

**EXH. RJR-13  
DOCKET UG-230393  
WITNESS: RONALD J. ROBERTS**

**BEFORE THE  
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION**

**WASHINGTON UTILITIES AND  
TRANSPORTATION COMMISSION,**

**Complainant,**

**v.**

**PUGET SOUND ENERGY,**

**Respondent.**

**Docket UG-230393**

**SECOND EXHIBIT (NONCONFIDENTIAL) TO THE  
REFILED REBUTTAL TESTIMONY OF**

**RONALD J. ROBERTS**

**ON BEHALF OF PUGET SOUND ENERGY**

**OCTOBER 6, 2023**

[Service Date August 29, 2005]

August 29, 2005

Steve Reynolds, President and CEO  
Puget Sound Energy  
P. O. Box 97034  
Bellevue, Washington 98009-9734

Re: Puget Sound Energy 2005 Least Cost Plan for Electricity and Natural Gas  
Operations  
Docket No. UE-050664

Dear Mr. Reynolds:

Puget Sound Energy (PSE) filed its 2005 Least Cost Plan for electric and natural gas operations (entitled Least Cost Plan April 2005) with the Washington Utilities and Transportation Commission (Commission) on May 2, 2005. The Commission provided a period for written comment and took oral comments at a recessed open meeting on July 18, 2005. All comments received by the Commission stated that the plan was well done, and is consistent with the requirements set out in WAC 480-100-238 and WAC 480-90-238. After careful review, the Commission agrees. Nevertheless, appended to this letter are several recommendations for improving future plans. As it prepares its next plan – due no later than May 30, 2007 – PSE should carefully consider these recommendations, as well as future suggestions by Commission staff.

The Commission reminds PSE that a finding that a least cost plan satisfies existing regulatory requirements does not pre-approve for ratemaking any expenditures or actions identified in the plan. The Commission will give due weight to the information, analysis, and strategies contained in this plan along with other pertinent information during any evaluation of PSE's services and rates.

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On a related matter, the Commission is reviewing both the electric and natural gas least cost planning rules for possible changes (WAC 480-90-238 and WAC 480-100-238). The Commission's docket numbers for this effort are UG-030311 and UG-030312, respectively. The Commission appreciates PSE's extensive written comments and participation in our rulemaking workshops. We remain interested in additional comments on how to improve the usefulness or reduce the cost of preparing Least Cost Plans. The Commission's lead person in this effort is Dr. Graciela Etchart, a member of the Commission's energy section staff. Her contact number is 360-664-1310.

Sincerely,

Carole Washburn  
Executive Secretary

Attachment

## **Washington Utilities and Transportation Commission Review of Puget Sound Energy's 2005 Least-Cost Plan Filing**

### **Overview**

Puget Sound Energy (PSE) is Washington State's largest energy utility. The company serves nearly 1 million electric customers and more than 650,000 natural gas customers, primarily in the Puget Sound region. PSE was created through the merger of Puget Power and Washington Natural Gas. As part of the settlement of the case in which the Washington Utilities and Transportation Commission (Commission) approved the merger, the new company agreed to file a combined document for its electric and natural gas Least Cost Plans (LCP). The joint filing allows for an economy of effort by PSE and the Commission. The use of a common gas commodity price forecast and shared gas purchasing insights allows PSE to reduce the resources devoted to demand forecasting and, in turn, the Commission's effort in overseeing those forecasts.

PSE filed its combined 2005 electricity and natural gas LCP on May 2, 2005. During the preparation of this plan, PSE held a series of extensive research consultations, technical meetings and public meetings. One result is a consensus among public commenters and Commission staff that PSE prepared a good plan which contains all major elements required by Washington Administrative Code 480-90-238 and 480-100-238. The Commission agrees. This is a good plan that improves upon the work done in PSE's previous plan. Nevertheless, in its next plan PSE should strive to incorporate comments contained herein and should consider those from interested parties as well.

### **Electricity Planning**

Utility LCPs identify short- and long-run strategies for reliably serving load at reasonable cost and with manageable risks. The short-run element guides the utility's approach to resource decisions that it will likely face in the next two years based on known and reasonably forecast criteria. The long-run element systematically considers how well (or poorly) alternative resource portfolios fit various futures. Fully developed least cost plans, along with information gathered through the subsequent "request for proposal" processes, provide the Commission important context on utility requests to bring new resources into rate base.

### **Forecast of Electric Load**

One of the most important elements of a least cost plan is its forecast of electric load. Many factors affect electric load including population, income, electric tariffs, economic activity, awareness of and commitment to conservation, and governmental energy and environmental policies. In addition, random factors such as weather affect demand. As

a result, there is a significant degree of uncertainty and variability around demand forecasts. PSE used Monte Carlo-type simulations to analyze many of the uncertain factors affecting electric load. This plan, for the first time, forecasts the effect of variations in ambient temperature on demand by season, and accounts for differences in the distribution of customers among counties. This marks an improvement in PSE's load growth forecasts.

The company could further improve its load forecasts by moving away from scenario-based straight-line increasing load growth estimates. A better approach would account for the uncertain factors affecting load growth by presenting the load growth forecast as a range. Also, while PSE's matrix of cost-risk trades-offs is a good way to identify the scenario with the lowest overall risk and cost, the company should develop criteria to further differentiate among resource portfolios. One example could be a metric that reveals the share of risk assumed by ratepayers and the share assumed by stockholders.

#### **Design Peak day**

PSE uses the design peak day (the coldest day over the past several years) to assess peak electricity load. However, since design peak days very rarely, if ever, occur, the cost of creating a system to meet this load may, or may not be excessive. Given the historical record of hourly temperature, it is possible to compute the probability with which a design day would occur. The Commission recommends that PSE compare system costs assuming (i) the design peak day, (ii) the expected design day (probability weighted coldest day) and (iii) the second coldest day. This kind of analysis would reveal the extra cost or investment added due to the policy choice of operating the system to meet the design peak day.

#### **Supply Alternatives**

The plan describes PSE's existing generation supply portfolio including the expiration of several contracts. The plan considered a reasonable range of alternatives for new and replacement power: scrubbed coal, combined cycle combustion gas turbine, wind, and biomass, medium life contracts, and winter capacity call options. The company discussed more advanced and prototype technologies in technical advisory committee meetings. For example, PSE reviewed integrated coal gasification-combined cycle combustion both with and without carbon sequestration. PSE concluded that the costs of advanced and prototype technologies were very site specific and costs could not be estimated today. The plan considered a reasonable range of supply alternatives.

The plan indicates that the company may use contracts to bridge the gap in time between the point of committing to a large coal project and the on line date of the resource. However, the plan acknowledges that (1) the coal project requires resolving

the current transmission capacity constraints that limit the amount of power that can be brought from Montana to the Pacific Northwest; and (2) the quantity of power available through bridging contracts is uncertain. The company's next plan should consider what alternative actions PSE's might take should it determine that either or both of these resources were physically unavailable, proved too costly, or presented unacceptable risks. The plan also states that PSE typically uses call options to meet winter load and does not envision building simple cycle combustion turbines only to run a few weeks each winter. However, the next plan should provide quantitative analysis supporting this position.

### **Conservation Alternatives**

The Company's 2003 LCP (entitled 2003 Electric Integrated Resource Plan) developed a relatively comprehensive assessment of conservation potential in PSE's service territory. This assessment provided a strong foundation for the plan's short-term conservation targets. The Conservation – Renewables Advisory Group (CRAG) supervised and reviewed the work of a consulting firm who developed bundles of conservation programs and estimated energy savings. The inclusion of fuel conversion and demand response assessments is an improvement from the 2003 plan. The next plan should build upon this strong base by evaluating and assessing direct load control and critical peak pricing programs.

### **Integration**

The plan used three models to integrate the projected demand with supply resources: Aurora (an electricity price market fundamentals model), the PSM (portfolio cost analysis model) and the CSM (conservation screening model.) In addition, Cambridge Energy Research Associates (CERA) provided gas fundamental models, a key input to the electricity supply models.

To run these models, company planners used their best judgment to construct multiple sets of alternate resource portfolios. By displaying the plan results in probability bar diagrams, PSE makes the point that no single portfolio has both the lowest cost and the lowest risk. Nevertheless, portfolios that fall towards the bottom of both ranges contain a resource mix of gas, wind, conservation, bridging contracts, and later, coal. The bridging contracts allow the time required to site and construct coal resources along with necessary transmission improvements. It appears that the company considered a reasonable range of resource combinations as to technology, quantity, and timing.

The risk of a utility's resource portfolio belongs to both shareholders (who are paid a premium in the allowed "rate of return" for capital investment and operational risks)

and to ratepayers. The company has begun to study customer risk preferences regarding resource options. PSE should expand on this effort in its next plan.

### **Further Recommendations for the Electric Plan**

In its next plan, PSE should:

1. Clarify how the optimization function mathematically calculates the tradeoffs among risks and costs.
2. Work toward a mathematically driven method of portfolio construction.
3. Further refine its understanding of the capacity value of wind and the impact of wind on system stability, as modeling aids. As part of this effort, PSE could investigate whether the Oliva model (by the NWPPC) or the Power World model offers the possibility of studying transmission line enhancement or re-contracting.
4. Discuss the decision values that a strategically minded management might consider. This would expand on work included in PSE's 2003 LCP but not advanced in the present plan.
5. Finally, it is imperative that all future plans should include avoided cost estimates for both capacity and energy, and the derivation of those estimates. Even better would be short- and long-term estimates for capacity and energy avoided costs.

### **Natural Gas Planning**

#### **Forecast of Natural Gas Demand Growth**

PSE uses econometric models of natural gas demand and consumption that are driven by use per customer, weather, price levels and conservation effects.

#### **Design Peak day**

The Company uses a "design peak day" (the coldest day over the past several years) to assess highest single-day natural gas load. This approach is also used to identify natural gas pipeline stress points and needed upgrades. Since design peak days very rarely, if ever, occur, the cost of creating a system to meet this load may be excessive. Given the several decade historical record of hourly temperature, it is possible to compute the probability with which a design day would occur. Therefore, PSE should compare overall system costs assuming: (i) design peak day, (ii) expected design day (probability weighted coldest day) and (iii) second coldest day. This kind of analysis would reveal the extra cost or investment added due to the choice of design peak day.

For its 2003 LCP, the company revised down its peak day from 52 heating degree-days (HDD) to 51 HDD. This small change freed up excess pipeline capacity that PSE sold in the winter, providing a source of revenue. The company presented a benefit-cost

analysis of this decision in a technical meeting. While the data underlying that analysis is now dated, the analytical approach was appropriate. The Commission commends the company for its work in this area.

### **Gas Prices**

The company's consultant, CERA, provided four alternative long-term gas supply and price futures ranging from technology successfully mitigating the current high prices, to scarcity driven high price conditions. The company used the scenario that was most like the recent past, assuming it the least speculative of the alternatives. Short-term gas prices were modeled in the manner of the company's last rate case, using the statistical relationship between forward contracts and spot prices.

The Commission is satisfied with PSE's overall approach. However, the inability of Commission staff to access CERA's supporting models and assumptions is not acceptable. While the Commission recognizes, as the company argues, the difficulty in finding a vendor who will sell a completely transparent product, PSE needs to find some accommodation that allows Commission staff access to this data under appropriate confidentiality restrictions.

### **Supply Alternatives**

Capacity: According to the plan, PSE does not now need additional natural gas capacity. Nevertheless, the plan considered increasing underground storage, adding facilities to liquefy and store natural gas, and acquiring new pipeline capacity. None of these options appear economic at this time.

Commodity: The company is considering whether to increase the inter-basin arbitrage in order to acquire less expensive gas. In its next plan, PSE should report on the outcome of this analysis.

DSM: The plan supports consideration of significant increases in gas efficiency programs. The company should work with Staff and interested parties to develop achievable and cost-effective savings targets. The Commission commends PSE for, once again, presenting the most comprehensive assessment of natural gas energy efficiency opportunities. However, a weakness with PSE's assessment of efficiency savings is that the plan incrementally increases the capacity of DSM programs. In reality, economics of scale dictate that efficiency programs be more "lumpy." In its next plan, PSE should better reflect "real-world" DSM conditions.

### **Integration**

PSE used the well known linear programming model "SENDOUT" as the integration tool. This platform is crafted specifically for gas planners, and produces both short- and

long-term projections. SENDOUT allows for studies of spot market, gas contracts, additional pipeline capacity and storage options as well. It accommodates conservation programs as part of the integrated system designed as a complete planning tool. However, SENDOUT does not model the interaction of gas and electric prices and it relies on the same exogenous system of price and variance that the electric models do. PSE should study and incorporate this price interaction in its next plan.

PSE is the first LDC to use the added VectorGas program in support of SENDOUT. This program generates combinations of related variables like weather, load, and gas prices to compute a scenario of inputs for which SENDOUT creates an optimal gas supply strategy. The Commission commends PSE for adding this natural gas analysis tool and expects that it will allow the company to further improve its natural gas supply strategy.

#### **Further Recommendations for the Natural Gas Plan**

In its next plan, PSE should:

1. Continue the analytical studies using the combined VectorGas and SENDOUT models;
2. Work to develop synergies between natural gas and electricity strategic analysis techniques; and
3. Provide an avoided cost table for gas conservation. This would help conservation services firms who might bid on company RFPs.

#### **Additional Comments**

##### **Integration of Natural gas and electric resource plan:**

The least cost plan covers both natural gas and electricity. Despite being in a single document, the plans for natural gas and electricity are performed separately. There is no integration between the two plans. As submitted, the plan is really two documents. In its next plan, PSE should look for opportunities to integrate the two plans such as using a joint product planning model or a model that identifies opportunities to maximize the benefit of integrating energy products.

##### **Public Comments**

While generally positive, the public did make specific suggestions for PSE's next LCP. The company's next plan should state how those suggestions were incorporated or why they were not.

Three parties directed their comments at the Commission. The Sumas Cogeneration Company, L.L.P., the Tenaska Ferndale Cogeneration Station, and the March Point

Cogeneration Co., asked the Commission to set a three year deadline for completing negotiations to replace the contracts that expire in 2011-2013. In response the Commission reiterated several long-standing policies. First, the process for evaluating resource acquisition alternatives is the utility's prerogative. Second, utilities should appropriately value any special attribute that alternative resources would bring to their portfolio when making resource acquisition decisions. Third, utilities should use a rational process to make these decisions. Finally, the burden of demonstrating the prudence of resource acquisitions falls solely on the utility that makes the decisions to acquire those resources.

**Finally**

The Commission reminds PSE that the conclusion that this plan satisfies the requirements of WAC 480-100-238 and WAC 480-90-238, along with any encouragement for specific items, methodologies or approaches in this plan, or recommendations for future plans should not be construed as support for any resource acquisition or other cost for ratemaking purposes. However, the Staff commends PSE for improving its analytical toolkit and for improving its planning in the context of a clear need for additional resources during the term of this plan.