Exhibit No. ___T (DN-3T)
Dockets UE-111048/UG-111049
Witness: David Nightingale

BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

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

CROSS-ANSWERING TESTIMONY OF

David Nightingale

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WASHINGTON UTILITIES AND
TRANSPORTATION COMMISSION

PSE Resource Evaluation Criteria

January 17, 2012

Q. What analyses did PSE use to screen renewable resource options from those proposed during the 2010 RFP evaluation process?

A. PSE used both qualitative and quantitative methodologies to broadly evaluate all renewable resource proposals. For qualitative analyses, PSE used the results of the 2009 IRP, with certain values updated as appropriate, as inputs to the evaluation of proposals offered during the 2010 RFP. The screening evaluation modeled the operation of the existing resources owned or under contract to PSE to establish baseline values of the portfolio. Then PSE added one individual resource proposal at a time to the portfolio. The results of the all generic model versus the same model run with one specific proposed resource provide a direct financial comparison between proposals. In this way the impact on the portfolio for each separate alternative can be evaluated and compared. The quantitative factors calculated in the screening evaluation process that provide the comparison between alternative resource proposals were the following: Portfolio Benefit, Benefit Ratio, and 20-Year Levelized Cost.

Q. Please describe the Portfolio Benefit factor.

A. PSE's Portfolio Benefit factor can be summarized as follows:[1]

Portfolio Benefit ($M) = PV cost of the existing portfolio plus generic resources to meet 20 yr. loads _ PV cost of existing portfolio including a proposed resource with other generic resources to meet 20 yr. loads

The Portfolio Benefit provides a dollar value comparison between the generic resource and a new resource proposal substituting for part of the generic resource. A positive

[1] For all quantitative factors, PV = Present Value (discounted for the time value of money) of a cost or benefit. All generic as well as all proposed resource PV costs and benefits include "all in" costs including capital expenses, operations and maintenance, fuel, transportation, transmission, and end effects such as residual plant and the value of extended cash flows.

Portfolio Benefit factor indicates a more valuable resource than the generic resource. The units for this measure are typically millions of dollars.

Q. Please describe the Benefit Ratio factor.

A. PSE's Benefit Ratio factor can be summarized as follows:

$$\text{Benefit Ratio} = \frac{\text{Portfolio Benefit of a specific resource}}{\text{PV to purchase and operate a specific resource for 20 years}}$$

The Benefit Ratio normalizes the Portfolio Benefit for different sizes of the same resource type. A very large plant may require a lot of capital to realize a relatively modest amount of Portfolio Benefit dollars. When the Portfolio Benefit of each proposed resource is divided by its "all in" costs, different proposed resources can be more directly compared; this is the value of the Benefit Ratio calculation. Generally, a higher positive Benefit Ratio represents a more favorable acquisition opportunity.

Q. Please describe the 20-Year Levelized Cost factor.

A. PSE's 20-Year Levelized Cost factor can be summarized as follows:

$$\text{20-Year Levelized Cost (\$/MWh)} = \frac{\text{PV to purchase and operate a specific resource for 20 years}}{\text{MWh generated over 20 Years}}$$

The 20-Year Levelized Cost represents the average cost over a twenty year timeline to generate energy and has the units \$/MWh. This is analogous to calculating dollars per mile for a truck considering all capital and operating costs. This calculation does not rely on the existing mix of PSE's current portfolio, but rather it is an estimate of what the expected costs to generate energy will be for a specific resource. For a dispatchable

resource the run time and cost is based on forecast market prices for energy and fuel. For must-run resources, it is the cost to run the resource regardless of market pricing. This analysis applies regardless of whether the resource is self-build, a contract, a purchase agreement, or the like. This calculation can be valuable when comparing different types of energy or capacity generating resources, as well as different sizes of resources, because all calculations are dollar normalized to the generation of one MWh of energy.

Q. What are the qualitative factors the Company uses to evaluate proposals?

A. PSE uses a host of qualitative factors in evaluating candidate projects. These factors are outlined in the Company's RFP and the analyses are performed by various organized groups of subject matter experts, the RFP evaluation team, within the Company.[2] This team approach allows the evaluation of specific technical and financial aspects of all proposals in a timely and efficient manner. The RFP evaluation team examines cost as described above, but also non-financial analysis of risks and overall project feasibility of all proposals to find the least reasonable cost and least reasonable risk alternatives. The RFP evaluation team includes analysis of project development status, proposed commercial terms, environmental and community impacts, permit status, real estate development rights, assessment of the technology, transmission constraints, interconnection agreements, counter-party experience, dispatchability, regulatory requirements such as whether the project is a qualified renewable resource, and other project specific performance characteristics. In addition, for wind resource proposals, the Company hired wind energy consultants to perform technical evaluations of the data provided regarding the wind generation estimates of proposed sites with the specific

[2] Exhibit No.__ (AS-1HCT), page 8.

turbine technology proposed.[3] This evaluation group performed qualitative analyses during the screening and optimization phases of RFP evaluations.

Q. After the screening evaluation is complete, how does the Company quantitatively evaluate the remaining proposals?

A. PSE uses a more detailed quantitative analysis called the optimization model. The optimization model is a method that combines the results of Aurora dispatch to price all available resources (existing and proposed in the RFP) under different sets of economic scenarios with a linear program optimizing algorithm within a large Excel spreadsheet. The spreadsheet is designed to find the lowest total portfolio revenue requirement over 20 years. This is done through multiple iterations. Various combinations of resources are selected by the spreadsheet at different times with appropriate constraints to find the lowest overall revenue requirement. The constraints used in all modeling runs include meeting the RPS standard, providing capacity planning reserve margins, and limiting the yearly acquisition of generic wind, peakers and combined-cycle generating plants to a certain maximum size.[4] The model continues to try different available resources and timing of resource acquisitions until it finds the least cost portfolio for the given scenario over 20 years.

[3] Exhibit No.__(AS-1HCT), pages 8-12.
[4] Exhibit No.__ (AS-3HC), page162.