date. For large wind projects, utility-scale generation projects, the credit termination date is January 1, 2013, and the percentage of eligible cost available for payments is 30 percent.[24] Large wind projects (projects over 100kW nameplate capacity) were eligible for a 30 percent cash payment for certain capital costs if construction began by December 31, 2010, and they were placed in service by January 1, 2013.[25]

Q. Were either of these deadlines, namely, beginning of construction or placement in service, important in PSE's consideration of when to commence development or acquisition of utility-scale wind projects?

A. Yes. Since wind resources have historically been the least cost utility-scale renewable resource, the Treasury grant construction beginning date was of special interest to the Company in evaluating the potential economic advantage of acquiring any renewable resource ahead of the schedule required by the EIA. The critical factor was meeting the beginning of construction deadline of December 31, 2010 for large wind projects. If a large wind project could meet that deadline, there was sufficient time (two years) to place the resource in service. This has proven to be true: the Company began construction of LSR Phase 1 in May 2010, which satisfies

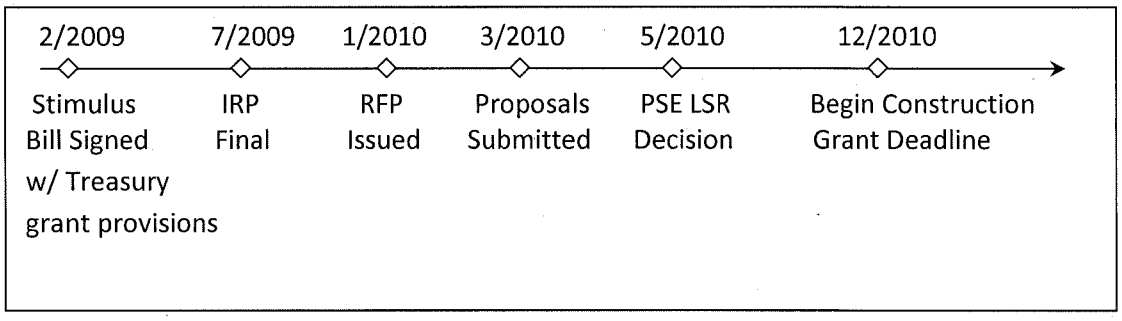
[24] Exhibit No. __ (RG-6).
[25] Exhibit No. __ (RG-6), page 5. In December 2010, 6 months after PSE had committed to build LSR Phase 1, Congress extended the timeline for start of construction for large wind projects by one year to December 2011. The placed in service deadline remained January 1, 2013. PSE Response to Staff Data Request 200 and *Payments for Specified Energy Property in Lieu of Tax Credits under the AMERICAN RECOVERY AND REINVESTMENT ACT OF 2009*, April 2011, http://www.treasury.gov/initiatives/recovery/Documents/B%20Guidance%203-29-11%20revised%20(2)%20clean.pdf.

the Treasury grant beginning of construction deadline that existed at the time PSE made the decision to acquire LSR Phase 1, and PSE anticipates LSR Phase 1 being operational in February 2012, well ahead of the placed in service deadline of January 1, 2013. The Company estimates that 90 percent of the capital expenditures on LSR Phase 1 will qualify for the 30 percent Treasury grant.[26]

Q. What were the key PSE milestones for the decision to acquire wind resources to meet the Treasury Grant deadline?

A. The following Treasury grant timeline begins at the time of the extension of the federal grant program for large wind projects (for projects with construction begun by 2010 and on-line by 2012). The timeline shows the actions taken by PSE to assess the Treasury grant opportunity and be positioned to timely act on those findings.

PSE Timeline and Treasury Grant Deadline



Q. How does Treasury determine the beginning of construction?

[26] Exhibit No. __ (RG-14HC), page 187.

A. The "beginning of construction" date is determined when "physical work of a significant nature begins".[27] Physical work of a significant nature is assumed to begin when facts and circumstances show that the physical work has begun or when more than 5 percent of the project cost is incurred by the end of 2010.[28] Physical work includes road construction, excavation for foundations, pouring foundations and similar on-site work such as supporting electrical infrastructure, as well as off-site manufacturing of wind turbine generation equipment.[29] Physical work does not include planning, site testing, clearing and financing costs.

Q. How did PSE plan to meet the beginning of construction standard to qualify for the Treasury Grant for LSR Phase 1?

A. When the PSE Board of Directors approved the development of LSR Phase 1, in May 2010, the Company planned to meet the beginning of construction deadline by showing that it had expenditures which amounted to more than 5 percent of the grant eligible project budget by December 2010. Based on my site visit in November 2010 and budget data provided by the Company, I estimated that at least 12 percent of the project budget was spent with on-site activities including road building, site preparation, underground energy collection system infrastructure, and turbine foundation construction.[30]

[27] Exhibit No.__ (RG-6), page .6.
[28] Exhibit No.__ (RG-6), page 7.
[29] Exhibit No.__ (RG-6), page 6.
[30] PSE Response to Staff Data Request 200, Attachment A, Independent Engineering Report for Lower Snake River Wind Project Phase 1, page 25.

Q. How is "placed in service" defined for Treasury grant purposes?

A. Placed in service is defined as "the property is ready and available for its specific use."[31] Commissioning reports and interconnection agreements document large scale wind resources placed in service date.[32] The deadline for placed in service is January 1, 2013.

Q. Do you expect PSE to meet the "placed in service" requirement for the Treasury grant for LSR Phase 1?

A. Yes. LSR Phase 1 is fully constructed and is anticipated to be generating energy in February 2012, nearly a year ahead of the placed in service deadline. In addition, PSE has executed a large-generator interconnection agreement with BPA.[33]

Q. Did PSE take into account the Treasury grant deadlines in evaluating proposed wind resources?

A. Yes. Because of the large potential capital cost reduction offered by the 30 percent Treasury cash grant, PSE modeled the financial performance of each wind proposal assuming that the Treasury cash grant would be acquired. By consistently applying this assumption, each proposal was compared equally for this financial aspect. The Company also evaluated, as one of a number of risk factors, the likelihood of each wind resource project successfully meeting the Treasury cash grant requirements, including qualifying timelines.

[31] Exhibit No. __ (RG-6), page 5.
[32] Exhibit No. __ (RG-6), page 10.
[33] Exhibit No. __ (RG-24).

Q. What were the state tax incentives that were set to expire and considered by PSE in its resource evaluation?

A. Senate Bill 6170, passed in May 2009, extended the sales tax exemption timeline for wind and other renewable technologies. 100 percent sales tax exemption was granted through June 30, 2011, but is then reduced to 75 percent from July 1, 2011 through June 30, 2013. PSE considered the impact of the sales tax exemption in its evaluation of wind projects. For example, the Company estimated that approximately 70 percent of the sales tax exemption would apply to LSR Phase 1. The estimated sales tax rate for LSR Phase 1 was estimated by PSE to be 7.7 percent.[34] Thus, the estimated effect of the sales tax exemption that the Company applied to LSR Phase 1 was 5.4 percent (70 percent of 7.7 percent)

Q. What would be the approximate cumulative discount of the federal and state incentives available for qualified renewables acquisition expenses?

A. The cumulative discount from the federal and state incentives is 35.4 percent; 30 percent from Treasury grants and 5.4 percent from sales tax exemption.

Q. What is the financial implication of the availability of this combination of incentives?

A. Without these two financial incentives, PSE would have had to spend about 50 percent more for qualifying capital expenditures to acquire an equivalent amount of

[34] Exhibit No. __ (RG-14-HC), page 168. This may be a bit optimistic as the current sales and use tax in Garfield County is only 7.5%.

renewable resources. Consequently, the presence of these two incentives provided a substantial capital cost reduction opportunity.[35]

Q. What process was used by PSE in evaluating proposed resources, including wind resources?

A. To evaluate available opportunities to acquire least-cost needed resources, the Company used a sophisticated RFP process involving extensive analysis and multiple quantitative and qualitative criteria in two phases. The "All Sources" RFP was issued in January 2010 and called for proposals from any interested party.[36] Proposals were due in March 2010 from all electric generation sources and technologies. 64 proposals from 55 respondents were submitted; 31 of these were for renewables and 21 of the 31 were for wind resources.[37]

Q. Did the Company evaluate all the proposals at once?

A. No. In order to evaluate the potential to take advantage of the Treasury cash grants in time to make a decision that would allow PSE to meet the beginning of construction deadline of December 31, 2010, the Company evaluated all of the renewables proposals first and the remaining non-renewables proposals later.[38] This separate evaluation path separated the need for renewables, which most likely would

[35] The cumulative estimated incentive of 35.4 percent is just over 1/3. This reduces the effective price to a lower level. For illustrative purposes, assume that the discounted lower level cost is $100. This $100 dollars represents 2/3 of the original price. To get back to the non-discounted cost, you must multiply 2/3 by 3/2 to equal 1 (100 percent of the normal price). Multiplying by 3/2 is the same as increasing the discounted price by 50 percent, so the $100 discounted price would have to be inflated to $150 to determine the non-discounted cost.
[36] Exhibit No. __ (RG-5).
[37] Exhibit No. __ (AS-3HC), page 17.
[38] Exhibit No. __ (AS-1HCT), page 5 and Exhibit No.__(AS-3HC), pages 25-26.

be filled with wind resources with only a 5 percent capacity factor, from other supply-side resources, which can reliably fill most of the capacity need identified in the IRP, typically with combustion technologies.

Q. Please describe the two phases of RFP evaluation used by PSE?

A. Phase 1 of the proposal evaluation process is a "fatal flaw" screening process that eliminates proposals presenting clearly unacceptable high costs or risks. Proposals that are not eliminated for fatal flaws move into the Phase 2 evaluation. Phase 2 includes more in-depth analysis of each remaining proposal through a dynamic modeling exercise that uses PSE's Portfolio Screening Model ("PSM") to understand how the proposal fits into the existing portfolio of generating resources and the level of benefit the project has in comparison to the generic resource assumed in the 2009 IRP. The PSM provides levelized costs, 20-year net present value, and compares the specific resource being modeled to the existing and generic resources used during the 2009 IRP.

There are two metrics that come out of the PSM analysis. The first is the "Portfolio Benefit," measured in net present value dollar benefit of the portfolio due to the addition of a specific resource compared to the existing and generic resources. The second metric is the "Portfolio Benefit Ratio," measured as a ratio of overall increase or decreased value of the portfolio due to the specific resource compared to the existing and generic resources.[39] Qualitative factors are also examined in more detail and, as needed, project bidders are contacted to provide more detailed

[39] Exhibit No. __ (AS-3HC), pages 157-160.

information about projects to fairly and fully evaluate each project. This more detailed modeling and analysis incorporates updated assumptions from the 2009 IRP to reflect changes in the market and up-to-date forecasts. An extensive matrix of qualitative and quantitative criteria is applied to evaluate each proposal.[40] Phase 2 results in a short list of the most promising proposals that are a combination of least cost and lowest anticipated risk.[41]

Q. Did the Company respond to other wind proposals or updated proposals outside of the RFP process timeline?

A. Yes. The renewables proposals submitted in compliance with the RFP deadline were evaluated between March and mid-April 2010, and bidders were then informed of their post-evaluation status. PSE staff had determined at that point that building out LSR Phase 1 was the best alternative due to a combination of least reasonable cost and lowest reasonable risk. In response, some bidders supplied follow-up bids, typically with lowered pricing.

In addition, unsolicited bids were provided outside of the RFP timeline. Some proposals received early in the evaluation process could be evaluated. PSE management reviewed the results in mid-April and a determination was made to present recommendations at the May 5, 2010, Board of Directors meeting.[42] This timing would allow the opportunity to take advantage of market conditions and the available incentives. Nonetheless, in order to assure that there were no late-arriving proposals or price-adjusted proposals that might be better than LSR Phase 1, PSE

[40] Exhibit No. __ (AS-3HC), pages 95-113.
[41] Exhibit No. __ (AS-3HC), pages 23 and 34-48.
[42] Exhibit No. __ (AS-3HC), pages 20-21 and 202-212.

staff re-examined proposals through June 2010. PSE determined that, upon comparing the late arriving or rebid proposals, LSR Phase 1 remained the lowest reasonable cost and lowest reasonable risk choice.[43]

Q. What was the range of levelized cost for renewables PSE examined in Phase 2 of their RFP evaluation process?

A. In the Phase 2 evaluation process, the levelized 20-year energy prices offered for renewable resources ranged from [redacted] per MWh. LSR Phase 1 was evaluated at a 20-year levelized cost of [redacted] per MWh[44].

Q. Were there significant differences in the Phase 2 qualitative risk evaluations between LSR Phase 1 and the other RFP renewables proposals?

A. Yes. Other than LSR Phase 1, the proposals suffered from one or more significant qualitative risks including:

- Incomplete planning and permitting processes, such as conditional land-use, air emissions, or environmental impact statements,
- Lack of available transmission or transmission rights,
- Lack of wind study to substantiate resource claims,
- Lack of long-term agreements with dependent operations or fuel supply to assure operation in the future,
- Improper wind turbine placement that would require project redesign,
- Lack of wind turbine site suitability from turbine manufacturer, and

[43] Exhibit No. __ (AS-3HC), page 49.
[44] Exhibit No. __ (AS-3HC), pages 115-121.

- Construction start dates and these other factors that made it unlikely for the project to meet the Treasury grant deadlines for beginning of construction or placed in service.[45]

Q. How did PSE determine whether it was economically beneficial to acquire wind resources ahead of the RPS deadline?

A. Starting with the 2009 IRP, PSE modeled the option of building wind just in time to meet the RPS standard versus building sooner to take advantage of market conditions and state and federal incentives. The analysis from the IRP financial modeling of additional generic wind resources indicated that with the state and federal incentives it was more cost-effective to build 100 to 300 MW of wind in 2012.[46]

In examining the option of acquiring wind resources earlier than the RPS deadlines, the Company re-ran the 2009 IRP PSM model during the RFP process. The new modeling runs included eight wind-build schedules including developing "No Early Wind", the 2009 IRP wind schedule, and 6 other schedule variations to develop wind at various times and amounts between 2010 and 2022. The "No Early Wind" schedule was shown to be the most expensive schedule of wind development using both the 2009 Trends and the Business As Usual portfolio scenarios.[47]

Q. What did the analysis conclude about the most beneficial size of wind to acquire before the RPS deadlines?

[45] *Id.*
[46] Exhibit No. __ (RG-3), pages 237-238.
[47] Exhibit No. __ (AS-1HCT), page 25 and Exhibit No. __ (RG-13HC), pages 180-181.

A. The analysis performed after the 2009 IRP showed that the most financially beneficial amount of wind to acquire by the end of 2012 was approximately 600 to 990 MW nameplate capacity.[48]

Q. Why did the Company decide to build less than the optimal nameplate capacity of wind by 2012?

A. While the financial analysis indicated the advantage of acquiring more wind by 2012, this potential path was substantially limited by various qualitative, real-world constraints, including:

- Uncertainty of being able to meet the Treasury grant requirement of 5 percent of construction by December 31, 2010 for a much larger project size,
- Incomplete, challengeable, conditional use permitting process for a larger scale project that would encompass leases in Columbia County,
- Less well-developed engineering plans that could delay start of construction for additional phases of the LSR project, and
- Not being able to take advantage of future wind turbine technology advances.[49]

This led the Company to limit the size of LSR Phase 1 to areas within Garfield County that were most ready to proceed towards construction. Taking into account all of these factors, the Board of Directors approved the 343 MW, LSR Phase 1 development on May 5, 2010.

[48] Exhibit No. __ (RG-13HC), page 175 and Exhibit No. __ (AS-3HC), page 371.
[49] Exhibit No. __ (RG-13HC), pages 183-185.

Q. Was the price PSE paid for LSR Phase 1 reasonable at the time of the project's development?

A. Yes. The price of LSR Phase 1 was cost competitive and was at or slightly better than the estimated cost of the generic wind resource evaluated in the 2009 IRP and was more favorable than the other candidates on the short list of 2010 RFP proposed renewable resources when measured by total benefit to the portfolio.[50] This finding was reaffirmed by analysis performed around June 30, 2010 which evaluated LSR Phase 1, including its contract termination costs, compared to other late arriving or rebid renewable options.[51] It is notable that this analysis occurred after the PSE Board had already authorized management to develop LSR Phase 1 at its May 5, 2010 meeting.[52] PSE staff verified that the LSR option was still the best choice by using the most up to date offers.

PSE compared the LSR pricing structure to other projects scheduled for delivery to the Americas in late 2010 through early 2011. This was done through reference to a Bloomberg New Energy Finance market prices article. The Bloomberg article identified a cost range between $1.36 million/MW to $1.48 million/MW of turbine capacity. The negotiated price for the LSR turbines was near the lower end of this price range.[53]

The range of 20-year. levelized costs for the 2010 RFP wind projects proposed were wider than the range of wind proposals from the similar 2008 RFP process. The range of 2010 proposals extended above and below the levelized cost

[50] Exhibit No. __ (AS-1HCT), page 34, Table 12.
[51] Exhibit No. __ (AS-1HCT), pages 44-45.
[52] Exhibit No. __ (RG-1HCT), page 57 and PSE Response to Public Counsel Data Request 290.
[53] Exhibit No. __ (RG-23), page 1.

from 2008.[54] Between 2008 and 2010 there emerged an oversupply of turbines due to financing limitations. Therefore, prices of wind turbines declined between 2008 and 2010 by about 15 percent.[55] The timing of this turbine market price reduction further enhanced the opportunity of the Treasury grant and state sales tax exemption to acquire wind resources at a deeply discounted price.

Q. What attributes of risk were different for LSR Phase 1 compared to the other proposals made in 2010?

A. The availability of PSE's interconnection through the BPA system for transmission reduced the risk of LSR Phase 1 compared to other proposals. In addition, all other wind projects had significant challenges in showing that they would likely be able to meet the construction deadline under the Treasury grant program. In various ways, the other projects did not have as clear a path to construction and final permitting as LSR Phase 1. LSR Phase 1 already had a completed wind assessment study for the proposed site, all local conditional use permits in hand, preliminary engineering and planning for roads and power collection runs were designed, the turbine manufacturer had been identified and was able to commit to a timely delivery schedule, and all ground leases were secured.[56] Consequently, no other project was positioned nearly as well as LSR Phase 1 to take advantage of the Treasury grant opportunity at a competitive price point. In addition, LSR Phase 1 allowed the Company to eliminate the risk of third-party performance, as the project development would be performed directly by PSE. PSE professional staff had been

[54] Exhibit No. __ (AS-3HC), page 14.
[55] Exhibit No. __ (RG-23), page.3.
[56] Exhibit No. __ (AS-1HCT), pages. 40-41.

developing the ability to perform these activities from their experiences of acquiring the Hopkins Ridge and Wild Horse wind projects. This was part of the overall strategy of the Company to enter the wind development arena earlier in order to avoid paying venture capital returns on turn-key wind projects.[57]

In summary, after my independent review of all the relevant documentation and facts and circumstances, I conclude that the Company adequately supported the need for a wind project of the size of LSR Phase 1 and demonstrated that LSR Phase 1 was the appropriate resource to acquire to meet that need.

b. Participation of the Company's Board of Directors

Q. Did PSE's Board of Directors make the final decision to develop LSR Phase 1?

A. Yes, the final decision to acquire this major capital investment was made by the PSE Board.[58] The information provided to the Board was well documented in the testimony of Company witness Garratt.[59] The PSE Board received voluminous materials to review, and extensive presentation and analysis from PSE staff, in order to make a reasoned decision on the self-build acquisition of LSR Phase 1.[60]

[57] Exhibit No. __ (RG-3), page 12.
[58] PSE Response to Public Counsel Data Request 290.
[59] Exhibit No. __ (RG-7HC) and Exhibit No. __ (RG-8).
[60] Exhibit No. __ (RG-13HC).

c. Documentation of the Company's Decision-Making Process

Q. Did PSE keep adequate, contemporaneous records that allow the Commission to evaluate the Company's decision-making process?

A. Yes. PSE provided adequate documentation in their direct testimony of both management and Board of Director decision-making processes through memos, reports, presentations given to the decision-makers, and resolutions of PSE's Board.[61]

d. Commission Policy on Acquisition of Renewables

Q. What other factors, in additional to the prudence factors described above, are important in this case?

A. The Company's analysis of LSR Phase 1 was performed using information available at the time. However, because this large acquisition was made significantly in advance of the need to satisfy the RPS standard, the Commission's Renewable Policy Statement in Docket UE-100849 also directly bears on this acquisition.

Q. How does the acquisition of LSR Phase 1 meet the RPS standards earlier than the standards require?

A. The Company currently has enough wind resources in its portfolio to satisfy the RPS standard until 2016. Because wind development can often takes 2-3 years, the

[61] *Id.*

Company was not required by the RPS standards to start the process of acquiring wind resources or building out LSR Phase 1 as early as 2010.

Q. Do these circumstances invoke the Commission's policy regarding the acquisition of renewable resources?

A. Yes. On January 3, 2011 in Docket UE-100849, the Commission issued the Renewable Policy Statement discussing the criteria by which it will review the prudence of acquisitions of renewable resources or Renewable Energy Credits ("REC") in three scenarios: (1) when the acquisition is to meet Washington's renewable portfolio standards of the EIA; (2) when the acquisition is to meet the RPS, but the acquisition is in advance of an RPS deadline; and (3) when the acquisition is to meet an energy demand and the utility has already acquired other resources to meet the RPS. The second scenario matches PSE's acquisition of LSR Phase 1.

Q. What does the Renewable Policy Statement say about the scenario when a company acquires a renewable resource in advance of a RPS deadline?

A. The Renewable Policy Statement affirms that the Commission will apply the prudence criteria historically used by the Commission, as I discussed earlier, including a requirement for a demonstration by the Company of need and an evaluation of alternatives to meet that need.[62] The Commission also affirmed the

[62] Renewable Policy Statement, ¶¶ 43-57.

general requirement that before any resource can be recovered through rates the resource must be shown to be "used and useful".[63]

Specific to the scenario where a company acquires a renewable resource in advance of a RPS deadline, the Commission focused on the need for a resource, the "used and useful" standard, and cost justification stating:

- The "used and useful" statute does not prevent acquisition of a renewable resource in advance of the RPS deadline.[64]
- Early acquisition of a renewable resource is "useful" if it will meet the utility's RPS needs at some point in the future.[65]
- The EIA mandates electric utilities to acquire renewable generation whether or not the utilities "need" the resource to meet demand. Therefore, when a utility acquires a resource to meet the relevant RPS, the prudency standard's requirement to demonstrate "need" has been satisfied by the statute.[66]
- To be "used" the utility must show that the resource produces benefits that offset the cost of early acquisition. This could include the sale of energy generated, sale of RECs, or other value attributable to the acquisition.[67]
- To give the utilities sufficient incentive and flexibility to achieve the EIA's goals, the Commission would support the acquisition of renewable resources in advance of the RPS deadlines if the early acquisition can be cost-justified.[68]

[63] Renewable Policy Statement, ¶55-56.
[64] Renewable Policy Statement, ¶55.
[65] Renewable Policy Statement, ¶56.
[66] Renewable Policy Statement, ¶42.
[67] Renewable Policy Statement, ¶56.
[68] Renewable Policy Statement, ¶52.

Q. Is the Company's acquisition of LSR Phase 1 consistent with the "useful" and demonstration of "need" standards, as outlined in the Renewables Policy Statement?

A. Yes. LSR Phase 1 results in PSE's portfolio having in excess of 9 percent renewables before that level must be met by 2016 under the EIA. However, acquisition of LSR Phase 1 will only allow PSE to meet about 79 percent of the RPS of 15 percent of load from renewables by 2020.[69] Consequently, the entire LSR project output can be completely devoted to meeting the RPS standard in the future and the Company will still be required to procure more renewable resources or RECs beginning in 2020 to be in compliance with the EIA. This indicates that the "useful" and "need" requirements, as discussed in the Renewable Policy Statement are met by the development of LSR Phase 1.

Q. The Renewable Policy Statement also focuses on whether an early acquisition is cost-justified. Has the Company cost-justified its early acquisition of LSR Phase 1?

A. Yes. Because wind and other generating resources require years to develop and have long service lives of 25 to 30 years or more, it is necessary to make an acquisition commitment based on long-term projections of costs and benefits, such as the 20-year levelized cost. This is how PSE approaches the acquisition of new long-term resources in its IRP, as well as in its normal resource acquisition processes.

[69] Exhibit No. __ (AS-3HC), page 372.

It may have seemed speculative to build a large renewable project far ahead of the need to meet Washington's RPS schedule, however, the abnormal price structure for the acquisition of wind resources at the time PSE decided to develop LSR Phase 1 early was much more favorable than usual. The favorable conditions included turbine supply prices (15 percent below 2008 prices), the federal Treasury grant (30 percent capital discount) and state sales tax exemptions (5.4 percent). Lacking the Treasury grant, sales tax exemption, and depressed turbine market prices, this investment might have been questionable. With the cash grant, sales tax exemption, and depressed turbine market prices, however, the opportunity to purchase wind resources early at lower capital costs more than offset the fact that the cost of the energy in the first few years of generation from LSR Phase 1 is likely to be incrementally higher than market. In fact, this factor was incorporated into the analysis PSE used to determine that the early acquisition of wind was cost-justified and is a net benefit to the generation portfolio.[70] Further, any energy produced by LSR Phase 1 will offset energy that would otherwise be supplied by other resources in PSE's portfolio of resources. RECs sold from the project will also benefit customers.

Q. Did the Company take into consideration short term transmission constraints and BPA transmission charges[71] in it cost-justification calculations?

[70] Exhibit No. __ (RG-17HC), pages 7-9.
[71] Renewable Policy Statement, ¶38.

A. Yes. During the evaluation of LSR Phase 1, the Company's economic analysis included an estimate of lower revenues associated with the short-term transmission constraints from the project, as well as BPA wheeling charges.

Q. Do you have any closing comments regarding the application of the Renewable Policy Statement to LSR Phase 1?

A. Yes. The Commission recognized that "a generator's useful life can span decades and will provide benefits over that same period" and therefore the need standard is not rigidly applied for generation facilities that are "too large for immediate forecasted need."[72]

Q. What is the expected life of LSR Phase 1?

A. The expected life of the LSR Phase 1 project is 25-30 years or more. This is typical for major wind turbine manufacturers such as Siemens, the selected turbine supplier to LSR Phase 1.

e. Conclusion on LSR Phase 1 Prudence

Q. What is your conclusion regarding the prudence of PSE's acquisition of LSR Phase 1?

A. Based on the documents I reviewed and the analysis I conducted, I conclude that LRS Phase 1 is "used and useful" and that the acquisition of the project by PSE was

[72] Renewable Policy Statement, ¶34.

prudent under the Commission's established prudence standard and its Renewable Policy Statement in Docket UE-100849.

3. Application of the Prudence Standard- Klamath Seasonal PPA

Q. Do the same prudence standards you applied to LSR Phase 1 apply to your analysis of PSE's acquisition of Klamath Seasonal PPA?

A. Yes. However, because Klamath is neither a renewable resource nor baseload electric generation, neither the renewable portfolio standards nor greenhouse gas emission standards of RCW 80.80 apply, and therefore, need not be addressed in the prudence analysis.

a. The Need for the Resource; Evaluation of Alternatives; Cost

Q. Does the Company adequately support the need for the Klamath Seasonal PPA, and show that it was an appropriate resource to acquire to meet that need?

A. Yes. The PSE electric demand profile is characterized as a winter-peaking utility. The Klamath Seasonal PPA provides up to 100 MW of winter peaking capacity resources. This resource coincides with the July 2009 IRP which describes a need for approximately 160 MW of peaker capacity by 2012.[73] As mentioned earlier in my testimony, the Klamath Seasonal PPA is used and useful to Washington customers.

[73] Exhibit No.__(RG-3) page 10.

Q. How did PSE evaluate the Klamath Seasonal PPA?

A. The Klamath Seasonal PPA was selected for acquisition within the Company's 2010 RFP evaluation process. The Klamath Seasonal PPA was evaluated and selected from a total of 21 capacity proposals, some with multiple offers. As described earlier in my testimony, the Company uses a two-phase evaluation method to evaluate resources. The first evaluation phase is a screening or fatal flaw analysis to eliminate high-risk and high-cost proposals. The second phase is a more in-depth analytical examination to create a short list of projects for possible negotiations.

The 2010 RFP process found that, in general, proposals from currently operating capacity resources provided less risk and more benefits than proposals offering capacity from the development of new resources.[74] Each proposal was compared to the projected generic cost derived from the 2009 IRP to see if the proposed resource was higher or lower. This comparison results in the Portfolio Benefit and Portfolio Benefit Ratio that I discussed earlier. When calculated values are positive, the Portfolio Benefit (dollars) and Portfolio Benefit Ratio indicate proposals that are projected to provide greater benefits to the portfolio than the generic capacity resources. Similarly, when the portfolio benefit and portfolio benefit ratio are negative, the indication is that the proposal represents resources which are likely to provide less benefits than the generic capacity resources.

The Company evaluated capacity proposals for combined-cycle combustion turbines (CCCTs), simple-cycle combustion turbines (SCCTs), and other capacity

[74] Exhibit No.__(AS-3HC) page 55.

resources at the same time. Included in the comparisons were the generic options to purchase power using market instruments and self-build resource options. The Klamath Seasonal PPA provided the highest Portfolio Benefit Ratio of all capacity proposals with a ratio of 3.21. One other offer had a Portfolio Benefit Ratio of 2.33 and all other offers were at 0.41 or less.[75] The significant qualitative concern surrounding the Klamath Seasonal PPA was providing firm transmission from southern Oregon to PSE's service territory. This issue was thought to be easily overcome and was a condition of the negotiated agreement.[76]

Q. Was the price paid for the Klamath units reasonable?

A. Yes. Pursuant to PSE's financial analysis, the pricing of the Klamath Seasonal PPA was the most competitive, as evidenced by the Portfolio Benefit Ratio I mentioned before.

Q. Did the parties successfully resolve the firm transmission issue between Klamath and PSE's service territory?

A. Yes. This issue was resolved by acquisition and reassignment of transmission rights between the Klamath busbar and PSE's service territory.[77]

[75] Exhibit No.__(AS-3HC) pages 54 and 55.
[76] Exhibit No.__(RG-26C) pages 1 and 2.
[77] Exhibit No.__(DEM-08T), page 10.

b. Participation of the Company's Board of Directors

Q. Did PacifiCorp's Board of Directors make the final decision to purchase the Klamath units?

A. No. The decision was made by a team of PSE senior management called the Energy Management Committee ("EMC") on February 17, 2011.[78] Considering the analysis and information provided to the EMC, it was reasonable for PSE management to decide to execute this winter-peaking PPA at an advantageous price without Board approval. I do not believe the acquisition should be found imprudent just because the Board did not make the final decision.

c. Documentation of the Company's Decision-making Process

Q. Did PSE meet the documentation requirement for the acquisition of the Klamath units?

A. Yes. PSE provided adequate contemporaneous records of its decision-making process and supporting analysis in this case, as cited above.

d. Conclusion on Klamath Seasonal PPA Acquisition Prudence

Q. What is your conclusion regarding the prudence of PSE's acquisition of the Klamath Seasonal PPA?

[78] Exhibit No.__(RG-27HC).

A. PSE satisfied all prudence factors and the decision to acquire the Klamath Seasonal PPA was made appropriately by PSE management. Therefore, I conclude that the Klamath Seasonal PPA acquisition was a reasonable and prudent choice for PSE when that decision was made.

Q. Does this conclude your testimony?

A. Yes, it does.