EXHIBIT NO. _____ (JMR-1T)
DOCKET NO. _____
2003 POWER COST ONLY RATE CASE
WITNESS: JULIA M. RYAN

BEFORE THE

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

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

DIRECT TESTIMONY OF JULIA M. RYAN ON BEHALF OF PUGET SOUND ENERGY, INC.

OCTOBER 24, 2003

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PUGET SOUND ENERGY, INC.

DIRECT TESTIMONY OF JULIA M. RYAN

Q: Please state your name, business address and occupation.

A: My name is Julia M. Ryan. My business address is: 10885 NE 4th St., PSE 12N, Bellevue WA 98004-5591. I am employed as the Vice President of Energy Portfolio Management for Puget Sound Energy, Inc. ("PSE" or "the Company").

Q: What are your responsibilities in your current position?

A: I lead PSE's Energy Risk Management, Power Supply Operations, and Gas Supply Operations Departments. In this capacity, I manage all PSE short-term and medium-term wholesale power and natural gas portfolios (*i.e.*, up to two years). (The words "short-term" and "medium-term" are collectively referred to as "short-term" in the remainder of my testimony.) I am familiar with the operation of the wholesale power and natural gas markets and the significant changes to the markets that have occurred during the last few years. **Ex. ____ (JMR-2)** describes my professional responsibilities in more detail.

Q: What are your educational background and professional work experience?

A: My educational background and professional work experience are described in **Ex. ____ (JMR-2)**.

I. PURPOSE AND SUMMARY OF TESTIMONY

Q: What is the purpose of your testimony?

A: The purpose of my testimony is twofold. I will explain why PSE should not rely to a significant extent on the short-term power market to bridge the expected energy and capacity deficits that PSE faces. I will also discuss several reasons why PSE's acquisition of an ownership interest in EPCOR's Frederickson 1 gas-fired combustion turbine project makes sense for PSE at this time.

Q: Please summarize your testimony.

A: I begin my testimony by discussing the work performed by PSE's Energy Risk Management Department. PSE must balance numerous risk factors when obtaining resources to meet its customers' energy requirements. Section II describes PSE's approach to energy risk management.

I then review in Section III the current status of the wholesale power markets in the Pacific Northwest region. PSE buys and sells products in these markets in order to manage risk factors and to meet customer load on a daily basis and throughout the year. Today, however, the markets are illiquid – and PSE cannot rely on them for resources beyond eighteen months to the same extent that PSE could in the past. A number of factors are responsible:

- **Fewer Participants**. Not as many companies are participating in the markets – and many of the companies that still participate are doing so to a much lesser degree.
- **Fewer Products**. Not as many energy products are available in the markets – and the products that are still available are shorter in duration.
- **Credit Concerns**. Credit issues have become a major concern in the industry due to the financial condition of many energy companies – which limits all energy companies (including PSE) in their ability to transact in the markets.
- **Transmission Constraints**. PSE faces transmission constraints on the BPA system throughout the Pacific Northwest region -- which limits the energy and capacity products available to the Company.

Due to these factors, PSE is constrained today in its ability to transact beyond eighteen months within the short-term power market. Consequently, in order to manage risk effectively, and as a matter of prudent business strategy, PSE should not rely on the short-term power market alone to bridge the expected energy and capacity deficits that PSE faces. Other resources should be procured.

I conclude my testimony in Section IV by describing why the portion of the Frederickson 1 plant that PSE has agreed to acquire will enable the Company to better manage risk and to achieve several economic and operational benefits:

- **Reduced Reliance Upon the Short-Term Power Market.** PSE can take approximately 125 MW in power output from the Frederickson 1 plant rather than purchase equivalent energy from third parties in the short-term power market. To this extent, PSE will not have to resort to the short-term power market for energy products that, currently, are difficult to obtain beyond eighteen months or in large quantities over a short period of time.
- **Attractive Heat Rate.** The Frederickson 1 plant will offer an efficient heat rate that will economically convert gas to power.
- **Reduced Transmission Risk.** The geographic location of the Frederickson 1 plant will help mitigate some of the transmission curtailment risks that PSE currently faces with respect to energy purchases in the short-term power market.
- **Voltage Support.** Connection of the Frederickson 1 plant to the PSE system, as currently envisioned, will potentially enhance the voltage support for the Company's energy delivery system.
- **Operational Flexibility.** PSE will be able to dispatch the Frederickson 1 plant when energy output is required to meet customer load and respond to system emergencies, such as a sudden cold spell or unplanned loss of generation. PSE will also be able to turn down the plant when energy output is not required, in order to

adjust to real-time changes in loads and prices. These features provide more flexibility than a typical purchased power arrangement.

- **Operating Reserve Capability**. The Frederickson 1 plant will add operating reserve capability – which is important since PSE self-provides operating reserves.
- **Duct Firing Capability**. Additional duct firing capability will likely be added to the Frederickson 1 plant. This capacity can be used not only for operating reserves but, additionally, as incremental capacity to help meet a peak event.

II. PSE'S APPROACH TO ENERGY RISK MANAGEMENT

A. Overview

Q: Please describe PSE's approach to energy risk management.

A: PSE must balance numerous risk factors when obtaining energy resources to meet customer load. My staff and I work to identify these factors so that PSE can: (1) deliver reliable energy when our customers need it; (2) serve our customers at a low cost while minimizing price volatility; and (3) maximize the value of PSE's energy resources. The risk management activities are overseen by PSE's Risk Management Committee ("RMC"), which I discuss in more detail below.

Q: Why is it important to manage risk factors?

A: PSE operates in a highly dynamic energy environment. On any given day and throughout the year, PSE experiences energy supply and load fluctuations; stream flow variability; forced generation outages; wholesale power and gas price volatility; transmission and transportation constraints; and weather impacts. Mr. Gaines discusses many of these variables in his testimony. *See* **Ex. ____ (WAG-1T)** at 19-23.

Risk management is the process by which we manage our wholesale energy portfolio in this dynamic environment and mitigate the impacts of risk factors upon power costs. We assess and measure risk factors in order to understand their impact on supply, load,

and cost. Our primary objective in this process is to develop and implement effective risk management strategies that will reduce price and operational risks when we are buying energy from the markets (in times of need) and when we are selling energy into the markets (in times of surplus).

Q: Has PSE prepared documents that discuss these risk management activities?

A: Yes. In 2000, PSE prepared an Energy Supply Hedging and Optimization Procedures Manual (the "Procedures Manual") that has since been updated. The Procedures Manual sets forth confidential risk management protocols that PSE follows. I have attached the current Procedures Manual to my testimony as **Ex. ____ (JMR-3C)**.

We also prepared summaries of the Company's energy risk management activities as part of PSE's least cost planning process. Chapter 6 of the Draft LCP (December 2002) discusses PSE's risk management; this chapter is attached to my testimony as **Ex. ____ (JMR-4)**. Similarly, Appendix B to the LCP that was filed in April 2003 describes PSE's approach to risk management. The April LCP is attached to Mr. Black's testimony as **Ex. ____ (CJB-3)**.

My testimony will not cover every element of PSE's energy risk management activities. A more detailed review of these activities can be found in the above-referenced documents.

B. The Energy Risk Management Department

Q: Please describe the responsibilities of the Energy Risk Management Department.

A: The Energy Risk Management Department ("ERM Department") – composed of energy market analysts, quantitative analysts, and other professionals – is responsible for identifying, quantifying, and reporting on risk factors. The ERM Department also develops and recommends risk management strategies for the Company. The ERM

Department works closely with the Power Supply Operations and Gas Supply Operations Departments to perform these tasks and to manage PSE's short-term portfolios.

As I discussed earlier in my testimony, the RMC – composed of senior PSE officers – oversees the activities performed by the ERM Department. The RMC provides policy-level and strategic direction for the ERM Department on a regular basis. In addition, the RMC reviews bi-weekly position reports, sets risk exposure limits, reviews proposed risk management strategies, and approves the appropriate strategies for implementation by my staff.

Q: Please describe the types of risk that PSE faces.

A: The risk types associated with PSE's power supply portfolio are both financial and operational in nature:

- **Volumetric Risk** – Volumetric risks arise due to the potential variability of loads and resources within the portfolio. For example, customer loads will fluctuate with weather and production from specific plants may vary depending upon rainfall. This potential variability in demand and supply creates imbalances that the Company must consider and manage.
- **Commodity Risk** – Future power and gas prices are unknown and potentially volatile. This price uncertainty is driven by uncontrollable factors, including local and national weather; economic conditions; hydro supply; plant availability in the Pacific Northwest region; regional reserve margins; and oil prices. Thus, PSE and its customers are at risk for potential commodity price changes if PSE purchases products in the short-term power market.

- **Counterparty Risk**– Counterparty risk is the risk of default by PSE's counterparties. A strategy to mitigate price volatility can go awry if the counterparty fails to perform its contractual obligations, and causes PSE to be at risk for liquidated damages.
- **Operational Risk** – Changes in generation or transmission operating conditions and availability that affect PSE's portfolio (such as plant outages and transmission curtailments) are examples of operational risk.
- **Estimation Risk** – There are estimation risks associated with using models to measure real world events – especially in the complex energy industry. Different assumptions or inputs can all cause changes to the model results.

Q: How does the ERM Department perform its work?

A: The ERM Department collects and gathers data from a number of sources; synthesizes and analyzes the data; and employs a variety of techniques and tools in order to quantify and understand potential risk to our customers (which we define as negative variation in power costs). Then, once the various risks are understood, the ERM Department analyzes and evaluates potential risk management strategies intended to reduce the uncertainty in the portfolio. **Ex. ____ (JMR-4)** at 12-13 discusses these activities in more detail.

Much of the ERM Department's analytical effort involves what we call "fundamental analysis." This type of analysis attempts to quantitatively measure and understand certain variables and the interactions among them, in order to gauge the impact of the variables upon the range of potential forward market prices. These variables include, among others: (1) power and gas prices; (2) GDP growth; (3) rig counts; (4) generation plant additions; (5) oil prices; (6) temperature; and (7) streamflow.

In addition to the analysis of potential future prices, the ERM Department gathers and evaluates relevant historical and projected data concerning variables that directly affect PSE's short-term power portfolio. These variables include, among others: (1) PSE portfolio-specific data such as customer load; (2) plant characteristics and contract details; and (3) critical external variables that are directly related to PSE's portfolio.

The data and information that PSE gathers represent a key input variable to a risk management system that the Company uses to project various market positions and exposures. Moreover, with this system the Company can run scenario testing risk analysis to view how certain strategies reduce risk exposure. The risk management system extracts data from the Company's gas scheduling and power scheduling systems, and is used in conjunction with other models that PSE employs.

Q: What is the ERM Department's goal in this process?

A: Our goal in energy risk management is to find an optimal strategy that balances potential risks and potential benefits. A particular strategy may include one or more of several different structures, such as a fixed-price purchase, an exchange, or a hedging instrument like a "call" (an option to purchase energy) or a "put" (an option to sell energy). As I discussed above, my staff studies how the addition of such a strategy to our supply portfolio will interact with the other resources in the portfolio, and what the overall impact will be. The ERM Department performs sensitivity analyses with respect to a strategy in order to fine-tune the strategy to meet the portfolio's risk elements. **Ex. ____ (JMR-4)** at 13-14 discusses these activities in more detail.

III. TODAY'S POWER MARKETS – ISSUES AND CHALLENGES

A. Fewer Companies are Participating

Q: Please describe the current level of participation in the regional power markets.

A: Many large energy companies that participated actively in the regional power markets just a few years ago do not do so today. Numerous companies have exited completely or reduced their activity in the region. The number of companies with which PSE engages in significant power transactions has dropped by approximately 55%. Many utilities have reduced their forward trading activity (to focus more on short-term transactions), and several have closed their power market affiliates and operate only as utility companies. *See* **Ex. ____ (JMR-5C)** (*Comparison of PSE's Gas and Power Counterparties From 2001-2003*).

Q: Has this decline in market participation caused trading activity to go down?

A: Yes. Compared to the late 1990s and the years of the Western Power Market Crisis (2000-2001), we have seen a noticeable decline in trading volumes, even in standard instruments. The number of actively-traded locations in the Pacific Northwest region has also dwindled. The longevity of offers has dropped, to a point where there are fewer term price quotes beyond eighteen months (*i.e.*, two-year power products).

Q: Why is the decline in trading activity significant?

A: The level of activity is an excellent indicator of a market's robustness, or liquidity. More participants with differing strategies and goals lead to greater market liquidity, which ultimately benefits everybody. Such a market lets a prospective buyer select among a wide variety of products that are offered by many different sellers – which leads to greater choices, lower prices, and better outcomes. Further, when many different buyers and sellers transact in the markets, our experience has been that prices will tend to converge to a level that is agreeable to both counterparties. But in a less

liquid market, there can be a significant difference between the price at which parties are willing to purchase (bid) and the price at which parties are willing to sell (ask).

The markets today are not robust. Compared to the recent past, there are fewer participants in the markets and (as I discuss below in my testimony) fewer products that are available. This illiquidity makes it increasingly difficult for PSE to develop effective risk management strategies for the benefit of its customers, at a time when PSE faces a growing deficit between its load and its available resources.

B. Fewer Products are Available

Q: What fixed-price energy products are available in the markets today?

A: Subject to the credit and transmission issues that I discuss later in my testimony, PSE can enter into fixed-price purchases and sales for eighteen months or less at the Pacific Northwest's longstanding trading hub, the Mid-Columbia ("Mid C") (which has become the only real trading hub in the region). These fixed-price products are available despite the decline in regional trading activity. However, market illiquidity is a factor beyond eighteen months – such longer-term products are difficult if not impossible to obtain.

In addition, it is difficult to obtain single-month price quotes for fixed-price transactions beyond 4-6 months into the future. Instead, sellers are more likely today to offer "quarterly" products that package three calendar months together. This poses difficulties for PSE since its energy needs are not the same in every month. In the fourth quarter, for example, PSE has much less load in October and November than in December. But when the only available product is a quarterly product, PSE will over-purchase for the first two months of the quarter to cover the December need. PSE may then have to sell the excess energy back into the market – perhaps at a loss.

Q: How have other products changed in the markets?

A: An active market existed just a few years ago at the Mid C market and at COB (California Oregon Border), and companies would purchase and sell energy between those points. Today, however, COB is neither liquidly traded nor quoted frequently as a spread or price difference to the Mid C.

Another significant decline in activity has occurred with respect to power options, such as the calls and puts that I discussed earlier in my testimony. PSE used those options at times in lieu of fixed-price contracts in order to manage some of the volumetric risks surrounding load and hydro variability. But the marketers who used to bundle outage insurance with the ability to call on power at a fixed price (if a plant outage occurred) are either no longer in business or no longer marketing these products. With respect to the few non-standard products PSE still enters into to deal with seasonal peaking deficits and surpluses, we have fewer counterparties with whom we can work.

Q: Can PSE purchase long-term products from traditional regional counterparties?

A: No. Most of PSE's traditional regional counterparties are, like PSE, load-serving entities ("LSEs"). These companies are focused primarily on meeting their immediate and expected load obligations -- but not at the cost of increasing longer-term risk exposure. Most LSEs are transacting power a maximum of three to six months out. For these reasons, and due also to the reduced creditworthiness of many LSEs, it is very difficult to obtain a longer-term product from these entities today. *See* **Ex. ____ (JMR-6).**

C. Credit Issues Are Now a Major Concern

Q: Why is credit an important factor in today's power markets?

A: A company's financial condition, and thus its creditworthiness, is the lens through which all prospective buyers and sellers in the markets – including PSE – now look at

and evaluate potential counterparties. Many companies have incurred large losses during the last few years, with some forced into bankruptcy court. Consequently, a company's creditworthiness has become the single most important factor in determining the companies with which PSE can transact.

Q: How does a counterparty's financial condition affect PSE's risk exposure?

A: If PSE agrees to purchase an energy product from a counterparty, but that counterparty fails to deliver the product when required, then PSE must go to the market to replace the product – perhaps at a much higher cost. PSE could, of course, bring a claim against the defaulting counterparty for the incremental costs required to cover PSE's position. But if the counterparty's financial condition is weak, then PSE may never recover those costs.

The same analysis applies if PSE sells an energy product, except that the exposure to PSE can be even greater. If PSE delivers a product to a counterparty, but the counterparty fails to pay for the product, then PSE loses the entire value of the energy that has been delivered. In addition, PSE faces the exposure risk of having to replace the remaining amount of the contracted supply with another counterparty, at potentially a lower price.

Q: Are debt ratings relevant to PSE's discussions with potential counterparties?

A: Yes. Generally PSE will not contract with companies that have debt ratings below "investment grade." While PSE has a low "investment grade" debt rating, most of our gas and power suppliers have stronger credit ratings that we do. This can put us in a weaker negotiating position with those suppliers. PSE's credit rating and the credit ratings of PSE's currently-approved counterparties are set forth in **Ex. ____ (JMR-7C)**.

Q: How do the financial and rating issues play out in the markets?

A: As a result of recent bankruptcy announcements, PSE and other energy companies are very careful today to include credit terms in their contractual arrangements. Typically a company will not transact with a potential counterparty until it evaluates the counterparty's debt rating and other financial indices and determines -- based on those factors -- that the counterparty will likely perform its contractual obligations. In some cases, a company may agree to enter into certain transactions with a counterparty on an "open credit" basis. Then, as the transactions' value begins to exceed the amount of open credit, the company may require the counterparty to provide some level of collateral as a condition to further transactions. The collateral may take the form of a letter of credit, prepayment, or deposit of funds into an escrow account -- to be drawn down by the company if the counterparty defaults.

Q: What types of companies does PSE transact with?

A: PSE attempts to transact, where possible, with: (1) LSEs with which we have existing business relationships; (2) stable merchant power producers; and (3) highly-rated energy marketing companies. In this process, PSE identifies the open credit that it is willing to extend to a potential counterparty, and then negotiates with that counterparty for reciprocal credit terms. We do not transact with a counterparty that will not extend open credit to PSE, since we do not want to pre-pay or post collateral to other parties.

Q: What position has PSE taken with respect to the posting of collateral?

A: For the most part, PSE has not had to provide collateral to its wholesale counterparties. Some agreements proposed to PSE provide that, if a counterparty suffers a material adverse change in its financial condition, then the other counterparty may request that the first counterparty post collateral. In some of PSE's financial derivative agreements, a matrix outlines the amount of open credit that will be extended to each counterparty based upon its rating level. The credit provisions further state that, if the projected

gains and losses associated with all open transactions between the counterparties exceed the open credit amount, then the counterparty whose open credit amount is exceeded must post collateral to the other counterparty. Moreover, most financial contracts have additional credit provisions which provide that a counterparty's open credit will drop to the next defined level if the counterparty's debt rating is downgraded. The posting of such collateral carries a cost -- *e.g.*, in the case of a letter of credit, the cost may equal a percentage charge for the face value of the letter.

Therefore, PSE cares not only about the amount of available open credit, but the impact of a potential rating downgrade. If the rating agencies downgrade the rating of an energy company, then that change can trigger a collateral call by the company's counterparties. This in turn can cause a financial "squeeze" for the company -- since the posting of collateral would use the company's existing bank lines to support the wholesale transactions, when those lines might be needed for working capital and deferral customer account needs. If the collateral calls exceed the company's cash and short-term bank lines, then the company would need to look for additional outside financing.

PSE's current senior unsecured debt rating is just at investment grade and its corporate rating is only one notch above investment grade. We are extremely concerned about putting the Company in a position in which it would have to post collateral in the event of a credit downgrade. Therefore, we have told physical counterparties that PSE will not agree to transaction terms that would force the Company to post collateral if a rating downgrade occurs. This has slowed our ability to execute new agreements with new counterparties. With respect to financial counterparties, we have not executed the desired number of agreements with those companies, since most of them have made credit requests of us that include the ratings downgrade provisions. On balance, however, our position on the posting of collateral means that PSE is less vulnerable

with respect to potential collateral calls and rating downgrades. *See* **Ex. ____ (JMR-8C).**

Q: What is PSE currently doing to manage its short-term credit situation?

A: Credit utilization is an important consideration since there is a finite amount of open credit extended to the Company. PSE must therefore make transactional decisions that use the open credit effectively, leaving credit available for movements in hedged positions. We have several approaches to maximize the credit available to us.

First, we enter into "netting" arrangements with counterparties. In these transactions, PSE works with a potential counterparty with the objective of "netting" the companies' respective payable and receivable positions associated with all outstanding transactions. The objective of such an arrangement is to offset contracts with payments due at the same time, and to net the projected gains and losses of all open contracts for which delivery has not yet occurred, when determining the net exposure of one company to another. To the degree that PSE and a counterparty may enter into both purchase and sales arrangements, this agreement to "net" payments and future exposure allows the companies to engage in more transactions than they otherwise might have executed.

Second, PSE seeks to expand its current counterparty list, and is open to working with any new company for physical power and gas supplies if that company meets our credit requirements. We have executed new agreements in 2003 with several banks that have begun to trade financial derivative products, and two contracts with physical gas suppliers.

Third, PSE is making acquisitions that will help PSE manage its short-term credit situation. The acquisition of an ownership interest in the Frederickson 1 facility is an example of such a transaction.

Q: How will the Frederickson 1 acquisition improve PSE's credit situation?

A: The acquisition of the Frederickson 1 plant will improve the Company's credit situation by reducing the amount and cost of power we would otherwise need to purchase. We will instead purchase fuel to supply the plant (the cost of which would have been a part of the purchased power price). The difference in the heat rate at the Frederickson 1 plant and current market heat rates means that the cost to purchase the necessary gas supply is significantly less than the cost to purchase 125 MW of power under a power purchase agreement. If market heat rates improve (increase), then the differential between the cost to purchase gas supply and the purchased power cost will become even greater.

D. PSE Faces Transmission Constraints

Q: Do transmission constraints affect the availability and cost of power to PSE?

A: Yes. Transmission constraints can prevent the Company from moving power to its system (if it is serving customers) or to the secondary market (if it is selling surplus power). If a transmission curtailment or outage occurs, then the price relationship between the "source" (where the power originates) and the "sink" (where the power is destined) can change dramatically – the supply at the source must be sold to another market (or stored if hydro energy) and the sink must be supplied with power from another resource. Such an event can affect supply reliability as well as cost, especially if the transmission curtailment or outage occurs on a cold winter day.

Q: Does PSE face transmission constraints today?

A: Yes. We do have firm transmission rights to all of the Company's owned resources, including thermal and hydro. But we do not possess firm transmission to match up with all of the market purchases that would be required to bridge the energy and capacity deficits that Mr. Black discusses in his testimony. Additional BPA firm transmission is not available for "east to west" energy flows – from points east of the Cascades such as Montana and Eastern Washington to the western side of the state (where our customers are located) – nor is firm transmission generally available for "north to south" energy flows in Western Washington. Since many energy companies in the Pacific Northwest transact at the Mid C market, which is located in Eastern Washington, we face reliability risks if we purchase power from suppliers at the Mid C and use non-firm transmission to bring the power to our system to meet loads. The risk of curtailment of non-firm transmission is greatest in the winter months, when PSE's loads are greatest. *See* Report to the Infrastructure Technical Review Committee (August 20, 2002) titled "*Upgrading the Capacity and Reliability of the BPA Transmission System*," **Ex. ____ (JMR-9)**; Map titled "NW Constrained Paths," **Ex. ____ (JMR-10)**.

Q: How will the Frederickson 1 plant affect PSE from a transmission perspective?

A: The risk of transmission constraints is significantly lower if PSE can move power from generation located in or near PSE's service territory. Thus, in the case of the Frederickson 1 plant, we requested that BPA provide firm transmission to move power from South Tacoma (the interconnection of the plant's 230KV line with BPA's system) to our system -- a distance of only 25-30 miles. This power would move "south to north," which is counter to the constrained flow on BPA's system. BPA is completing its assessment of our request, but has indicated that the requested path should be available to the Company. Further, the BPA transmission tariff includes an "evergreen" clause (i.e., the right to extend the contract term) that will protect PSE if,

in the future, we do not connect the Frederickson 1 plant directly to our system. (Transmission reliability will be further enhanced if we do connect the plant directly to our system -- since in that case there would be no risk of curtailments on the BPA system.)

E. PSE is Limited in the Short-Term Power Market

Q: What concerns do you have with respect to regional generation adequacy?

A: Although a generation surplus exists in the Pacific Northwest region today, there is no guarantee that this surplus will continue in the future. As Mr. Black discusses in his testimony, reserve margins in the Pacific Northwest region are eventually expected to decline. *See* **Ex. ____ (CJB-1T)** at 34 and cited exhibits. This presents an issue given the current status of the merchant industry that Mr. Markell discusses in his testimony. *See* **Ex. ____ (EMM-1T)** at 6-8. Since we do not see significant generation coming on line in the next few years, we are concerned that the power markets may become even less liquid than they are today -- which will further limit PSE's ability to rely upon the short-term power market for energy products.

Q: What concerns do you have regarding PSE's ability to meet a deficit situation?

A: I discussed earlier in my testimony the difficulties that PSE faces when attempting to enter into forward transactions beyond eighteen months. In addition, we are limited by the amount of time that it takes to complete market transactions. The current illiquidity in the power markets means that it can take several days to obtain a market quote for just 25 MW (the typical size increment that is offered) 9-12 months out in the future. This poses great challenges if we want to meet a winter deficit with energy from the short-term power market – it simply cannot be done quickly. This can present a significant problem if we want to purchase large quantities of energy over a short period of time.

Q: What are the consequences of these limitations?

A: These limitations effectively constrain PSE when managing its supply portfolio and the risk factors that I discussed earlier in my testimony. Of course, if the Company does not add long-term resources to bridge the expected energy and capacity deficits that Mr. Black discusses in his testimony, my staff will continue to purchase such energy products as may be available in the short-term power market. But due to market conditions, we are limited in the forward purchase transactions (beyond eighteen months) into which we can enter. Further, our ability to forward purchase in the future, and to manage risk, will be limited by what happens with respect to factors such as credit issues, the development or retrenchment of non-LSE industry participants, and regional reserve margins.

Under these circumstances, if PSE were to rely exclusively on short-term purchases to meet the expected energy and capacity deficits that Mr. Black discusses in his testimony, then PSE would be unable to completely manage the price volatility risks that would be associated with such reliance. In my opinion, it would not be prudent for PSE to rely on the short-term power market to this extent and for this purpose.

IV. WHY THE FREDERICKSON 1 ACQUISITION WILL BENEFIT PSE

A. Better Ability to Manage Risk

Q: Will the Frederickson 1 plant enhance PSE's ability to manage risk?

A: Yes. We expect that energy prices will likely continue to be volatile in the Pacific Northwest region for the next few years. By acquiring its interest in the Frederickson 1 plant, PSE will fix a portion of its energy costs and thereby limit its exposure to fuel cost volatility (since PSE will have only fuel costs to manage from a commodity risk perspective). In addition, the conversion cost of transforming natural gas into electricity will be fixed through PSE's investment in the Frederickson 1 plant. These

are good risk mitigation strategies for the Company. Further, the Frederickson 1 acquisition will improve PSE's ability to manage the operational risks that I discussed earlier in my testimony.

Q: How will the Frederickson 1 plant help PSE to manage its operational risks?

A: When a gas-fired generating unit with duct firing is operating at capacity, PSE can use the incremental generation capability that the duct firing provides. The duct firing will be at a higher heat rate and can be used during peak load periods and when market prices make that use economic.

Alternatively, the duct firing can be held in reserve – as operating reserves – when the combustion turbine is at full operating capacity. The Western Electricity Coordinating Council (WECC) and Northwest Power Pool (NWPP) define, as Operating Reserve Obligations, the amount of Operating Reserve that a utility must have available to replace capacity loss if a unit trips or fails to start, or if some other system failure occurs. Although PSE typically uses its hydro resources as operating reserves, PSE may at times prefer to apply the former resources to meet load obligations while retaining the Frederickson 1 duct firing as operating reserves.

B. Economic and Operational Benefits

Q: Will the Frederickson 1 plant offer economic and operational benefits to PSE?

A: Yes. The Frederickson 1 plant offers important benefits to the Company. Among other benefits, the plant will provide a mix of firm energy and peaking capacity and offer flexibility with respect to ramp rates and displacement capability. By contrast, a purchased power arrangement does not offer all of the benefits that the Frederickson 1 plant offers. Typical fixed-price power purchase agreements are for a set amount of energy delivered over a specified time period. Tolling transactions typically provide

only pre-schedule rights to supply gas and take delivery of power. It is rare for either arrangement to provide the flexibility inherent in owning a power plant.

Q: Please describe the major benefits that the Frederickson 1 plant offers.

A: Mr. Markell discusses several of these benefits in his testimony. *See* **Ex. ____ (EMM-1T)** at Section V. I will identify and describe other major benefits that are associated with the Frederickson 1 plant:

- **Reduced reliance upon the short-term power market**. PSE can take approximately 125 MW in power output from the Frederickson 1 plant rather than purchase equivalent energy from third parties in the short-term power market. To this extent, PSE will not have to resort to the short-term power market for energy products that, currently, are difficult to obtain beyond eighteen months or in large quantities over a short period of time.
- **The plant will have an efficient heat rate**. One of the most attractive features about the Frederickson 1 plant is its efficient heat rate. The plant will be the Company's most efficient gas-fired generation facility, and will economically convert gas to power.
- **The plant will reduce transmission risk**. The geographic location of the Frederickson 1 plant will permit PSE to obtain reliable energy supply close to its service territory -- which will help mitigate some of the transmission curtailment risks that I discussed earlier in my testimony. A direct connection of the plant to PSE's system will further improve transmission reliability because no intermediary transmission provider service will be necessary.
- **The plant connection to PSE's system through an enhanced substation will provide voltage support**. The Frederickson 1 plant currently has a 230 kv line that goes from the busbar of the plant to BPA's 230 kv line at the South Tacoma substation. The current plan to connect the Frederickson 1 plant to PSE's system is

to run a second 230 kv line one-quarter mile from the plant busbar to PSE's Frederickson substation, where there will be a transformer to interconnect the 230 kv line to PSE's 115 kv system in Pierce County. This addition of generation, combined with the enhanced substation, should provide voltage regulation for PSE's system.

- **The plant will provide operating flexibility.** PSE will be able to dispatch the plant on a per-hour basis, and not be limited to day-ahead prescheduling rights. Thus, if the region experiences a sudden cold spell, and our peak load jumps as a result, then PSE can dispatch energy from the plant at times when our customers most need the energy. Also, PSE may at times desire to turn down the Frederickson 1 plant when energy output is not required, in order to adjust to real-time changes in hourly loads and market prices. (This would likely occur in off-peak hours, when it is more cost-effective to ramp down the plant rather than turn it off and re-start the plant for on-peak hours.) By operating the plant in this manner, PSE can avoid the start-up costs it would incur if the plant first had to be shut down. A purchased power arrangement does not offer this same benefit.
- **The plant offers operating reserve capability.** The Frederickson 1 plant will add operating reserve capability that a purchased power arrangement does not offer. I discussed this capability earlier in my testimony.
- **The plant offers duct firing capability.** PSE expects to obtain additional duct firing capability from the Frederickson 1 plant. As I discussed earlier in my testimony, the duct firing can be used not only for operating reserves, but also as incremental capacity for use in a peak event. This will let PSE increase the plant's power output if that additional output is needed to meet peak customer load. This is another example why the Frederickson 1 plant can help us bridge the expected deficits between available capacity and peak load that Mr. Black discusses in his testimony.

Q: Are you sponsoring any exhibits to your testimony?

A: Yes. I am sponsoring the following exhibits which are attached to my testimony:

EXHIBIT LIST

	Description of Exhibit	Exhibit No.
JMR-1T	Testimony of Julie M. Ryan	
JMR-2	Description of Julie M. Ryan's responsibilities, current position, and educational background	
JMR-3C	PSE Energy Supply Hedging and Optimization Procedures Manual	
JMR-4	Chapter 6 of the PSE's Draft 2002-2003 Least Cost Plan (December 2002) (Risk Management)	
JMR-5C	*Comparison of PSE's Gas and Power Counterparties From 2001-2003*	
JMR-6	Regulated utilities that are below investment grade and/or filed for Chapter 11	
JMR-7C	PSE's credit rating and the credit ratings of PSE's current energy suppliers	
JMR-8C	Financial Counterparties / Ratings Triggers	
JMR-9	*Upgrading the Capacity and Reliability of the BPA Transmission System*	
JMR-10	NW Constrained Paths	

Q: Does this conclude your testimony?

A: Yes.