EXH. PKW-1CT
DOCKET UE-18____
PCA 16 COMPLIANCE
WITNESS: PAUL K. WETHERBEE

BEFORE THE
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

In the Matter of the Petition of **PUGET SOUND ENERGY** **For Approval of its April 2018 Power Cost Adjustment Mechanism Report**	**DOCKET UE-18____**

PREFILED DIRECT TESTIMONY (CONFIDENTIAL) OF

PAUL K. WETHERBEE

ON BEHALF OF PUGET SOUND ENERGY

REDACTED VERSION

APRIL 30, 2018

PUGET SOUND ENERGY

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I. INTRODUCTION

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

A. My name is Paul K. Wetherbee. My business address is 10885 NE Fourth Street, Bellevue, Washington, 98004-5591. I am the Director, Energy Supply Merchant for Puget Sound Energy ("PSE").

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

A. Yes, I have. It is Exh. PKW-2.

Q. What are your duties as Director, Energy Supply Merchant?

A. I am responsible for oversight of all Front Office activities including power and gas trading, the hedging program, and the dispatch of PSE's generating assets and related transmission.

Q. Please summarize the contents of your testimony.

A. First, I provide background information regarding the Power Cost Adjustment ("PCA") mechanism. I then describe PSE's management of power costs during the period that began on January 1, 2017 and ended on December 31, 2017 ("PCA Period 16"). Finally, I compare PSE's actual allowable power costs for PCA Period

16 to the baseline variable power costs included in rates during PCA Period 16. The baseline power cost rate approved in the 2016 Power Cost Update, WUTC Docket No. UE-161135, went into effect December 1, 2016 and remained the effective rate for all but the last 13 days of PCA Period 16. A new baseline power cost rate was approved in PSE's 2017 General Rate Case, WUTC Docket UE-170033 ("2017 GRC"), and went into effect December 19, 2017. The Prefiled Direct Testimony of Susan E. Free, Exh. SEF-1T, contains further information regarding the baseline rates for PCA Period 16.

II. BACKGROUND REGARDING THE PCA MECHANISM

Q. Why does PSE have a PCA mechanism?

A. Volatility in wholesale power markets coupled with variations in power supply and load volumes can lead to significant differences between the actual cost of PSE's power supply portfolio and the costs currently included in customer rates. The PCA mechanism seeks to balance the risk of such power cost differences between customers and PSE by providing a method to share costs and benefits if power costs deviate significantly from those embedded in rates.

The PCA mechanism originally took effect on July 1, 2002 following Commission approval of a settlement agreement in PSE's 2001 general rate case, Docket UE-011570. As part of PSE's 2013 Power Cost Only Rate Case ("PCORC"), Docket UE 130617, PSE and parties to that proceeding initiated a collaborative process to address issues relevant to the PCA mechanism. That process resulted in a multiparty settlement that changed certain elements of the PCA including:

- Removal of fixed production costs from the PCA imbalance calculation;
- Modifications to the sharing bands;
- Changes to the refund or surcharge trigger;
- Accounting for administrative costs of PSE's hedging program;
- Changes to exhibits and contents of compliance filings.

The settlement was approved by the Commission in Order 11 of PSE's 2013 PCORC, and the changes became effective on January 1, 2017.

Q. Why do power costs deviate from those included in rates?

A. PSE's power supply portfolio contains a diverse mix of resources with a wide range of operating and cost characteristics. The cost of operating these resources and the amount of power they contribute to the portfolio result from a complex interaction of many variables including, primarily: (1) streamflow variation and its effect on hydroelectric generation; (2) variability of wind generation; (3) weather uncertainty affecting power demand/usage; (4) the frequency and duration of forced outages; (5) constraints on transmission and gas transportation; and (6) the relative prices of wholesale gas and electricity. These variables all contribute to volatility in load and available power supply, which PSE then must balance with purchases and sales in the wholesale electricity market. Wholesale electricity prices are similarly volatile due generally to the same factors listed above but on a regional level.

Q. How does the PCA mechanism work?

A. The PCA mechanism accounts for differences in PSE's actual power costs relative to the power cost baseline included in rates. The costs and benefits of such power

cost variances are shared between PSE and customers according to three graduated levels of power cost variance, or sharing bands. The dead band includes the first $17 million of power cost variance (+/-). Within the dead band 100% of costs and benefits are retained by PSE. The first sharing band includes power cost variances between $17 and $40 million (+/-). Within this band costs are shared 50 percent to PSE and 50 percent to customers, while benefits are shared 35 percent to PSE and 65 percent to customers. The second sharing band includes power cost variances over $40 million (+/-). Costs and benefits in this band are shared 10 percent to PSE and 90 percent to customers.

The customers' share of power cost variances is accounted for each year and deferred until the cumulative balance in the deferral account triggers a surcharge or refund. See Ms. Free's Prefiled Direct Testimony, Exh. SEF-1T, for more information regarding accounting of the cumulative balance.

III. PCA PERIOD 16 POWER COSTS

A. PCA Period 16 Power Resources

Q. Were there any changes to PSE's electric supply resources during PCA Period 16 relative to those included in baseline rates?

A. As noted above, the baseline rates in effect during almost all of PCA Period 16 reflect the power portfolio from PSE's 2016 power cost update. Because that portfolio included only limited updates relative to the 2014 PCORC, several changes are reflected in the PCA Period 16 actual power costs relative to those recovered in rates for most of PCA Period 16. PCA Period 16 actual power costs

included:

(1) Contract changes and expirations

a. 75 average MW decrease to winter energy due to expiration of the Barclays long term contract effective February 28, 2015;

b. 100 MW decrease to winter capacity from the Klamath peakers due to expiration of a power purchase agreement with Iberdrola Renewables effective February 29, 2016;

c. 86 average MW decrease to winter energy due to expiration of the WNP-3 Settlement Exchange Agreement with Bonneville Power Administration effective April 30, 2017;

d. 1 MW capacity decrease due to expiration of a power purchase agreement with Hutchinson Hydro LLC effective September 30, 2016;

(2) Upgrades to two of PSE's gas-fired generating resources

a. upgrade to the Goldendale plant that increased capacity to 300 MW beginning in June 2016;

b. upgrade to the Mint Farm plant that increased capacity to 314 MW beginning in June 2017;

(3) Changes to fixed gas transportation contracts to continue to support the physical gas requirements of PSE's gas fired generation;

(4) Updates to power contracts and resources to reflect current operations, contract terms, and planned maintenance.

Q. Did PSE acquire any new resources during PCA Period 16?

A. Yes. PSE acquired new resources in the form of off-system physical or financial purchases and sales of power and fuel to generate power. The majority of these transactions were short-term balancing transactions for power and natural gas used to generate power. Such balancing transactions are made in response to changes in

load or resource availability as well as changes in market heat rates, which guide PSE's decisions of whether to dispatch gas-fired generation or to buy power and sell hedged natural gas that would otherwise have been used to generate power. Transactions made during PCA Period 16 also included intermediate term contracts used to manage exposure to short-term and spot market price volatility. Such hedging transactions were entered into pursuant to PSE's portfolio hedging program. PSE did not acquire any new long-term resources during PCA Period 16.

Q. How did PSE oversee the various transactions described above?

A. These transactions were undertaken within a comprehensive portfolio and risk management system of organizational structure, technological tools, and human resources designed to deliver reliable energy when customers demand it, mitigate price volatility, and enhance the utilization of PSE's energy resources.

PSE has organizational structures, policies, and overarching strategies in place to provide oversight and control of energy portfolio management activities, many of which are undertaken on an hourly and daily basis by PSE's energy traders. PSE also uses modeling tools to assist with management of its power and gas portfolios. PSE uses these tools to develop and implement strategies to reduce the cost risks associated with portfolio volatility.

B. PSE's Management of its Power Portfolio and Related Fuel Supply for PCA Period 16

Q. What organizational structures are in place to provide oversight and control of power portfolio management activities?

A. The Energy Supply Merchant ("ESM") department is composed of energy market analysts, quantitative analysts, energy traders, and other professionals. The ESM department manages PSE's short- and medium-term portfolio and is responsible for developing and implementing risk management strategies for PSE. The ESM department was under my direction for all of PCA Period 16.

The Energy Risk Control ("ERC") department is responsible for independently monitoring, measuring, quantifying and reporting official risk positions and performing credit analysis. The ERC department is led by the Corporate Treasurer.

PSE's Energy Management Committee ("EMC") – composed of five PSE officers – oversees the activities performed by both the ESM and ERC departments. 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 Committee.

Q. What are the current hedging strategies approved by the EMC?

A. PSE's hedging program is managed in accordance with the EMC-approved Energy Supply Hedging and Optimization Procedures Manual ("Procedures Manual"). The Procedures Manual provides guidance and risk management strategies for hedging exposure in two different time periods. The Programmatically Managed Hedge period begins [redacted] in advance of the month in which power is needed to serve load. The ESM department uses the Programmatically Managed Hedge program to systematically reduce PSE's net power portfolio exposure (including natural gas for power generation) until a particular month rolls into the Actively Managed Hedge period. The Actively Managed Hedge program begins [redacted] in advance of the month in which power is needed to serve load. During this period ESM staff monitors positions on a daily basis and authorized traders execute transactions to manage exposure within monthly and rolling-[redacted] authority limits established by the EMC. Exh. PKW-3C contains a description of the EMC-approved hedging strategies and their application to a sample month, July 2017.

Q. How does PSE integrate hedging activity with its power portfolio modeling?

A. PSE's risk system employs 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 allows PSE to model scenarios with variable prices, hydro conditions, load projections, generation and contracted resources, and other inputs to estimate future portfolio needs. The risk system includes executed power and gas hedges in the portfolio.

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To model a variety of scenarios regarding PSE's gas-fired generation, the risk system considers each plant's individual operating characteristics including efficiency, start-up costs, variable operating costs, minimum run times, and outages. The model performs simulations of different market conditions and various outages 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 probabilistic position. The risk system incorporates the inter-relationship between gas and power prices in developing its probabilistic gas and power positions. PSE's gas or power requirements will change in different scenarios as plants become economic to dispatch depending on the price differential between power and gas. Output from the risk system is used to calculate PSE's net power portfolio exposure, which then informs hedging decisions.

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

A. The risk system generates a probabilistic volumetric position composed of 250 scenarios for on- and off-peak power and gas needed for power generation. For each month of the Programmatically Managed Hedge Period the system reports resource volumes in PSE's power position grouped by resource type (short-term purchase and sale transactions, long-term contracts, combustion turbines grouped by plant heat rate, non-utility generators/Qualifying Facilities, coal plants, wind, and hydro). Based on this volumetric position for each month, the risk system then calculates the exposure associated with open positions. Exh. PKW-4C includes

exposure reports generated by the risk system for a sample month, July 2017.

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 ESM department executes transactions for the purchase or sale of gas or power to stay within EMC-determined exposure limits. Execution entails entering into specific transactions with approved counterparties under approved master agreements subject to credit limits.

Q. Does the Energy Supply Merchant department rely only on net exposure to implement the Programmatically Managed Hedge program?

A. No. Net exposure drives transactions only to the point of showing whether PSE's exposure is within the maximum and minimum monthly parameters of the program. The ESM department then analyzes market prices and fundamentals that impact the wholesale electric and gas markets to decide on the volume to hedge while remaining within monthly parameters. The ESM department also determines when and with whom to execute such transactions to manage net exposure for each month.

Q. What information does the ESM department rely on to inform portfolio management decisions?

A. The ESM department utilizes a wide set of tools and sources of information to make informed decisions about dispatching plants, purchasing fuel, and executing hedges

within EMC-approved limits. The ESM department monitors, collects, and analyzes data such as weather trends, gas storage inventories, hydro run-off forecasts, hydro reservoir levels, precipitation, and snow pack. Additionally, we review forecasted wholesale market prices and supply/demand fundamentals provided by trading firm publications and consulting services. We receive real-time information from sources including Future Source and Intercontinental Exchange (live price data). The ESM department also has instantaneous data coming from PSE systems operations staff to view load and generation dispatch data on a real-time basis.

We hold regular meetings to review operational events, discuss market trends, and review supply and demand information. Within this context, the team works together to understand exposures in the portfolio and determine hedging priorities.

The ESM department may also use 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 current strategies.

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

A. Yes. The ERC department is responsible for establishing and monitoring counterparty credit limits in accordance with the EMC-approved Credit Risk Management Policy. Counterparty-specific exposure is calculated and monitored frequently, and ESM staff is permitted to transact only within established credit limits.

Q. Can you provide an example of how PSE applied the risk management systems, tools, and strategies described above with respect to PCA Period 16 power supply and costs?

A. Yes. Please see Exh. PKW-3C for a description of how PSE applied these systems, tools, and strategies in the management of power supply and costs for a sample month during PCA period 16.

Q. Are the activities described in Exh. PKW-3C the only portfolio risk management activities that PSE undertook for PCA Period 16?

A. No. Similar activities were undertaken with respect to managing PSE's portfolio and exposure for the entire PCA Period 16.

C. PSE's PCA Period 16 Actual Power Costs

Q. How did PSE's recoveries of actual power costs for PCA Period 16 compare to power costs recovered through rates?

A. During PCA Period 16, PSE under-recovered actual power costs by $11.7 million. Since this amount is within the $17 million dead-band, PSE will absorb the full amount and there will be no sharing of costs with customers.

Q. Why do actual power costs differ from those set in rates?

A. The actual costs of power delivered to PSE's system will always differ from those set in rates because they reflect the actual resources available to PSE, as discussed above, and the actual outcome of power cost variables. Examples of these variables include:

(i) streamflow variation affecting the supply of hydroelectric generation;

(ii) weather uncertainty affecting power usage;

(iii) variations in market conditions resulting in changes to wholesale gas and electric prices;

(iv) forced generation outages;

(v) variability of wind generation;

(vi) differences in actual resources in the power portfolio versus those set in rates due to contract expirations, contract changes and/or changes to resource characteristics; and

(vii) transmission and transportation constraints.

Although power costs set in rates are estimated "as closely as possible to costs that are reasonably expected to be actually incurred,"[1] they are still forecasts of future events and are further limited by regulatory normalizing assumptions. Specifically, ratemaking in the 2016 power cost update normalized power cost volatilities by employing:

(i) a 70-year hydro data set to determine hydro generation,

(ii) a weather normalized load forecast,

(iii) a three-month average forward gas price forecast,

(iv) model-generated forward power prices,

(v) historical average forced outage rates, and

(vi) forecasted average wind generation.

[1] *WUTC v. Puget Sound Energy, Inc.*, Dockets UE-040640, *et al.*, Order 06 at ¶ 108 (Feb. 18, 2005).

Q. What caused the difference during PCA Period 16 between PSE's actual power costs and power costs recovered in rates?

A. PSE's $11.7 million under-recovery during PCA Period 16 was primarily due to higher power costs relative to the costs included in rates. Actual variable power costs were $11.1 million higher than the amount in rates. The remaining $0.6 million under-recovery was due to lower revenues because actual delivered load was less than the delivered load assumed in rates.

Higher actual power costs were driven primarily by lower generation volumes from PSE resources and long-term contracts along with higher transmission wheeling costs. Lower hydro and wind generation increased power costs because the reduction was replaced with market purchases. Lower generation from long-term contracts and Colstrip resulted in a reduction in power costs because the price of market purchases that replaced them was lower than contract prices and the Colstrip variable fuel costs included in rates. A small cost reduction also occurred from replacing gas-fired generation with lower cost market purchases, but this reduction was more than off-set by higher fixed gas transportation costs and lower-than-forecasted revenue from the sale of gas not ultimately used for generation. Total variable costs attributed to gas-fired generation, therefore, were about $8 million higher than the costs included in rates. Total actual load, which includes losses and station service, was 138,175 MWh lower than total load included in rates. This reduced power costs by about $1.5 million relative to rates.

Table 1 below provides a comparison of the resources used to serve load relative to

the resources included in rates.

Table 1: 2017 Generation and Load Differences from Rates		
	Change	Change
Generation higher / (lower) than rates:	aMW	%
Hydro	(17)	-3.5%
Colstrip	(49)	-8.7%
Gas-fired	(326)	-42.7%
Wind	(39)	-16.8%
Contracts	(20)	-4.1%
Market purchases and sales	437	593.9%
Load (generated, purchased & interchanged)	(16)	-0.6%
Delivered load	(2)	-0.1%

Table 2 contains a summary of the items contributing to the total $11.7 million under-recovery for PCA Period 16.

Table 2: Components of PCA Period 16 Under Recovery	
($ in millions)	
Over / (under) recovery - actuals vs rates:	PCA 16
Revenues	
Delivered load lower by 19,515 MWh	($0.6)
Allowed costs	
Load (GPI) lower by 138,175 MWh	1.5
Hydro generation	(4.4)
Wind generation	(9.5)
Gas-fired generation	(8.0)
Colstrip	6.3
Long-term contracts	10.3
Transmission/wheeling	(7.2)
Other	(0.1)
Total allowed costs	(11.1)
PCA Period 16 under recovery of power costs	**($11.7)**

IV. CONCLUSION

Q. Has PSE met the Commission's prudence standard with respect to its power costs during PCA Period 16?

A. Yes. PSE met the Commission's prudence standard for the PCA Period 16 power costs. PSE's management of its power costs during PCA Period 16 was reasonable. PSE has structures and processes in place to formulate strategies for managing power costs and executed those strategies, taking into account information and variables associated with managing a complex resource portfolio within a dynamic market environment.

Q. Does that conclude your testimony?

A. Yes, it does.