EXHIBIT NO. ___(RG-1HCT)
DOCKET NO. _____
2005 POWER COST ONLY RATE CASE
WITNESS: ROGER GARRATT

BEFORE THE
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

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

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

REDACTED VERSION

JUNE 7, 2005

PUGET SOUND ENERGY, INC.

PREFILED DIRECT TESTIMONY OF ROGER GARRATT

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PUGET SOUND ENERGY, INC.

PREFILED DIRECT TESTIMONY OF ROGER GARRATT

I. INTRODUCTION

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

A. My name is Roger Garratt. My business address is 10885 N.E. Fourth Street Bellevue, WA 98004. I am the Director of Resource Acquisition within the Energy Resource Group of Puget Sound Energy, Inc. ("PSE" or "the Company").

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

A. Yes, I have. It is Exhibit No. ____(RG-2).

Q. What are your duties as Director of Resource Acquisition for PSE?

A. My present responsibilities include overseeing the acquisition of electric resources for the Company, commencing with the Request for Proposal process and culminating in the execution and closing of all of the definitive agreements necessary to acquire a resource. In addition, I am responsible for the construction and operation of the Company's wind projects.

Q. Please summarize the contents of your testimony?

A. I describe in greater detail than Mr. Eric Markell's executive summary the manner in which the Company evaluated the proposals submitted in response to its Request for Proposals for Wind Power Projects ("Wind RFP") and Request for Proposals for All Generation Sources ("All-Source RFP") that were issued in November 2003 and February 2004, respectively. I also describe the self-build option the Company analyzed as a potential alternative means of meeting some of its resource needs. I provide additional detail regarding the Company's decision to acquire the Hopkins Ridge wind powered electric generation facility (the "Hopkins Ridge Project"). Finally, I detail the costs and construction schedule for the Hopkins Ridge Project.

II. PSE'S EVALUATION OF RESOURCE ALTERNATIVES

A. Overview

Q. How did the Company approach its evaluation of acquiring potential resources to meet its need?

A. Mr. Markell's testimony describes the process and analysis leading up to the Company's issuance of the Wind RFP and All-Source RFP. The Company evaluated the proposals submitted in response to these RFPs in two stages based on criteria that were designed to take into account qualitative and quantitative

factors that the Company believed should be considered in deciding whether to acquire a potential resource.

The short list of projects that best met the criteria during Stage One of the process advanced to Stage Two, where they were subjected to additional analyses and due diligence. The Company also evaluated a potential self-build option. In Stage Two of the process, the Company ultimately identified a slate of projects that it would seek to acquire by reaching definitive agreements through additional negotiations and due diligence.

Q. What processes did the Company put in place to organize and document its efforts?

A. Company staff responsible for this evaluation worked almost constantly on the evaluation process from the time responses to the Wind RFP were submitted in January 2004 until the Hopkins Ridge Project acquisition was finalized. Personnel involved in the evaluation met weekly to review and document progress made as of that time and to discuss any issues or questions that had arisen. In addition to its own staff, PSE used outside consulting firms to evaluate the technical and environmental attributes of the proposals.

During the course of the evaluation process, Energy Resources staff regularly updated the Company's officers and the Commission Staff on the status of the evaluation and any preliminary conclusions through presentations documented

primarily in power point slides. The exhibits to my testimony include slides from several such presentations. The Company's management, in turn, regularly apprised PSE's Board of Directors of the status of the evaluation process. *See* Exhibit No. ___(EMM-12HC) through Exhibit No. ___(EMM-17HC).

The Company's evaluation process and conclusions reached at various stages of its analysis are further explained below, and were documented in reports prepared during the course of the evaluation. *See* Exhibit No. ___(RG-3HC) (March 26, 2004 Wind RFP Stage 2 Evaluation Process & Review); Exhibit No. ___(RG-4HC) (May 13, 2004 All-Source RFP Stage 1 Evaluation Process & Review); and Exhibit No. ___(EMM-12HC) at 74-92 (Dec. 2004 All-Source RFP Evaluation Stages One and Two).

Q. How did the Company approach evaluation of responses to its Wind RFP versus its All-Source RFP?

A. As described in Mr. Markell's testimony, PSE received the responses to its Wind RFP first, in January 2004, well before it received responses to the All-Source RFP on March 12, 2004. Thus, the Company's initial evaluation efforts focused on the responses to the Wind RFP. PSE identified a short list through its Stage One analysis and proceeded into Stage Two evaluation of the wind projects. *See* Exhibit No. ___(RG-3HC); Exhibit No. ___(RG-6HC) at 6; Exhibit No. ___(EMM-12HC) at 51-72; Exhibit No. ___(EMM-13HC) at 12-22.

However, all of the short-listed projects from Stage One of the Wind RFP evaluation process were resubmitted in response to the All-Source RFP, some with revisions. In addition, all but two of the respondents to the Wind RFP that did not make the Wind Stage One shortlist resubmitted their proposals in response to the All-Source RFP. Thus, the Company merged the two evaluation processes into a single combined evaluation effort at the time it selected the short list of proposals to take into Stage Two of the All-Source RFP evaluation. *See* Exhibit No. ___(RG-4HC) at 5; Exhibit No. ___(RG-5HC) at 2-3.

For these reasons, the discussion below focuses on the Company's evaluation of the responses to the All-Source RFP. However, some of the analysis with respect to wind power projects was undertaken prior to the time the Company received responses to its All-Source RFP.

B. Stage One of the RFP Evaluation

1. The proposals.

Q. What proposals did the Company evaluate in Stage One?

A. In response to the All-Source RFP, PSE received 47 unique proposals from 39 different owners/developers. Many of the proposals contained multiple options such as power purchase agreements ("PPAs"), asset ownership, and a combination of a PPA and a partial ownership. Considering all the options offered under each

proposal, the Company had to evaluate more than 80 different proposals. With respect to fuel source, 38% of the proposals were for natural gas fired facilities, 28% were for wind, 9% each for hydro and coal, and the rest were for biomass, geothermal, recovered heat, or were PPAs that did not specify a fuel source. *See* Exhibit No. ___(RG-4HC) at 3; Exhibit No. ___(RG-5HC) at 4-7.

2. The criteria.

Q. What criteria did the Company apply during Stage One of the evaluation process?

A. During Stage One, PSE applied the following general criteria to the proposals:

- Compatibility with PSE Resource Need;
- Cost Minimization;
- Risk Management;
- Public Benefits; and
- Strategic and Financial concerns.

These criteria are described in greater detail below, as well as in Exhibit No. ___(EMM-12HC) at 96-99; s*ee also* Exhibit No. ___(RG-7HC) at 7-13.

Q. What considerations were included under the "Compatibility with Need" criterion?

A. This criterion focused on the Company's interest in meeting its long-term energy need while reducing the risk of excess capacity. The Company was interested in projects that would come on line sooner rather than later because of its ongoing exposure to wholesale market risks. Because the Company's loads are much higher in winter than in summer months, as described in Mr. Markell's testimony, the Company was very interested in resources that were or could be shaped to balance the seasonality of its loads. The Company also considered its need to diversify its portfolio, pursuant to the conclusions of its 2003 Least Cost Plan.

Q. What considerations were included under the "Cost Minimization" criterion?

A. The Company sought to identify the lowest cost alternatives that would meet its energy and capacity needs, looking not only at prices that might be stated in proposals but at other factors that would ultimately impact the cost of the resource. Examples of such costs include the costs of transmission upgrades and firming.

Q. What considerations were included under the "Risk Management" criterion?

A. The Company considered many risks, particularly those that could threaten the feasibility of a project or the timing of completion. Such risks included environmental and permitting risks. The Company also evaluated risks associated with whether a potential counterparty would actually be able to perform its obligations related to a project proposal. Other considerations included the desirability of long-term flexibility in order to better respond to future changes in the industry or PSE's portfolio.

Q. What considerations were included under the "Public Benefits" criterion?

A. The Company considered whether projects would contribute to regional energy adequacy and contribute to environmental and efficiency interests such as reducing portfolio emission levels. Community impacts were also considered.

Q. What considerations were included under the "Strategic & Financial" criterion?

A. These considerations included potential exposure to future environmental regulations and future state wholesale market restructuring. They also included balance sheet impacts and potential degradation of the Company's credit quality or ability to fund ongoing operations due to factors such as credit support requirements and imputed debt.

3. PSE's initial screening and application of the criteria.

Q. How did the Company apply these criteria?

A. The Company first screened the 47 proposals to identify any that appeared clearly unsatisfactory because the project lacked viability. Several proposals were identified as clearly not feasible for a variety of reasons. PSE initially moved 17 such projects to a "constrained list". PSE later removed two projects from the list due to improved transmission conditions so that they could be further considered. PSE sent two other such projects – involving short-term opportunities -- to the Energy Risk Management Department for consideration.

The Company then performed technical analytical analysis using the Company's Acquisition Screening Model ("ASM"), as explained in Mr. W. James Elsea's testimony. Information from the ASM was used to develop a cost ranking for each individual resource proposal. *See* Exhibit No. ___(RG-4HC) at 7-9; Exhibit No. ___(RG-5HC) at 10-16; Exhibit No. ___(RG-7HC) at 18-25.

Q. Did the Company do anything in addition to this initial ASM screening?

A. The Company also conducted an extensive evaluation of qualitative factors related to its evaluation criteria. Such factors included availability and potential problems regarding fuel supply and transmission. The Company also evaluated whether the bidders' projections regarding their proposal appeared to be realistic, as the Company had concerns regarding the likely ability of bidders to actually deliver

what they proposed. Subject matter experts within the Company were assigned to closely review various project proposals or aspects of proposals with which they were familiar and then provide their proposed rating based on that review. *See* Exhibit No. ___(RG-5HC) at 8-10; Exhibit No. ___(EMM-13HC) at 11.

Q. Please describe the evaluation teams.

A. In both Stage One and Stage Two of the evaluations, subject matter experts within the Company were assigned to review project proposals and perform due diligence in order to assess the proposals or aspects of proposals within their specialized area. Typically, several people were assigned within each team area. Each team was also responsible for evaluating several of the evaluation criteria discussed above. The subject matter teams consisted of the following:

- Quantitative Analysis;
- Business & Commercial Issues;
- Environmental & Permitting;
- Transmission & Integration;
- Real Estate;
- Fuel Supply;
- Credit; and
- Community Affairs.

See Exhibit No. ___(RG-6HC) at 11-13 and Exhibit No. ___(RG-7HC) at 8-13 for examples of the evaluation criteria and associated subject matter teams. In

addition, Company staff were assigned to evaluate technological matters that were relevant to a number of the subject areas listed above.

Q. How did the work of the evaluation teams feed into the overall evaluation process?

A. After each team performed their evaluations, positive and negative comments were documented. Then through the weekly evaluation meetings, the teams summarized their evaluations by assigning a qualitative evaluation rating for each of the proposals using a rating system of "Low," "Medium," and "High," with "High" being considered more favorable and "Low" being considered less favorable. This qualitative rating system was applied in order to help begin to sort the most favorable proposals. *See* Exhibit No. ___(RG-5HC) at 18-25.

Q. Would you please provide some examples of the teams' evaluation process and analysis?

A. Some examples of the work, process and results of the evaluation teams are:

- The community affairs team visited the local community where a proposal project was located or potentially would be located. The team talked with community stakeholders and assessed local support. Information was gathered from public, local, state and federal government entities and Native American nations. The team collected local newspaper editorials and letters to the editor that discussed project proposals. One example of the results of such efforts

was the discovery that one project proposal was favored by a local community over two other project proposals within the same community. This allowed PSE to understand and address the concerns of the local community regarding a potential project and helped position PSE for further development of the project.

- The real estate team engaged in extensive review of the site control documents presented in the proposals. As additional information was needed, particularly in the Stage Two evaluations, the real estate team visited project proposal sites, walked or drove the sites, and "ground truthed" the representations contained in the proposals. This helped PSE identify potential issues that were not described in the proposal documents.

- The environmental team researched the web sites of local, state, and federal agencies in order to determine whether there were any environmentally sensitive issues and to uncover any assessment documents that had been produced. This allowed PSE to more fully evaluate environmentally sensitive issues that needed to be addressed within the proposals.

- On the permitting side of the environmental team, local, state, and federal permitting processes were outlined in order to ascertain the status of the project proposals' permits. An evaluation of the process and risks of acquiring such permits were also address by the team's efforts.

Q. Would you please provide some examples of how the Company applied these qualitative factors?

A. As one example, as described above, Company staff with real estate experience reviewed the proposals with an eye toward the status and documentation of real estate rights related to a project. Projects at the earliest stages of real estate execution and/or with no real estate documentation provided for review received a "low" ranking with respect to this factor, proposals containing plans and/or discussion of real estate rights but with incomplete or insufficient documentation received a "medium" ranking and those with fee ownership and/or signed real estate documentation (or where a plant was operational and assumed to have valid operating rights) received a "high" ranking.

Transmission issues provide another example. Company staff evaluated the location of proposed projects in relation to PSE's system as well as transmission paths and known transmission constraints. Proposals that were not to be delivered directly to PSE's system were reviewed to determine whether the developer had already submitted a request for transmission rights and the status of that request in the transmission provider's queue.

Company engineers also evaluated the technologies proposed to be used for each project. They noted positive attributes such as the reliability or efficiency of a type of turbine as well as negative attributes such as lack of information on the

type of equipment proposed to be used for a project, and ultimately assigned high, medium or low ratings to each project with respect to the technology evaluation.

Q. Did the Company do all of the Stage One evaluation in-house?

A. The Company also retained the consulting firm Garrad Hassan Americas, Inc. ("Garrad Hassan" or "GH"), a leading authority on wind energy, to assist PSE in evaluating the various potential wind resource proposals. *See* Exhibit No. ___(RG-3HC) at 5, 8; Exhibit No. ___(RG-6HC) at 14; Exhibit No. ___(EMM-17HC) at 35.

Q. Why did the Company hire Garrad Hassan?

A. The Company felt that it needed external assistance in evaluating wind projects because of its lack of experience with wind energy. Garrad Hassan is recognized internationally as a leading authority on all aspects of wind energy. GH has acted as project engineer for many projects on behalf of lenders, insurers and owners. As part of this work, they have performed due diligence with respect to wind turbine technology, wind resource assessment, and consulted with respect to various aspects of project design and construction including economic modeling. GH maintains its independence by taking no equity stake in any development or technology and works purely on a consultancy basis.

Q. What did Garrad Hassan do?

A. Garrad Hassan undertook its own evaluation of the wind projects. It applied PSE's Stage One criteria to the projects based on its knowledge of the wind generation industry. Its most significant contribution to the evaluation process was to look at each proposed project from the perspective of an independent engineer. By providing PSE feedback on the engineering and financial viability of the proposal – i.e., was the information presented in the proposal sufficient for a lender or equity investor to proceed – GH provided PSE with expert advice to supplement the Company's own judgment. Garrad Hassan also employed their proprietary software for analyzing topographic and wind turbine wake effects on project output.

Additional detail regarding the Company's analysis of issues specific to the wind power proposals is discussed below.

Q. What did the Company do with all of this information?

A. The qualitative evaluation and rating, combined with the ASM ranking, eliminated certain proposals with high costs, unacceptable risks, and/or feasibility constraints. *See, e.g.* Exhibit No. ___(RG-5HC) at 17-25, 27-30.

4. The "most favorable proposals" list and ultimate Stage One short list.

Q. How did the Company then proceed?

A. PSE determined at this time that a selection of proposals should be included in a preliminary list of "most favorable" proposals, and selected 18 proposals for the "most favorable proposals" list. Exhibit No. ___(RG-4HC) at 10; Exhibit No. ___(RG-5HC) at 26.

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Q. How did the Company proceed with respect to the "most favorable proposals" list?

A. From that list, PSE then identified the proposals that – although attractive at some levels – faced obstacles such as transmission constraints, high fuel costs, premature development status, permitting obstacles, and other issues. The seven proposals from the "most favorable proposals" list that appeared to face the fewest such obstacles, or for which the obstacles appeared more manageable, were placed on the formal Stage One short list to proceed to Stage Two in-depth analysis.

These seven proposals appeared to offer the lowest cost and lowest acceptable risk for obtaining additional electric supply. The proposals selected to the short list included a diverse mix of ownership types and fuel sources, specifically: three wind projects, two coal PPAs, one [redacted]-backed PPA, and one project that would recover heat from natural gas-fired combustion turbines driving gas compressors

on the Northwest Pipeline. The short-listed proposals and their ratings under the Stage One evaluation criteria were as follows:

PROPOSAL		STAGE 2 EVALUATION CRITERIA RATINGS				
Code	**Project Name Owner/Developer**	**Compatibility with Need**	**Cost Minimization**	**Risk Management**	**Public Benefit**	**Strategic & Financial**
A02b	Wild Horse Wind Project Zilkha Renewable Energy	High	High	Medium	High	Medium
A03	Hopkins Ridge Wind Project RES North America, LLC (RES)	Medium	High	High	High	Medium
A06	150 MW Wind Project	High	High	Medium	Medium	Medium
A19	2-yr PPA (Centralia Coal Plant) Arizona Public Service (APS)	High	High	High	High	High
A24b	10-yr PPA (Coal Plant)	High	High	High	High	Low
A30	22-yr Seasonal On-Peak PPA	High	High	Medium	High	Medium
A39	NWPL Sumas Recovered Heat Project/ORMAT Nevada, Inc.	High	High	Medium	High	High

See Exhibit No. ___(RG-4HC) at 11-12; Exhibit No. ___(RG-5HC) at 35-36.

Q. Why did some of these projects rate only "medium" or "low" on some of the evaluation criteria?

A. The short list as a whole was rated medium to high in all categories; however, the 10-year Coal PPA rated low in Criteria 'E' due to certain credit and accounting issues, described below. Some concern with regard to permitting risks caused the Wild Horse and Project A06 150 MW Wind projects to receive a medium rating in Criteria 'C'. The Hopkins Ridge Project rated medium in Criteria 'A' due to the uncertainty of securing firm transmission. Further analysis during the due

diligence phase of Stage Two, coupled with greater knowledge of the credit and accounting issues, enabled PSE to evaluate these issues more thoroughly at that time.

Q. Were the projects from the "most favorable proposals" list that faced obstacles then rejected by the Company?

A. No. PSE determined that the proposals facing obstacles should be placed on a "continuing investigation" list so that PSE could continue to monitor their status during Stage Two and potentially reconsider whether any of these proposals should be pursued. *See* Exhibit No. ___(RG-4HC) at 11; Exhibit No. ___(RG-5HC) at 33-34; Exhibit No. ___(RG-7HC) at 42-43.

Q. Why did the Company wish to continue to investigate such options?

A. Among other things, PSE observed that given the high level of current and forecasted natural gas prices, no natural gas-fired projects were included in the formal short list. While no natural gas-fired option made the "most favorable proposals" list as a stand-alone resource, the Company believed it was still important to consider a gas-fired option in the context of PSE's portfolio. Therefore, PSE decided it would analyze representative natural gas proposals – drawn from the continuing investigation list – in the Portfolio Screening Model ("PSM") analysis during Stage Two that is described in Mr. Elsea's testimony. Then, if PSM runs indicated that gas projects would comprise all or a portion of

the least cost PSE portfolio in the near term, PSE would reconsider such projects. *See* Exhibit No. ___(RG-4HC) at 12.

C. Stage Two of the RFP Evaluation

1. The criteria.

Q. What criteria did the Company apply during Stage Two of the evaluation process?

A. During Stage Two, PSE continued to apply the Stage One evaluation criteria and placed further emphasis on the following qualitative factors:

- Transmission and Integration Alternatives;
- Comparison of PPAs and Ownership Alternatives;
- Ability to Deliver;
- Experience of Developers;
- Guarantees and Security; and
- Environmental and Public Benefit.

The Stage Two criteria are described in further detail in Exhibit No. ___(EMM-12HC) at 100-103.

Q. How did the Company apply these criteria

A. The Company reevaluated the proposals against each other by combining quantitative cost rankings with extensive evaluation of qualitative criteria, which

were again summarized in "High," "Medium," and "Low" qualitative ratings. The Company based this evaluation on information that had been provided in the initial proposals as well as on responses to information requests that PSE sent to the owners and developers of the short-listed projects. The Company also considered information discovered through its due diligence efforts. *See generally* Exhibit No. ___(EMM-12HC) at 86-92, 119-137.

Q. What additional information did the Company request?

A. PSE requested information such as copies of existing permits or applications for permits, a list of agreements contemplated between PSE and the developer, information about contingency plans in the event certain assumptions did not materialize, and preliminary information about the commercial agreements and terms the bidder anticipated requesting of PSE. PSE also inquired as to certain projects whether the bidder would be willing to agree to terms such as price guarantees or date certainty to the extent such terms were not addressed in the original proposal.

2. PSE's quantitative evaluation of the proposals.

Q. Did the Company evaluate quantitative issues in Stage Two?

A. Yes. Mr. Elsea's testimony describes how the Company performed the Stage Two Quantitative analysis. *See also* Exhibit No. ___(RG-7HC) at 50.

3. PSE's qualitative evaluation of proposals.

Q. What qualitative evaluation did the Company undertake in Stage Two?

A. The Company's qualitative evaluation included continuing efforts such as those described above for Stage One. In addition, the Company conducted the due diligence described below and considered information regarding qualitative factors that resulted from those investigations. The Company also evaluated the creditworthiness of the bidders as potential counterparties to long-term transactions, for the reasons described below. *See* Exhibit No. ___(RG-7HC) at 48-49; Exhibit No. ___(EMM-12HC) at 85-87, 91-92.

4. Due diligence.

a. Overview

Q. Please explain what is meant by "due diligence"?

A. Due diligence is the process by which a party investigates and evaluates a potential investment. This often involves the examination of business operations, engineering design, equipment performance, environmental conditions, permit status, real estate and other necessary property rights status, and the verification of other material facts. Due diligence may also assess factors that affect the future

operation of a potential acquisition and the prospects that the acquisition will perform as expected.

Q. What due diligence did the Company perform with respect to the potential projects?

A. The Company conducted due diligence with respect to environmental issues and concerns, permitting status and conditions, real estate matters, counterparty credit, the wind resource projections made by project developers, and technical matters associated with the engineering, construction and operation of potential projects that were asset based.

Q. How did the Company go about performing this due diligence?

A. PSE conducted much of this review in-house, through personnel experienced in legal, environmental and real estate matters, but also relied upon outside expertise on environmental and permitting matters, real estate issues, and technical matters. With respect to wind projections, wind project feasibility, and technical compatibility, the Company continued to work with Garrad Hassan, as described above.

The Company's due diligence efforts began during its Stage Two evaluation process and continued thereafter as to projects that ultimately were selected to the Stage Two short list as well as projects on the continuing evaluation list.

Q. What were some of the results of these due diligence efforts?

A. These efforts caused PSE to decide not to pursue certain projects on the short list, and also confirmed the attractiveness of certain projects. For example, based on the Stage Two analysis undertaken by Garrad Hassan, PSE determined that the wind energy resource assessment for one of the wind projects was less than claimed in the proposal. This meant that the project's economics and overall viability – as originally represented by the developer – could not be supported. PSE therefore decided to place that project "on hold" until such time as the developer submits a more viable proposal. *See* Exhibit No. ___(RG-8HC) at 26; Exhibit No. ___(EMM-12HC) at 91. By contrast, the wind assessments of the Hopkins Ridge Project were very favorable and substantially confirmed the developer's projections in the proposal.

Q. In what respects were the wind assessments of the Hopkins Ridge Project favorable?

A. Garrad Hassan's analysis confirmed that the Project possessed a very energetic wind resource. In particular, the Hopkins Ridge project has good winds in the winter. GH's analysis with respect to the Hopkins Ridge Project is described in greater detail below.

b. Additional details regarding wind energy production and due diligence for wind resources.

Q. What is involved in producing an estimate of the energy production of an entire wind project?

A. Wind varies from place to place and year to year. The project developer typically installs one or more masts with wind instruments at several levels to collect data at several locations across a site for a period of one or more years. Generally, the more data that are collected, the more confidence one has in a long-term energy estimate for the project. The developer makes an estimate of the long-term average wind behavior for each prospective turbine site and from this, estimates the energy production from each wind turbine.

Included in this estimate are effects of topography on the wind, and the effect of wind turbine wakes and their effect on downstream wind turbines. In some cases, where wind turbines are placed very close to one another, at least for certain wind directions, a wind turbine manufacturer will prescribe what is called "sector management". Sector management is where the turbine operating system limits the operation of certain machines when the wind is blowing from directions that would place some machines too close to an upwind machine. In this case, the turbulence of an upwind machine might reduce the operating life of a machine operating in its wake. This is akin to not allowing small aircraft to land too soon after a large aircraft has landed due to the residual turbulence from the large

aircraft wings. The lost energy that results from any machine that is shut down for reasons of sector management is taken into account in the long-term energy assessment.

The developer will also estimate the amount of time a wind turbine does not operate because winds are too high, a wind turbine must be shut down as a result of ice on the blades, and a wind turbine does not operate because it is mechanically or electrically not available. Further, the amount of energy delivered to the interconnection point is less than the sum of the energies generated by all wind turbines due to electrical losses in the collection system.

Q. Please describe briefly how a wind turbine performs and the measures used to quantify performance.

A. There are several key words used to describe wind turbine performance, including cut-in and cut-out wind speeds, rated wind speed, rated power, availability, and capacity factor. I describe below how these terms are used.

Under normal conditions, a wind turbine is connected to the power grid such that if the wind is blowing at speeds within the operating range of the wind turbine, it will produce power. For the Vestas wind turbine used at Hopkins Ridge, if the winds are less than about nine miles per hour, the wind turbine will produce no power. As the winds increase above nine miles per hour, a speed known as the "cut-in" wind speed, the turbine will begin to produce power. The power will

increase to full output of 1.8 MW, or 1,800 kW, in winds of approximately 31 mph, and these conditions are known as the "rated wind speed" and the "rated output". In winds between 31 mph and about 56 mph, the wind turbine will produce its rated output. Should the winds exceed 56 mph, a speed known as the "cut-out" wind speed, the machine will stop producing power.

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Q. How do these cut-in, cut-out and rated wind speeds relate to the wind speeds at Hopkins Ridge?

A. To understand how much energy a wind turbine will produce, it is essential to know how often the wind blows at each speed in the operating range of the wind turbine. At Hopkins Ridge, the average wind speed is approximately [redacted] mph. This does not mean that the wind blows half the time above [redacted] mph and half the time below [redacted] mph. The distribution of wind speeds is not shaped symmetrically. In fact, more than one-half of the time (about [redacted]%) the winds are below average, and somewhat less than one-half of the time they are above average ([redacted]%). Approximately one-fourth of the time ([redacted]%) the winds are below cut-in and two-thirds of the time ([redacted]%) the winds are between cut-in and rated wind speeds. At other times, the winds are between rated and cut-out wind speed ([redacted]%) or, very rarely, above the high speed cut-out wind speed ([redacted]%).

From this, we see that the wind turbine will be producing some amount of power all but about one-fourth of the time ([redacted]%). It will not produce its rated power all the time, since most of the time the winds are below the rated wind speed. In fact,

the average output would be approximately one-third of its peak output ([redacted] kW) at a typical Hopkins Ridge wind site if the machine were available to run 100% of the time. However, a wind turbine will not be available to run 100% of the time.

Q. Why are the wind turbines not available to run 100% of the time?

A. There is a certain amount of time that wind turbines are not available to operate due to routine maintenance or forced outages of some kind. "Availability" is the term used to describe the readiness of a machine to respond to winds. After the first six months, during which Vestas guarantees [redacted]% availability, Vestas will guarantee that the turbines will be available to operate [redacted]% of the time, after providing for [redacted] of planned maintenance each year. Thus, in the course of a year (8,760 hours), after removing [redacted] for planned maintenance, Vestas will guarantee the machines will be available for [redacted] hours (= [redacted]% * (8,760 – [redacted]). Thus, PSE projects an availability of the turbines of [redacted]% (= [redacted]/8,760).

Q. Are there other factors that reduce the amount of energy that can be delivered from wind turbines?

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A. Yes. The energy produced by any wind turbine is transmitted through largely underground cables, known as the "collection system", to a substation where the voltage is increased to the transmission voltage. From there, the power is transmitted at high voltage to the point of interconnection with the transmission system. There are electrical resistance losses throughout the collection and project

transmission system that reduce the amount of energy actually delivered to the point of interconnection.

Q. How do the above limitations factor into projections of energy that will be available from a wind generation facility?

A. One estimates the net energy to be delivered by the wind farm after accounting for electrical losses and the effects of availability. This energy, expressed as a fraction of the rated output of the windfarm, is known as the "Capacity Factor". Thus, for the typical wind turbine described above that is designed to be capable of producing 1,800 kW, but expected to be capable of producing [redacted] kW due to prevailing wind speeds, one would actually expect over the course of a year to deliver to the interconnection point about [redacted] kW from that turbine. The fraction [redacted]/1,800 = [redacted]% is the Capacity Factor estimated for the Hopkins Ridge Project.

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Q. How does the above information relate to what Garrad Hassan projected in their analysis?

A. Garrad Hassan's analysis of the Hopkins Ridge Project site showed that average annual wind speed is [redacted] m/s (approximately [redacted] mph). Garrad Hassan projected a capacity factor of [redacted]%, with the facility expected to produce power approximately three-fourths ([redacted]%) of the time. This would make the Project one of the best wind resources in Washington State.

Garrad Hassan also estimated the monthly distribution of power from the Project. Significantly, the project was projected to produce over 50 aMW ([redacted] aMW) annual average energy, with average energy production even higher than that ([redacted] aMW) in January of each year, as well as significant production during the months of November through March. This is somewhat unusual for a Pacific Northwest wind facility, because winds tend to be lighter during winter months (when PSE most needs power) and stronger during summer months (when PSE has lighter loads). *See, e.g.,* Exhibit No. ___(EMM-17HC) at 13.

Q. How did the Hopkins Ridge Project developer's estimate of energy production and Garrad Hassan's estimate of energy production compare?

A. The estimates were very close but differed in minor respects. Both parties agreed to a remarkable degree on the long-term wind resource estimate at the three sites instrumented on site. However, they differed in their method of extrapolating these estimates to each turbine site. In the judgment of PSE, both methods were reasonable. The estimate used in PSE's projection is the lower of the two estimates.

HIGHLY CONFIDENTIAL per WAC 480-07-160

Q. How did the estimates compare with respect to losses for sector management?

A. Garrad Hassan assumed a one percent loss for the effects of sector management, but the wind turbine manufacturer did not require sector management based on its analysis of wind loading on the turbines.

Q. What about with respect to turbine availability and collection system losses?

A. RES estimated the turbine availability at [redacted]%, a number that is commonly achieved in practice, whereas Garrad Hassan projected [redacted]% availability. PSE used in its projection the guarantee of Vestas, who will operate and maintain the turbines during the warranty period. Vestas guarantees [redacted]% availability, after an allowance of [redacted] of scheduled maintenance per year for each wind turbine. Thus, PSE actually assumed an availability of [redacted]%, as described above.

Garrad Hassan, not having a specific design of the collection system, made a conservative estimate of three percent for the electrical losses, whereas RES assumed, based on their design experience and experience of operating sites they designed, an estimate of [redacted] percent. PSE accepted the [redacted] percent loss estimate of RES, subject to confirmation of the loss calculation in the engineering phase. This loss calculation depends on such things as the conductor size and the amount of time the Project is generating at each level of output.

HIGHLY CONFIDENTIAL per WAC 480-07-160

Q. Did the Company conduct other analysis related to wind resource assessment?

A. Yes, the Company also retained 3Tier Environmental Forecast Group, Inc. ("3Tier"), a Seattle-based firm with expertise in wind energy and atmospheric analysis, to provide an analysis of what the long-term variability of energy production characteristics of several of the wind project proposals are expected to be. 3Tier based its projections on an analysis of the last several decades using historical National Weather Service weather data, on-site data, and numerical modeling techniques. The 3Tier analysis was used to provide additional assurance to PSE that the wind resource assessments would be indicative of longer-term performance from the project. *See, e.g.,* Exhibit No. ___(EMM-17HC) at 61.

5. Wind integration issues.

Q. Did the Company undertake any specialized review of factors it believed should be considered in the evaluation process?

A. Yes. The wind projects on the Stage One short list appeared to be very favorable. However, the Company was aware that wind energy poses challenges to a portfolio with respect to scheduling and firming.

Q. What challenges are posed by wind power projects.

A. Wind is a resource that varies from minute to minute, hour to hour, and year to year. Since the power system must precisely balance loads and generation at any given time, other parts of the power system must compensate as wind generated power increases or decreases, in much the same way as the power system must compensate as loads increase or decrease. On a very short time scale, this load balancing is called regulation. Wind powered generation also presents challenges with respect to operating reserves because wind generation is not dispatchable on command.

Wind generation also presents challenges with respect to scheduling. The standard scheduling increment for power is one clock hour in length. Power purchases, sales, and resource dispatch are prescheduled on a day-ahead basis, 24 hours prior to the hour the energy is anticipated to be used (except for weekends and holidays, which are scheduled two or more days in advance). Since wind generation will be variable within a scheduled hour, there is a need for other resources to provide intra-hourly "load" following in order to offset the changes in wind generation.

Q. How did the Company address these challenges?

A. In order to better understand how energy production from wind projects would fit into PSE's future operations, the Company retained Golden Energy Service, Inc.

("Golden") to conduct analyses regarding operational and cost issues associated with integrating wind energy into PSE's portfolio.

Q. Please describe the analyses that the Company had Golden perform.

A. Golden's Phase 1 analysis was conducted in 2003, when the Company was considering how it might add wind powered resources to its portfolio but had not yet issued its Wind RFP. Phase 1 focused on the short-term operational characteristics of wind generation specifically for PSE's system. It studied the issues described above with respect to regulation, scheduling and operating reserves and estimated the cost to integrate wind onto the PSE system based on wind data from a single developer that was used as a proxy generic wind resource in the Ellensburg area. Wind generation data was simulated based on the wind data.

The Company subsequently requested that Golden perform additional wind generation related analysis in order to: (1) expand upon and refine the results of the previously completed Phase 1 studies, and (2) to develop information that would assist PSE in evaluating wind resource bids. The Phase 2 analysis was based on actual wind generation data from an operating wind farm that had become available since the Phase 1 studies, including wind generation and day-ahead and hour-ahead forecasts. Company staff worked with Golden to develop and refine its wind integration analysis. A public version of Golden's Phase 2 report is found at Exhibit No. ___(EMM-6) at 670.

In Phase 3, which is currently underway, Golden is providing a more detailed look at the cost of adding increased quantities of wind to the Company's portfolio while losing the ability to follow with hydro due to the reduction over time of Mid-Columbia contract rights.

Q. How did the Company use these studies?

A. The Golden studies were factored into the quantitative evaluations for the wind projects; that is, the Company compared proposals on a delivered-cost basis, which for wind projects, included estimated integration costs.

Q. What did the Company conclude with respect to wind integration costs?

A. The Company concluded that, for at least the first few hundred megawatts of wind generation, it could use its Mid-Columbia hydro resources to cover its hour-ahead and day-ahead firming of prescheduled resources. To do so, the Company would build into its scheduling of Mid-Columbia hydro resources additional "reserve" amounts in order to manage inherent wind generation variations.

The Company plans to utilize this method for day-ahead firming for the Hopkins Ridge Project. In order to project the costs associated with this balancing, the Company utilized Golden's estimate of the opportunity costs associated with the holdback of Mid C resources described above.

For hour-ahead firming for Hopkins Ridge, however, the Company will utilize a different method. Because the energy produced by the Project will be delivered to the PSE load center via the BPA transmission system, PSE will schedule the power on an hour-ahead basis and BPA will deliver the scheduled quantity to PSE. Although on this time scale wind is amenable to forecast, inevitably there will be a difference between what is scheduled and what is delivered. For each scheduled hour, PSE will be charged for the difference between the power scheduled and the power actually produced at BPA's published ancillary service tariff rate for generation imbalance. This imbalance charge will have the effect of firming the power within the hour.

PSE projected the costs it would incur under BPA's imbalance tariff based upon historical wind data and persistence forecasting over a twelve month period.

Q. Did the Company include these wind integration costs in its analyses of the costs and benefits of wind projects?

A. Yes, as described in Mr. Elsea's testimony. *See also* Exhibit No. ___(EMM-17HC) at 18.

6. Credit and Balance Sheet issues with respect to PPAs.

Q. Do you have additional comments on other factors considered in the Company's evaluation?

A. Yes. Creditworthiness, credit support and credit quality issues were of particular importance in evaluating PPAs as compared to ownership options. *See, e.g.*, Exhibit No. ___(RG-9) at 2-16; Exhibit No. ___(EMM-15HC) at 7-8, 17.

Q. What were the Company's concerns about creditworthiness and credit support?

A. The Company's concerns regarding the financial condition of potential counterparties and the credit required to support long-term, fixed price energy contracts were extensively documented in the Company's 2004 general rate case. *See, e.g.*, Docket Nos. UG-040640 et al., Exhibit No. 71 at 16-20 (Ryan); Exhibit No. 171C at 28-30 (D. Gaines).

Generally, the bankruptcies of a number of companies in the wake of the 2000-01 Western Power Crisis highlighted the importance of taking into account creditworthiness in considering whether the Company should transact with a potential counterparty.

In addition, it has become very common for companies to include in energy contracts a requirement that credit assurances be provided to better protect a party

from the risk that the other will not perform its obligations under the contract. Credit provisions are generally reciprocal, that is, the counterparty or PSE would provide to the other contractual access to immediately available funds in the form of a letter of credit or cash to cover the daily marked-to-market exposure (above a certain threshold level).

Q. Did bidders of PPAs request such credit support from PSE?

A. Yes. Among various proposed terms and conditions, bidders of PPAs requested that the Company post credit support to secure its obligations to pay for purchased power under the long-term PPAs. Potential counterparties requested credit support from PSE in the form of a demand letter of credit or cash.

Q. Would you give specific examples of supplemental credit demands made by PPA bidders?

A. Yes. In connection with the 10-year Coal PPA, the proposal required a credit facility capped at $125 million to cover marked-to-market exposure that could be potentially greater. *See* Exhibit No. ___(RG-8HC) at 31. Similarly, the 22-year Seasonal On-Peak PPA proposal initially required supplemental credit support in an amount sufficient to cover the marked-to-market exposure of that PPA. PSE estimated this exposure to be $100-$150 million. These credit requirements greatly reduced the attractiveness of these potential resources compared to other options.

Q. Did the Company have concerns about the creditworthiness of any counterparties?

A. Yes. As one example, in the case of the 10-year Coal PPA mentioned above, PSE had the following credit concerns:

- The parent company had experienced a recent two-notch corporate credit downgrade in 2003 from BBB+ to BBB- (the lowest rating to be classified investment grade). In 2004, S&P had indicated a deteriorating financial profile over the last five years.

- PSE's credit analysis of the proposer indicated negative cash flow by the end of 2005 without new incoming sources, or renewal of bank lines. PSE was becoming increasingly concerned about the entity's long-term viability.

- Given the entity's weakening credit picture, PSE was concerned about the entity's ability to post up to $125 million in credit support for marked-to-market movements pursuant to the proposed credit provisions, and to maintain that credit support for the life of the contract. Further, the collateral cap covered only $125 million. For any amount above $125 million, PSE and its ratepayers would have exposure. PSE was also concerned about its own alternative sources of liquidity. Although the Company was able to renew and extend its 364-day credit line with a three–year facility, a ten-year facility was unavailable from the Company's bank lenders.

See, e.g., Exhibit No. ___(RG-8HC) at 31.

Q. Did the Company seek to address these concerns without rejecting the resource proposal?

A. PSE and the entity that proposed the resource explored credit alternatives with certain investment banks such as credit default swaps (CDS) and various letter of credit structures. These alternatives added additional cost and did not provide risk

coverage for the full exposure or for non-delivery performance. Further, PSE was concerned about the impact of the additional leverage (i.e. letter of credit) on its capital structure, which could potentially result in a possible ratings downgrade. While the ratings agencies do not impute these amounts as debt today, there is the potential for them to do so in the future.

Q. Did the Company have other concerns about PPAs?

A. Yes. Credit rating agencies view electric utility PPAs as debt-like in nature and, in their analysis of the Company's financial strength and risk factors, treat a portion of the Company's obligation under such contracts as debt. This "imputed debt" is a significant concern for the Company because of its impact on the Company's credit quality. Moreover, the Commission's 1994 prudence order expressly instructed the Company to consider "rating agencies' views of purchased power" and "to quantify the impact of future resource acquisitions on capital cost and capital structure."[1]

Q. Did the Company consider the impact of imputed debt when comparing PPAs to ownership options?

A. Yes. The Company's quantitative analysis of the competing resource proposals took into account costs related to debt that would be imputed to the Company if it

[1] *WUTC v. Puget Sound Power & Light Co.*, Docket No. UE-921262, *et al.*, Nineteenth Supplemental Order (September 27, 1994) at 35-36.

entered into various proposed PPAs, as described in Mr. Elsea's prefiled direct testimony. *See also* Exhibit No. ___(EMM-12HC) at 18, 21, 32, 36.

D. PSE Also Considered a Self-Build Option

Q. Did the Company analyze a self-build option in addition to the projects proposed in response to the RFPs?

A. Yes. The Company did so by updating the self-build option that was performed for the Company in the fall of 2002 by Tenaska, Inc., based on current information available to the Company from a variety of sources.

Q. Please describe the self-build analysis that was performed in 2002.

A. In the fall of 2002, PSE asked Tenaska, Inc. to assess and report on alternatives for self-development of a generation project or projects. Tenaska prepared a report titled *Assessment and Report on Self-Build Generation Alternative for Puget Sound Energy's 2002-2003 Least Cost Plan* ("Tenaska Report"). PSE included the Tenaska Report as Appendix H to the April 2003 LCP. *See* Exhibit No. ___(EMM-3) at 375-393.

The Tenaska Report included detailed information on the various aspects of project self-development – including design, siting, permitting, equipment procurement, construction, startup, operation, and maintenance – for a gas-fired combined cycle combustion turbine ("CCCT") facility. The Report also provided

estimates of generic project development costs and time schedules as well as an overview of then-current market conditions that affected the price and availability of combustion turbines and engineering, procurement, and construction ("EPC") services.

Q. What were some of the other conclusions that Tenaska drew?

A. The Tenaska Report determined that certain design and construction issues have a significant potential effect on specific cost components. For example, EPC costs – typically the single largest cost component of a construction project – vary considerably under different conditions. Tenaska determined that permitting issues, project scheduling, gas transportation, and interconnection costs are unique for each facility and site.

Q. How did PSE update the Tenaska Report?

A. The Company revisited the assumptions and findings of the Tenaska Report based on current information available to the Company from a variety of sources. In particular, the Company reviewed: (1) the potential sites for the self-build, including access to fuel supply, water and wastewater, the transmission grid, and potential permitting issues; (2) potential equipment and configuration options and costs; and (3) estimated costs for other expenses including transmission access, engineering, construction, capital and the like. High-level documentation of the

Company's analysis and conclusions, described below, can be found at Exhibit No. ___(EMM-12HC) at 41-44.

Q. What information did PSE draw from to perform this update?

A. PSE's acquisition of a 49.85% interest in the Frederickson I CCCT generating station in 2004 provided PSE with access to actual plant operating cost and performance data, which provided a new set of reference points to use to check the Tenaska assumptions. Plant cost data that PSE was able to obtain from other industry sources provided other sets of reference points.

With respect to equipment configuration and costs, PSE obtained updated information through its All-Source RFP and through a proposal made by a potential supplier outside the RFP process.

Q. What did PSE do to investigate potential sites for a self-build option?

A. The 2002 Tenaska Report identified and screened a total of 24 potential CCCT sites, all selected based on being relatively close to power transmission and gas transportation infrastructure. It ultimately focused on two sites as having the greatest potential: (1) Frederickson, which appeared to offer advantages for interconnection for fuel gas supply and transmission access, but could be more expensive to construct due to its layout; and (2) Dieringer, due to its proximity to PSE's White River hydroelectric station and probable ease in laying out the project, but where off-site services were limited.

For PSE's updating of potential sites for a self-build option, PSE focused on three potential sites: Frederickson, Dieringer, and Fredonia. Ultimately, the Frederickson site appeared to be the best site for a potential self-build CCCT development. Advantages included the ability to further develop an existing site that would need very little additional infrastructure, direct access to the main line of Northwest Pipeline (NWP), and a 100,000-barrel liquid fuel storage tank that is already available for fuel diversity and backup to natural gas.

Q. How did PSE update the equipment and configuration information?

A. The Tenaska report provided cost and performance data for combined CCCT plants based on both the General Electric ("GE") Frame 7EA and Frame 7FA combustion turbines. This choice of key equipment was reviewed to determine if other manufacturers or newer technologies would markedly improve the performance, reliability, or economics of a self-build CCCT plant.

After the collapse of high electric power prices during 2000-2001, developers cancelled many of their plans to construct new CCCT projects. Some developers have been seeking to sell this equipment in the broker market or by marketing directly to utilities. One such proposal was made to PSE in response to its All-Source RFP. In Proposal A17, the developer offered to sell new combined-cycle power island equipment (GE Frame 7FA combustion turbine, heat recovery boiler, and steam turbine) to PSE that is in storage and has never been installed. The offer included assistance in the development of a new CCCT plant tailored to

meet PSE's energy needs. The proposal did not include the cost of off-site interconnections, changes to the developer's standard plant layout, warranty wrap, and/or other unknown conditions. PSE considered the Proposal A17 option to be a good candidate to develop self-build option pricing around, given its reliable design parentage and discounted price for the equipment.

The Company also investigated potential use of the new GE LMS100 combustion turbine. PSE obtained cost and performance information for PSE's use to determine if the new turbine could be competitive with other RFP responses, if self-built. *See* Exhibit No. ___(RG-7HC) at 52.

Q. How did PSE update other cost assumptions made in the 2002 Tenaska Report?

A. PSE updated the projected cost to connect transmission access to a self-built Frederickson CCCT plant based on an interconnection study performed by PSE's Transmission Planning group after transmission access was requested on OASIS. PSE also updated the anticipated costs associated with water and sewer connections that would be required for a plant. It then compared these updated costs with the additional cost data available to it from other sources, as described above.

Q. What was the resulting cost estimate of the updated self-build option?

A. As described in Mr. Elsea's testimony, PSE estimated a 20-year levelized cost in the range of $65/MWh to $107/MWh.

Q. How did these self-build options compare to other resource acquisition options?

A. In order to make a comparison of the self-build options with other resource acquisition options the Company was considering in the RFP process, it is important to note some relevant facts. First, at the time of the RFP evaluation, PSE's self-build expertise was generally limited to gas-fired technology. However, for PSE to build a gas-fired project would take four to five years from inception and would require costs at the level described above. On the other hand, most of the gas projects bid into the RFP were projects that had been developed for the merchant power market and were in late-stage development, if not already in construction or operation. In most cases, these were distressed assets that the owners were willing to sell at a discount. PSE's analysis showed that the lowest cost proposal from the RFP responses offered a 20-year levelized cost of $62/MWh. Therefore, the PSE self-build options were more expensive and would take longer than the gas-fired projects proposed.

Moreover, as described above, PSE's evaluation of the gas-fired projects proposed in the RFP process showed that these options were not as attractive as other

options, such that no gas-fired project made the "short list" from the Company's Stage One evaluation.

Ultimately, PSE concluded that the leading RFP candidates were equal or superior to the self-build options, and did not carry the risks that were associated with the self-build alternatives.

E. Results of the Stage Two Evaluation

Q. What did the Company do with the qualitative, quantitative, and due diligence analyses discussed in your preceding testimony?

A. Combining the qualitative, quantitative, and due diligence analyses led PSE to develop a list of proposals that combined low projected levelized costs compared to other proposals with acceptable evaluations with respect to qualitative factors. Exhibit No. ___(EMM-12HC) at 85-92 provides a high-level overview of how the Company's analysis led to selection of the short list.

Q. What did the Company conclude as a result of the Stage Two evaluation?

A. PSE ultimately selected the following portfolio of potential resources from the short list as a group of potential acquisition opportunities.

Code	Project Name Owner/Developer
A02b	Wild Horse Wind Project Zilkha Renewable Energy
A03	Hopkins Ridge Wind Project RES North America, LLC
A19	2-yr PPA (Centralia Coal Plant) Arizona Public Service (APS)
A30	22-yr Seasonal On-Peak PPA
A39	NWPL Sumas Recovered Heat Project ORMAT Nevada, Inc.

Q. Please describe why the Company determined that it should pursue these resources?

A. That determination resulted from the full range of analysis conducted in Stage Two. However, I describe certain favorable aspects of each project below.

1. *2-year APS PPA.* This short-term PPA consistently ranked as the lowest cost project among the proposals. Further benefits were identified through analysis that was conducted by the Company's staff responsible for short-term resource acquisitions, as described in Ms. Ryan's direct testimony.

2. *22-year Seasonal On-Peak PPA.* This PPA offered the benefit of a seasonally-shaped (winter energy only), heavy-load hour only, system-

delivered product. The portfolio analysis showed that this PPA lowered PSE's portfolio costs over 20 years compared to the generic portfolio analyzed in PSE's 2003 Least Cost Plan. At the time PSE selected its portfolio to pursue, it appeared that the supplier was open to foregoing any requirement that PSE provide credit support for the transaction.

3. *Hopkins Ridge Project*. During Stage One, the Hopkins Ridge wind project was the lowest-cost wind project according to the ASM. All of the project's qualitative ratings were high with the exception of the inability to secure firm transmission. The subsequent portfolio analysis in Stage Two showed that the Hopkins Ridge project lowers PSE's portfolio costs over 20 years compared to the generic portfolio analyzed in PSE's 2003 Least Cost Plan. Further analysis of the transmission constraints at that time showed that the potential for transmission congestion would likely be manageable. In addition, the Hopkins Ridge project had the greatest potential to reach commercial operations by the end of 2005, which would qualify the project for production tax credits ("PTCs").

4. *Wild Horse Wind Project*. PSE's due diligence showed that the Wild Horse wind project is a viable project, with a desirable location in Kittitas County and a strong potential for receiving timely permits. The portfolio analysis showed that the Wild Horse project lowers PSE's portfolio costs over 20 years compared to the generic portfolio analyzed in PSE's 2003

Least Cost Plan. Although the Wild Horse project requires acceleration of planned long-term upgrades to one of the Company's transmission lines (which involve cost and schedule risks), the permitting and engineering for the transmission line upgrades were underway.

5. *NWPL Sumas Recovered Heat Project*. The NWPL Sumas recovered heat project showed an attractive 20-year levelized-cost. The project's qualitative ratings were also favorable. Among other things, the project produces power through heat that is already being generated by existing industrial operations, thus produces virtually no additional emissions.

Q. Why didn't the Company further pursue the 10-year Coal PPA?

A. As described above, the Company had significant concerns about the proposer's overall financial health and its ability to provide adequate performance assurance both operationally and financially. Equally concerning were the credit support that both the Company and the proposer would be required to post as well as the debt that would be imputed to PSE's balance sheet if it entered into that PPA. Further, the quantitative analysis performed in Stage Two indicated that the resource was not as attractive as the other alternatives. In fact, the resource came at a cost rather than a benefit as compared to PSE's generic portfolio as shown in Mr. Elsea's prefiled direct testimony.

F. PSE's Efforts to Finalize Contracts

Q. How did the Company proceed with respect to the potential acquisitions that made the Stage Two short list?

A. With respect to the two-year APS PPA, the Company's Energy Resources staff worked jointly with the Company's Energy Trading staff, who are responsible for short-term resource acquisitions, to analyze that potential acquisition. Further benefits were identified through analysis that they conducted, as described in Ms. Ryan's direct testimony. After approval by the Company's Risk Management Committee, PSE and APS signed definitive contracts. PSE began receiving energy from this contract on January 1, 2005.

With respect to the other resources on the short list, the Company then began negotiations with the counterparties of the key commercial terms and conditions. Such terms and conditions were then set forth in a non-binding Letter of Intent as an initial step prior to negotiating definitive agreements and recommending approval from PSE's Board of Directors to execute the definitive agreements and proceed with the particular project.

Q. What were the results of those efforts?

A. PSE issued a Letter of Interest to ORMAT for the NWPL Sumas recovered heat project on August 18, 2004. Following further discussion, the parties entered into

a non-binding Letter of Intent on April 14, 2005. Due diligence and negotiations for definitive agreements are proceeding.

PSE and Zilkha signed a Letter of Intent on September 1, 2004, for acquisition of the Wild Horse project by PSE. Due diligence and negotiations for definitive agreements for that resource are proceeding. In the meantime, progress on the project has been continuing. For example, the developer has continued its efforts to acquire the necessary permits and property rights.

On October 29, 2004, PSE and RES, the developer of the Hopkins Ridge Project, signed a Letter of Intent for acquisition of the Hopkins Ridge Project by PSE. Detailed due diligence began after that time. Definitive contracts were entered into in March 2005 after finalization of commercial terms and Board approval, leading to the acquisition that is presented for Commission approval in this proceeding.

The Company also pursued acquisition of the On-Peak Utility PPA, but those efforts proved unsuccessful.

Q. What happened with respect to the 22-year Seasonal On-Peak PPA?

A. After negotiations with the counterparty supplier, PSE understood that the counterparty would not require any credit support or collateral of PSE, and that the counterparty's obligations would be backed by its parent, a utility with an

excellent credit rating and substantial system resources. *See* Exhibit No. ___(RG-8HC) at 29-30; Exhibit No. ___(EMM-12HC) at 15, 18, 22-24.

PSE management prepared a recommendation to the Board of Directors that the Board approve PSE's entry into this PPA at their December 15, 2004, meeting. The presentation recognized the benefits and risks associated with the acquisition and, on balance, recommended Board approval. *See* Exhibit No. ___(EMM-12HC) at 4-25.

However, by the time of the Board meeting, the supplier had withdrawn the credit support of its parent entity from the transaction. This introduced significant additional risk to the proposed acquisition because of the risk that the supplier would default in later years of a long-term fixed price contract, after PSE had potentially paid a relatively favorable price to the supplier compared to market for several years. Thus, PSE management recommended that the Board not act at that time on the recommendation that had been proposed in advance of the meeting. *See* Exhibit No. ___(EMM-12HC) at 2-3.

Q. What actions did the Company take with respect to the other potential resource acquisitions?

A. PSE management proceeded with their work toward final agreement on the other potential resource options, including additional due diligence review and

negotiation of definitive agreements for PSE's acquisition of the Hopkins Ridge Project.

III. THE HOPKINS RIDGE PROJECT

A. Additional Due Diligence

Q. What additional due diligence did PSE conduct with respect to the Hopkins Ridge Project?

A. The Company conducted a review of environmental and real estate matters related to the Project. The Company also further investigated the wind turbine supplier and technology proposed to be used for the project. Finally, although the Company had already investigated the capabilities of the developer, RES, it made arrangements for ongoing review of technical matters associated with RES's construction of the Project. *See generally* Exhibit No. ___(EMM-17HC) at 61-64.

Q. What environmental review did the Company conduct?

A. An environmental due diligence review was conducted of all required local, state and federal government notices, authorizations, approvals, licenses, and permits required for construction and operation of the Project, and corresponding applications, notices, studies and other information, as provided by the developer. The major documents reviewed include the Hopkins Ridge (Blue Sky) Wind Energy Project SEPA Checklist, the application for a Conditional Use Permit, the

Site Plan Application, the Traditional Cultural Property Assessment, the Biological Study Report (also called Baseline Avian Studies Report), the Wetland Delineation Report, and the Joint Aquatic Resources Permit Application (JARPA). The Company confirmed that the major environmental requirements had been obtained prior to the closing.

Q. What real estate matters did the Company investigate?

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 there were not any additional real property interests needed for the Project.

Q. How did the Company investigate issues related to the proposed wind turbines?

A. Garrad Hassan provided a due diligence review of the Vestas V80 wind turbine generator, and of Vestas. Garrad Hassan confirmed that Vestas is the world's leader in wind turbine market share and is considered the leader in technology as well. The V80 wind turbine has earned a "Type Certificate" from Germanisher Lloyd ("GL"), an industry recognized certification agency. The V80 fleet has achieved over 97% availability, and thus Garrad Hassan concluded PSE should expect to achieve its operational and financial goals with this WTG.

Nevertheless, Garrad Hassan also recommended that PSE take advantage of the five-year warranty offered by Vestas as protection against any serial defects which

might show up after the expiration of the standard two-year warranty. PSE implemented that recommendation through entry into the five-year O&M and warranty agreement described later in my testimony.

In addition to the Garrad Hassan due diligence, PSE also made an inspection of the Vestas factories, including the machine shops that manufacture major components, the nacelle assembly factory, the blade production factory, and the executive offices.

Q. What arrangements did the Company make for ongoing due diligence with respect to Project development?

A. Garrad Hassan provided review and comment during the negotiation of the Engineering, Procurement, and Construction ("EPC") Agreement and the Operations, Maintenance &Warranty Agreements to assure PSE that it is entering industry-conforming contracts with appropriate risk mitigation. For the construction period, PSE retained Global Energy Concepts (GEC), an internationally recognized wind energy firm headquartered in Kirkland, WA, to assist with certain technical issues during the course of the construction and testing period. GEC is assisted by RW Beck, a large internationally recognized engineering firm. In particular, GEC and RW Beck will assist with issues that require specific wind energy industry expertise, including the foundation design and installation, and the wind turbine commissioning. RES and PSE agreed to appoint Garrad Hassan to a role of independent expert should there be any

technical disagreements between the parties during the engineering and construction phases of the Project.

In addition, PSE staff engineers reviewed, negotiated and accepted the technical specifications included in the EPC contract, in particular the electrical design specifications for the transformers, substations, overhead transmission lines, and underground collection systems.

Q. Did PSE actively participate in the development of the Hopkins Ridge Project?

A. Yes. The agreements were negotiated such that PSE would purchase the rights to the Project after certain conditions were satisfied. These conditions included the receipt of major permits and real estate rights in form acceptable to PSE. Additional work was required to deliver these permits and rights to PSE. For example, not all of the potential wind energy land at Hopkins Ridge is part of the PSE Hopkins Ridge Project. RES has retained the rights to develop other portions of the lands in the area. However, some of the wind leases encompassed areas that would be part of the PSE project and areas that would not. It was necessary to re-negotiate these leases with the land owners to provide a lease specific to the PSE project. Further, the payment formula under the original leases contemplated a power sale agreement, rather than utility ownership. This required additional negotiation to bring the new leases into a form that works for utility ownership. In addition, numerous land development issues were needed, such as the

establishment of clear rights to access the transmission line even though the transmission line route was secured by an easement. To assure ourselves that the assets being purchased were acceptable to PSE required PSE involvement at a level that is beyond what would ordinarily be called due diligence.

B. Board Approval of the Acquisition

Q. Was PSE able to finalize contracts for acquisition of the Hopkins Ridge Project?

A. Yes. As described in Mr. Markell's testimony, negotiations with RES produced definitive agreements for PSE's acquisition of the Project. At the January 11, 2005 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. The Board approved the recommendation, and PSE executed the necessary agreements and closed on the transaction on March 11, 2005. *See* Exhibit No. ___(EMM-17HC) at 2-4; Exhibit No. ___(EMM-18HC).

Q. Does the Company's acquisition of the Hopkins Ridge Project satisfy the evaluation criteria set out in the Company's RFPs?

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A. Yes, it does.

The Project is compatible with PSE's need. It provides [redacted] aMW of January energy, and similar amounts during other winter months when PSE's need is high.

The Project will minimize PSE's costs. The Project was the lowest cost wind project proposed to PSE in the RFP process. It was also the lowest cost project overall except for the two-year APS PPA that the Company also entered into. The Hopkins Ridge Project is anticipated to lower PSE's net present value portfolio costs by $30 million over 20 years compared to the generic portfolio analyzed in PSE's 2003 Least Cost Plan.

The Project minimized PSE's risks. RES is an experienced developer and construction contractor with a track record of completed projects in the United States, including the Nine Canyon project in Kennewick, Washington owned by Energy Northwest and some of its members. At the time of PSE's decision to proceed with RES, many land rights had already been acquired, a Conditional Use Permit had been issued, RES was progressing well towards obtaining other major permits, and RES had a preliminary agreement with Vestas American Wind Technology, Inc. ("Vestas-American") to provide the wind turbines at a favorable price. These turbines are a proven technology for which Vestas American provides extensive support and warranties.

The Project includes public benefits. Unlike some other potential generation sites, the Project enjoyed strong community support and was consistent with existing land uses, which is primarily dry land wheat farming. In addition, it promotes development of renewable energy sources.

The Project met PSE's strategic and financial needs. By acquiring 100% ownership of the Project, PSE increased its flexibility with respect to future dispatch of the Project and eliminated costs associated with providing credit support for a PPA and debt that would have been imputed to PSE by ratings agencies if the transaction had been a PPA. In addition, financial security was provided though parent guarantees by RES Ltd and Vestas Wind Systems A/S as well as a payment and performance bond in favor of PSE.

C. Project Acquisition Costs

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Q. Please describe the acquisition costs for the Hopkins Ridge Project.

A. As described in Mr. Markell's testimony, the Company anticipates an "all in" cost of just under $200 million for the Hopkins Ridge Project acquisition. A detailed breakdown of these acquisition costs is provided in my Exhibit No. ___(RG-11HC). Exhibit No. ____(RG-11HC) includes a column showing amounts that PSE had already paid for each type of cost as of April 30, 2005. The following table summarizes these costs and payments:

Hopkins Ridge Wind Project	Project Costs	04/30/2005 Actuals
PSE Labor & Expenses	[redacted]	[redacted]
External Due Diligence & Development Costs	[redacted]	[redacted]
Transaction Costs	[redacted]	[redacted]
Development Assets Purchase & Closing Costs	[redacted]	[redacted]

Hopkins Ridge Wind Project	Project Costs	04/30/2005 Actuals
Insurance and Performance & Payment Bond	[redacted]	[redacted]
Real Estate Leases & Transmission Easements	[redacted]	[redacted]
Owner's Engineer	[redacted]	[redacted]
Transmission Interconnection	[redacted]	[redacted]
Engineering, Procurement & Construction Contract	[redacted]	[redacted]
Start-Up	[redacted]	[redacted]
Contingency	[redacted]	[redacted]
AFUDC	[redacted]	[redacted]
Total Project	**$199,767,347**	**$40,606,186**

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Q. Please describe the type of costs included in the category "PSE Labor & Expenses."

A. The category "PSE Labor & Expenses" consists of internal PSE costs incurred (i) during the development phase, and (ii) for the project and construction management of the Hopkins Ridge Project. Costs incurred in the development phase include time and expenses charged by PSE employees for tasks such as assisting in the permitting process for the Project, obtaining a private letter ruling from the IRS related to the Project, and negotiating the interconnection agreements with BPA for the Project. Costs incurred for project and construction management include time and expenses charged by PSE employees for items such as oversight of the construction of the turbines and other facilities for the Project.

Q. What costs are included under the category "External Due Diligence & Development Costs"?

A. I described above the concept of due diligence and the due diligence efforts undertaken by the Company with respect to the Hopkins Ridge Project. The category "External Due Diligence & Development Costs" reflects the costs paid by PSE to third parties who assisted in PSE's due diligence efforts for the Project. For example, this category includes payments made to the law firm Buck & Gordon for review of real estate documents related to the Project.

Q. Please describe the category "Transaction Costs."

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A. The category "Transaction Costs" consists of legal fees paid to the law firm LeBoeuf, Lamb Greene & McRae, L.L.P. for negotiating, drafting and documenting the definitive agreements for the Project, less the $[redacted] RES agreed to pay to PSE to defray these expenses pursuant to the negotiations described in Mr. Markell's testimony. RES paid 50% of the $[redacted] at closing, and is obligated to pay the remaining 50% at substantial completion of the Project.

Q. What costs are included under the category "Development Assets Purchase and Closing Costs"?

A. The category "Development Assets Purchase and Closing Costs" consists of the costs associated with the purchase of the assets of Blue Sky related to the Hopkins Ridge Project as of March 11, 2005, under the Asset Purchase Agreement

described in Mr. Markell's testimony. These amounts include the negotiated amount paid to Blue Sky for the development assets, closing costs, title insurance fees, and escrow fees.

Q. Please describe the category "Insurance and Performance & Payment Bond."

A. The category "Insurance and Performance & Payment Bond" consists of the following costs: (i) a performance and payment bond and (ii) builder's all-risk insurance. The performance and payment bond secures RES's performance under the EPC Agreement, and PSE is responsible for paying [redacted]% of the builder's all-risk insurance.

Q. What costs are included within "Real Estate Leases and Transmission Easements"?

A. The category "Real Estate Leases and Transmission Easements" consists of payments made by PSE to landowners during the construction phase of the Project under the WTG property leases and transmission line easements. PSE paid one-half of the construction period easement costs at closing and will pay the balance on the substantial completion date.

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Q. Please describe the category "Owner's Engineer."

A. The category "Owner's Engineer" consists of fees paid by PSE to Global Energy Concepts, RW Beck and other technical consultants to assist with engineering review of the Hopkins Ridge Project during its construction, as described above.

Q. What costs are included under the category "Transmission Interconnection"?

A. The Project requires construction of a new BPA switching station to interconnect the Project with BPA's transmission system. In addition, BPA identified some additional network upgrades that will be required to BPA's transmission system. PSE is required to pay BPA $10 million for these upgrades.

Once operating, BPA will refund PSE's up-front payments by crediting PSE for its BPA point-to-point transmission charges incurred by the Project after the Commercial Operation Date until an amount equal to the prepaid expense plus interest is reimbursed.

Q. Please describe the category "Engineering, Procurement & Construction Contract."

A. The category "Engineering, Procurement & Construction Contract" consists of those costs associated with the EPC Agreement, which provides that RES Construction will engineer, design and procure all materials and equipment

required for and construct the Project. The EPC Agreement reflects a firm, fixed total price for these materials and the services of RES, other than for scope changes to which the parties may agree pursuant to the EPC Agreement.

Scope changes to date (described below) have increased the total payment obligation of PSE under the EPC Agreement to $[redacted]. As of April 30, 2005, the Company had paid $[redacted] of this amount. The Company is obligated to pay remaining amounts as construction milestones are reached.

Q. What costs are included under the "Start-Up" category?

A. The category "Start-Up" reflects: (i) the mobilization costs for the operation and maintenance of the Project, such as Vestas' commissioning and turnover of the turbines and the recruitment, relocation and expenses of the PSE staff that will be part of the permanent operation of the Project; and (ii) fees paid to 3Tier Inc. for initial forecasting services to be used to support erection and commissioning of the Project. These costs are then offset by Start-Up revenue.

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Q. What is "Start-Up Revenue"?

A. Start-up revenue is the revenue that will be generated during the commissioning phase of the Project, prior to the Project being placed into service. As turbines are commissioned, they will operate in test mode as wind is available. The start-up energy revenue is calculated for the final two months of construction as 50% of

the sum of energy that the Project would generate, if complete, at a market rate of power.

Q. Please describe the category "Contingency."

A. During the course of construction of a major project, various events typically occur that require funds that were not specifically budgeted. For example, if conditions on the ground differ from assumptions made for the EPC Agreement, a scope change (or "change order") may be required to complete an aspect of the Project. For these purposes, a contingency allowance assures that there are adequate funds budgeted to complete the project.

The Contingency budget, approximately [redacted]% of the total anticipated Project cost, is within the range typical for a project of this size. It is also customary to assume that the entire contingency amount will have been exhausted by the time the Project is completed. To the extent any of the Contingency funds are not spent, they would be accounted for in a reduction in the capital cost of the Project during the true-up process described in Mr. Story's testimony.

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Q. Please describe the category "AFUDC."

A. The AFUDC category reflects the return the Company is entitled to receive on the funds it invests for the Hopkins Ridge Project during the course of the construction, prior to the Project being placed into service.

D. Construction Schedule and Status

Q. What is the schedule for construction of the Project?

A. A schedule of construction milestones, dates and percent complete as of May 20, 2005, is provided at Exhibit No. ___(RG-11HC). RES is obligated under the EPC Agreement to achieve Substantial Completion, which essentially means all the turbines are commissioned and operational, by December 10, 2005. However, RES currently forecasts Substantial Completion to occur in November 2005, well ahead of the contractual requirement. Following Substantial Completion, the project will begin routine commercial operation.

Q. What is the current status of the construction?

A. As of May 20, 2005, RES America has completed most of the roads required for the project and has poured many of the foundations required. Engineering is substantially complete, which has allowed the ordering of virtually all major equipment and materials. Logistics plans are being implemented to transport equipment and materials to the Hopkins Ridge site. The overhead transmission line is well underway, as is the construction of the Tucannon switching station being built by BPA.

Q. What is required to bring the Project into commercial operation?

A. The Project consists of 83 separate wind turbines. These turbines are positioned along the collection system in an arrangement of six strings. There are approximately 14 wind turbines per string. After RES completes the erection of each wind turbine, Vestas will make final checkouts of each turbine, resulting in the commissioning of each. Commissioning involves connecting the turbine to the electrical grid. Once commissioned, the turbine achieves "WTG Substantial Completion". Generally, an entire string will be made available for operation at one time. Vestas will assume operation and monitor these turbines in an initial testing period until all turbines are complete.

When all turbines have achieve WTG Substantial Completion and the rest of the project is complete, the project is determined to have reached Project Substantial Completion. At Project Substantial Completion, the Project is placed into service in PSE's electric portfolio. The only tasks remaining at that time to achieve Final Completion involve cleanup of punch list items that do not interfere with the commercial operations of the Project.

Prior to Project Substantial Completion, one string may be operating and producing significant quantities of power while in another string, turbines might still be under construction. Power generated by the Project prior to Project Substantial Completion is "test power", the value of which will offset Project capital costs, as described above.

Q. What assurances does PSE have that the Project will actually be completed by December 1, 2005?

A. As stated earlier, RES is an experienced construction contractor with a track record of completed projects. Also, RES is managing their construction efforts with an objective to complete the Project approximately four weeks earlier than the guaranteed date in the contract. Furthermore, as described in Mr. Markell's testimony, RES has taken on substantial risk by agreeing to indemnify PSE if the Project is not completed in time to qualify for PTCs that expire at year-end 2005. In addition, the EPC Agreement provides for liquidated delay damages per turbine per day of delay. The EPC Agreement also provides a performance incentive for every day that RES beats the December 10 Project Substantial Completion date. Thus, RES is very highly incented to continue on its current pace for November 2005 Project Substantial Completion.

Q. What assurance does PSE have that RES would be in a position to satisfy such obligations if they do not meet the deadlines?

A. As part of its negotiations for the Project, PSE obtained a guarantee from RES America's parent, RES, Ltd., for RES America's obligations. RES, Ltd. was formed in 1981 and is a member of the Sir Robert McAlpine Group, one of the United Kingdom's major engineering and construction companies. PSE's due diligence into the financial strength of RES, Ltd. showed that they are reasonably likely to be able to satisfy any damages caused by delay of the Project.

RES America has also obtained a payment and performance bond for the benefit of PSE. Furthermore, RES has obtained PTC insurance to backstop a portion of their PTC liability.

E. Operations and Maintenance Expenses

Q. What arrangements has the Company made with respect to ongoing Operations and Maintenance ("O&M") for the Hopkins Ridge Project?

A. PSE has entered into a separate Operation, Maintenance & Warranty Agreement ("OM&W Agreement") with Vestas-American under which Vestas-American will provide a power curve warranty, a five-year availability warranty, a five-year mechanical warranty, a serial-defect warranty, and five years of maintenance, operation, spare parts and service of the WTGs. O&M for the balance of plant and site management will be performed by PSE.

Q. Why did the Company decide to have Vestas-American perform O&M on the turbines for the first five years of the Project?

A. Wind turbines can be purchased with no warranty or with a warranty period of one to five years. As described above, Garrad Hassan recommended that PSE purchase a five-year warranty and this advice was supported by other due diligence PSE conducted in the industry. However, the major wind turbine suppliers will not sell a warranty without the associated O&M services.

Moreover, Vestas-American is an experienced wind turbine manufacturer and operator. As PSE is new to wind generation ownership and operation, the Company believed it made sense to contract with Vestas-American for several years as it built up its internal knowledge base and capacity to perform O&M on wind turbines.

Q. Are there other aspects to the operation and maintenance of the project?

A. Yes. Vestas-American will operate and maintain the wind turbines only. The remainder of the plant will be operated and maintained by PSE or other subcontractors under PSE control. This includes road maintenance and maintenance of the underground collection system, the overhead transmission line, the substation, and the operations and maintenance facility. PSE will hire a Plant Manager with administrative support to oversee these aspects of the project maintenance, and to manage Vestas-American performance under the Operations Maintenance and Warranty Agreement.

In addition, PSE has obligations under the project permits it must comply with, for example, to monitor the impact of the project on avian species. To oversee this extensive monitoring program, and to manage the administration of the aspects of the project that require interaction with land owners and local government officials, PSE will hire a Project Environmental and Communications Manager to be located more appropriately in the community of Dayton.

To support the scheduling of wind power for purposes of transmission and integration, PSE will retain a nationally recognized expert in forecasting wind energy production.

Q. What does the Company project its Operating and Maintenance ("O&M") expenses will be for the Hopkins Ridge Project during the rate year?

A. The Company anticipates total O&M costs of $[redacted] during the rate year, as detailed in Exhibit No. ___(RG-12HC).

IV. CONCLUSION

Q. Does that conclude your testimony?

A. Yes, it does.

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