EXHIBIT NO. ___(DEM-3C)
DOCKET NO. UE-11___/UG-11___
2011 PSE GENERAL RATE CASE
WITNESS: DAVID E. MILLS

BEFORE THE
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION, **Complainant,** **v.** **PUGET SOUND ENERGY, INC.,** **Respondent.**	**Docket No. UE-11____** **Docket No. UG-11____**

SECOND EXHIBIT (CONFIDENTIAL) TO THE PREFILED DIRECT TESTIMONY OF DAVID E. MILLS ON BEHALF OF PUGET SOUND ENERGY, INC.

REDACTED VERSION

JUNE 13, 2011

PUGET SOUND ENERGY, INC.

SECOND EXHIBIT (CONFIDENTIAL) TO THE PREFILED DIRECT TESTIMONY OF DAVID E. MILLS

PUGET SOUND ENERGY, INC.

PREFILED DIRECT TESTIMONY (CONFIDENTIAL) OF DAVID E. MILLS

I. PSE'S ORGANIZATIONAL STRUCTURES, POLICIES & STRATEGIES USED TO MANAGE PORTFOLIO RISKS

A. Organizational Structures

Q. What organizational structures does PSE have to manage electric and natural gas portfolio risks?

A. PSE's Energy Portfolio Management Department ("EPM Department") includes certain employees from the Energy Supply & Planning Department ("ESPD") and the Structuring, Asset Optimization and Analytics Department. The EPM Department is composed of energy market analysts, quantitative analysts, seasoned energy traders and other professionals. The EPM Department is responsible for identifying, quantifying, monitoring and recommending risk management strategies for PSE. The EPM Department performs these tasks and manages PSE's short- and medium-term portfolios. The ESPD is led by the Senior Vice President, Energy Operations. The Structuring, Asset Optimization and Analytics department is led by the Vice President Finance and Treasurer.

The Energy Risk Control ("ERC") Department includes the Credit Risk Management group and is responsible for providing risk control and credit risk

management oversight. The ERC department is led by the Vice President Finance and Treasurer.

PSE's Energy Management Committee ("EMC") – composed of senior PSE officers – oversees the activities performed by the EPM Department. The EMC is responsible for providing oversight and direction on all portfolio risk issues in addition to approving long-term resource contracts and acquisitions. The EMC provides policy-level and strategic direction on a regular basis, reviews position reports, sets risk exposure limits, reviews proposed risk management strategies, and approves policy, procedures, and strategies for implementation by PSE staff.

In addition, PSE's Board of Directors provides executive oversight of these areas through the Audit Committees.

Q. Does PSE have the same policies and overarching strategies with respect to its Power and Gas portfolios?

A. No, PSE's management of its Power Portfolio for electric customers (including the natural gas PSE acquires to generate electricity) is not the same as its management of its natural gas portfolio for gas customers (often referred to as the "Core Gas" portfolio). PSE actively manages and hedges both portfolios, but does not always employ the same strategies. This is because management of the Power Portfolio involves complexities not present in the Core Gas portfolio such as the relationship between wholesale market power prices and the wholesale market price of natural

gas needed to generate power; the extent of water available to generate hydroelectric power; and alternatives available to PSE to generate, purchase or sell power result in additional risks and opportunities in the electric portfolio.

B. PSE's Core Gas Portfolio Hedging Strategy

Q. Please describe PSE's policies and overarching risk management strategies with respect to its Core Gas portfolio.

A. The structure of the Core Gas portfolio hedging strategy can best be described as programmatic, with some discretion. It is a two-dimensional matrix, where both the time until delivery and required hedged volumes establish thresholds for executing wholesale gas market transactions. However, there is an additional price component to this matrix that accelerates hedging if prices fall to a certain level, referred to as the Threshold Price Level. The Threshold Price Level is derived by examining fundamental industry factors and modeling. Essentially, this price represents a "floor" where PSE feels comfortable accelerating its hedging based on current market prices, estimated supply costs, and the current Purchased Gas Adjustment mechanism. In low-price environments a third component is activated, referred to as the Cash Cost component. This component raises the hedge level beyond the [redacted] target established by the programmatic components and allows incremental hedging when prices approach triggers, established through a quarterly analysis of natural gas producer's variable operating

REDACTED VERSION

costs. The Cash Cost component time horizon is the [redacted].

Q. Please describe the programmatic and discretionary aspects of the Core Gas hedging matrix.

A. The hedging timeframe, or horizon, for the Core Gas portfolio is [redacted], and encompasses a maximum of [redacted]: November through March (winter) and April through October (summer). The strategy mandates that a certain percentage of the portfolio be hedged [redacted]. These volumetric hedge targets are spaced [redacted] apart, which allows PSE staff some flexibility as to when to execute the hedges. Execution timing is based on both fundamental and technical analysis performed by experienced traders. Hedge levels [redacted] and the strategy mandates that [redacted] percent of the [redacted] period. Specifically, the Core Gas Portfolio should have at least [redacted] MMBtu/day hedged going into the [redacted], and at least [redacted] MMBtu/day hedged going into the [redacted], both subject to credit availability.

Q. When did PSE develop its Core Gas hedging matrix?

A. PSE developed this approach to hedging the Core Gas portfolio in the summer of 2004. Prior to August 2004, when the current matrix was approved by the Risk

REDACTED VERSION

Management Committee, Core Gas was hedged using a dollar cost averaging strategy that had fundamental price levels built into it. As prices increased, less volume would be hedged; as prices decreased, more volume would be hedged. The reason for this approach was that, historically, natural gas prices had remained very stable (excluding the anomaly of the "Western Energy Crisis"). If prices rose sharply, it was assumed that this was a short lived event and that prices would revert to the mean and fall back to historic levels. However, as gas prices and volatility continued to increase, PSE staff realized that the growing price uncertainty required a change in the hedging methodology.

C. Electric Risk Management Policies

Q. What hedging strategies have been approved by the EMC?

A. With respect to hedging strategies for specific time periods or quantities of energy, the EMC has approved a programmatic hedging plan. The prior programmatic hedging plan, with a PSE staff transactional purview of [redacted], was approved by the EMC on July 22, 2004 and was utilized through September, 2007, when it was extended through [redacted]. At that time, the balance of the current month plus the first full [redacted] became the Actively Managed Hedge, in accordance with the EMC approved Energy Supply Hedging and Optimization Procedures Manual ("Procedures Manual"), and the latter [redacted] became the Programmatically Managed Hedge in accordance with the EMC approved strategy.

REDACTED VERSION

EPM Department staff utilize the Programmatically Managed Hedge to systematically reduce PSE's net power portfolio exposure (including natural gas for power generation) beginning [redacted] in advance of the month in which the power was needed to serve PSE's load. Generally, this plan requires EPM Department staff to reduce PSE's net electric portfolio exposure each month such that the net exposure by the end of each month fell within the range of exposure – stated in dollars – that was permitted in the plan. Such exposure reduction is subject to minimum and maximum monthly limits to reduce timing and market risks associated with hedging activities. By at least [redacted] prior to delivery, the bulk of the hedging strategies and transactions are made per this programmatic plan leaving primarily only balancing transactions needed to respond to changes in market heat rates, load, hydro conditions, unit assumptions and other portfolio changes.

Decisions about hedges for delivery during the Actively Managed Hedge are made by EPM department staff, within limits set out in PSE's Procedures Manual. EPM Department staff has discretion as to how to accomplish the required reduction in exposure during the course of each month, within limits set out in PSE's Procedures Manual. For example, EPM Department staff determine how much to purchase or sell and the timing during the month to complete such transactions. Margin at Risk analysis is also used to determine which commodity is most advantageous to hedge, be it on- or off-peak power or natural gas. In addition, PSE staff decide whether to

REDACTED VERSION

push toward the maximum or minimum monthly dollar limits each month, or to hedge somewhere in between. PSE staff may also recommend departures from this plan, pursuant to market fundamentals, but execution of any such departures from previously approved strategies is subject to EMC approval.

Q. What guidance does PSE have in place for approaching risk management strategy proposals?

A. Many years ago, PSE moved from a more "discretionary" model of making hedging decisions to a more "programmatic" approach to hedging. The preceding dollar-cost averaging strategy established a disciplined approach to purchasing a defined volume of gas or power on a monthly basis. In applying this strategy, PSE typically established plans to purchase hedges for specific forward time periods, with the goal of purchasing a defined amount of power and gas in order to ratably reduce the deficit positions by a small amount each month.

By spring 2003, the EMC had approved expansion of this concept to an "Exposure-based Dollar Cost Averaging." This refinement moved PSE from defining a specific commodity and volume to be hedged each month to a dollar amount of risk reduction to be accomplished every month. Under this approach, the EMC would approve a dollar figure of risk to be reduced, and PSE staff would determine whether it was better to hedge gas or power. As markets moved up or down, the approved dollar amount would allow for less or greater volumetric purchases of

power or gas for power.

In May 2004, PSE began to employ a metric called Margin at Risk, which measures risk reduction as a result of incremental hedging. PSE has incorporated the Margin at Risk concept into the evaluation process for hedge strategies to measure risk reduction for various alternatives. A series of hedge strategies, or transaction types, are run through the portfolio, providing a table of how much risk reduction is gained, by month and by strategy. The Margin at Risk concept assists with deciding how to allocate dollars in a credit-constrained environment, thus providing an additional tool for choosing between available commodities.

Q. Why did PSE extend its hedging strategies?

A. Prior to extending the term of hedging strategies, PSE engaged in a very detailed best-practices benchmarking and market research initiative. These efforts revealed that customers prefer a longer period of rate stability and that industry leading companies were engaged in longer term hedging practices than PSE. Given this and other information, PSE determined it could be beneficial to expand our hedging horizons. The line of credit requested and approved in the 2006 General Rate Case provides PSE increased flexibility to monitor and more actively address the exposures associated with its power and core gas portfolio positions, as well as its natural gas for power position.

II. PSE'S MODELING TOOLS & INFORMATION USED TO MANAGE ITS PORTFOLIO AND IMPLEMENT RISK MANAGEMENT STRATEGIES

Q. How does PSE integrate hedging activities into its Core Gas strategies?

A. PSE's Core Gas risk system models the estimated potential variability of future prices using 250 price scenarios. This risk system permits PSE to model scenarios of prices and storage activity versus load requirements to represent future projected Core Gas portfolio needs. For example, the 250 price scenarios the risk system models help incorporate monthly storage variability to calculate a conservative volume available to hedge under the Cash Cost methodology described above. In addition, PSE employs a metric called Margin at Risk, to inform decisions of which natural gas basin is most attractive to hedge.

Q. Are there other examples of how PSE's risk system modeling informs its discretionary actions under the Core Gas hedging matrix?

A. Yes. PSE's storage capacity at Jackson Prairie and Clay Basin, approximately [redacted] Bcf ([redacted] Dth), can have a large influence on the portfolio's position. PSE's model adjusts storage injections and withdrawals based upon the shape of forward price curves. The risk system also values these storage transactions. Based on this information, PSE staff may decide to release storage capacity to a third party if the capacity is in excess of PSE's needs, and if that party is willing to pay more for the

REDACTED VERSION

storage than what PSE staff thinks PSE can make by managing it internally.

Q. Please describe what PSE's electric portfolio risk system does.

A. PSE's risk system employs production cost modeling techniques to estimate future demand for on- and off-peak power and natural gas for PSE's fleet of gas-fired power plants. This risk system permits PSE to model scenarios of power prices, hydro conditions, load projections, generating and contracted resources and other inputs as required to represent future projected portfolio needs.

To model a variety of scenarios regarding PSE's gas-fired generation, the risk system takes into account each plant's individual operating characteristics, including: unit efficiency, start-up costs, variable operating costs, minimum run times, planned and unplanned outages, and unit availability. The risk system performs simulations of different market conditions and various outages in order to develop an estimate of the gas volumes required to produce a volume of power. The plants are modeled on an hourly basis and the information is aggregated into daily and monthly time frames for purposes of developing a forward-looking position. The risk system incorporates information about hedges that PSE staff has already executed to model whether the portfolio is surplus or deficit.

The risk system incorporates the inter-relationship between gas and power prices in developing its probabilistic gas and power positions. In different market scenarios, PSE's gas or power requirements will change. The reason is twofold. First, the

plants have different operating efficiencies (known as "heat rates") and become economic to dispatch at different price differentials between power and gas. Second, the forward market prices for power and gas change frequently and the price relationship between power and gas, known as the "implied market heat rates," change as well. At certain implied market heat rates, PSE will expect to run each plant at an expected rate, and the expected plant gas requirements can be calculated. But if market conditions change, PSE will expect to adjust its gas and power purchases or sales in order to serve load with the most economic resource. For example, it may be more economic to purchase power than to purchase gas to generate the power PSE needs to serve its load.

Q. Please describe the output that the electric portfolio risk system produces.

A. The risk system generates a probabilistic volumetric position, comprised of 250 scenarios, for on- and off-peak power and gas for power. The position report shows, for each of the months following the date of the report, the resource types in PSE's power position grouped by: short-term purchase and sale transactions, long-term contracts, Combustion Turbines grouped by heat rate efficiency of the facilities, Non Utility Generators/Qualifying Facilities, Coal Plants, Wind and Hydro (both PSE-owned and Mid-Columbia contracts).

Based on this probabilistic volumetric position for each month, the risk system also generates a report showing the potential net cost exposure associated with the

"open" positions (defined as any net surplus or deficit amount).

Q. How does PSE use the electric portfolio risk system to help make hedging decisions?

A. Once PSE's aggregated energy position and net exposure are defined for a particular period, the EPM Department staff evaluate and develop risk management strategy proposals and/or execute transactions around the purchase or sale of gas or power, as appropriate, to move toward a balanced position and reduced exposure. Execution entails entering into specific transactions with approved counterparties, approved instruments, executed master agreements and available credit.

Q. How is the risk system used to implement the Programmatic Hedging Plan described above?

A. As described above, the Programmatic Hedging Plan is set up to systematically reduce the total net exposure, for each month of the [redacted] beyond the next [redacted] timeframe, within maximum and minimum limits set forth in the plan outlining the amount of hedging that can or must be done each month, so that the total net exposure for each month will fall within the limits of the Procedures Manual. Every month, the risk system calculates the total net exposure to be reduced for each of the [redacted] in the Programmatically Managed Hedge period.

REDACTED VERSION

Q. Do Energy Portfolio Management staff implement the Programmatic Hedging Plan relying only on the net exposure?

A. No. The net exposure drives transactions only to the point of showing whether PSE's exposure is within the maximum and minimum monthly limits of the plan. EPM Department staff must then make use of market fundamentals, water supply and weather forecasts that impact the wholesale electric and gas markets to decide whether to press toward the maximum or minimum monthly limits, or somewhere in between. EPM Department staff also determines when and how to execute such transactions to maintain each month's net exposure within the maximum and minimum limits.

Q. How does PSE's staff develop a view of appropriate hedging strategies for the power portfolio?

A. The EPM Department function utilizes a wide set of tools and sources of information to help them make informed decisions about dispatching plants, purchasing fuel, and executing hedges approved by the EMC. They also hold several meetings each month so that the team can review operational events, discuss market trends, and review new supply/demand information. Within this context, the teams work together to understand the exposures in the portfolio and discuss where hedging priorities occur. Underlying all this teamwork is an EPM Department staff with years of experience in energy trading, optimization and risk

management.

Q. What types of information does the Energy Portfolio Management staff consider?

A. The EPM Department collects a wide range of data to monitor supply/demand factors, which include but are not limited to: weather trends; macro economic factors; crude oil markets, gas storage inventories across the United States, Canada and in the western United States; hydro run-off forecasts, reservoir storage, precipitation and snowpack; and more. Additionally, PSE staff reviews forecasted wholesale market prices and supply/demand fundamentals, as well as commodity price technical analysis, such as trading firm publications and consulting service forecasts.

EPM Department staff also receives real-time information from a variety of sources such as: Future Source, Intercontinental Exchange (live price data), live broker lines where current transactions are communicated though a speaker system, and other tools. The EPM Department also has instantaneous data coming from PSE's systems operations staff so they can view load and generation dispatch data on a real-time basis.

In addition to using such information and processes to implement the current Programmatic Hedging Plan, the EPM Department also uses such information to develop recommendations to the EMC regarding potential changes to PSE's

overarching hedging strategies or to recommend transactions that do not fall within those strategies.

Q. Does PSE use any other tools to manage its energy portfolio?

A. Yes. PSE also uses a counterparty credit risk management system to assist the Credit Risk Management group and EPM Department staff in evaluating credit issues associated with potential transactions. With this tool, PSE staff can review data including:

- Moody's and S&P rating of the entity;
- applicable information about the parent of the entity;
- amount of parent guarantee credit provided to PSE, if applicable;
- the entity's amounts payable and receivable;
- the aggregate mark to market exposure of all open forward transactions with the entity (the dollar value of the difference between the original contract price and current market price);
- the credit limit assigned to the entity;
- the existence of netting terms; and
- Accounting Standards Codification 815 (formerly Financial Accounting Standards Board Statement No. 133) designations. This Statement provides accounting and reporting for derivative instruments and hedging activities.