

**EXHIBIT NO. \_\_\_(DEM-3C)  
DOCKET NO. UE-12 \_\_\_  
PCA 10 COMPLIANCE  
WITNESS: DAVID E. MILLS**

**BEFORE THE  
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION**

**In the Matter of the Petition of  
PUGET SOUND ENERGY, INC.  
For Approval of its March 2012 Power Cost  
Adjustment Mechanism Report**

**Docket No. UE-12 \_\_\_**

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

**REDACTED  
VERSION**

**MARCH 30, 2012**

**PUGET SOUND ENERGY, INC.**

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

I. PUGET SOUND ENERGY’S HEDGING PLAN.....1

II. PROGRAMMATICALLY MANAGED HEDGE PERIOD .....5

    A. [REDACTED] THROUGH [REDACTED] .....5

    B. [REDACTED] through [REDACTED] .....8

III. ACTIVELY MANAGED HEDGING PERIOD.....10

IV. SUPPORTING EXHIBITS.....13

V. AUGUST 2011 – WITHIN MONTH OVERVIEW.....14

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PUGET SOUND ENERGY, INC.

ILLUSTRATION OF PSE'S PORTFOLIO AND  
RISK MANAGEMENT ACTIVITIES FOR PCA PERIOD 10 POWER  
SUPPLY FOR THE SINGLE MONTH AUGUST 2011

I. PUGET SOUND ENERGY'S HEDGING PLAN

The purpose of this exhibit is to illustrate the manner in which Puget Sound Energy, Inc. ("PSE") manages its electric portfolio, including risk management activities, by describing how PSE managed power supply and costs for a single month during PCA Period 10: August 2011.

The Energy Management Committee ("EMC") is responsible for providing oversight and direction on all portfolio risk issues in addition to approving long-term resource contracts and acquisitions. Power and Gas Supply Operations Staff ("Staff") follow the EMC approved Programmatic Hedge strategy to guide them in the specific time periods and quantities of energy to hedge. PSE manages its short-term energy supply hedging and portfolio risk activities in accordance with the EMC-approved Energy Supply Hedging & Optimization Procedures Manual ("Procedures Manual"). In addition, the Audit Committee of PSE's Board of Directors also provides oversight of these activities in accordance with PSE's Energy Risk Policy.

On July 22, 2004, the EMC approved the original programmatic hedging strategy, with a Staff transactional purview of [REDACTED]. The programmatic hedge strategy authorizes Staff to use a dollar cost averaging informed by Margin at Risk ("MaR") analysis, with defined minimum and maximum monthly exposure limits. See Exhibit

1 No. \_\_\_(DEM-5C) for a PowerPoint presentation on MaR. This hedging plan increases  
2 Staff's ability to react to position changes due to stream or hydro flow variation, forced  
3 thermal plant outages and changing market conditions.

4 The term of the EMC approved strategy, known as the "Programmatically Managed  
5 Hedge" period, consisted of the last [REDACTED] of the [REDACTED] purview - this was also  
6 known as the "Rolling [REDACTED] Hedge". The first [REDACTED] (current month plus the  
7 following [REDACTED]) of the [REDACTED] purview were actively managed ("Actively  
8 Managed Hedge") in accordance with the Procedures Manual.

9 On January 7, 2006, the "Rolling [REDACTED] Hedge" was amended to be a "Rolling  
10 [REDACTED] Hedge" and the Actively Managed Hedge was extended to include the current  
11 month plus the next [REDACTED]. In October 2007, consistent with PSE's benchmarking of  
12 hedging best practices and market research efforts tailored to measure the value of energy  
13 commodity hedging to customers, PSE extended its hedging tenor from [REDACTED] to [REDACTED].  
14 At that time, the first [REDACTED] of this period became the Actively Managed Hedge period  
15 and the remaining [REDACTED] through [REDACTED]) became the Programmatically  
16 Managed Hedge period in accordance with the EMC approved strategy. The  
17 Programmatically Managed Hedge period is currently referred to as the "Rolling [REDACTED]  
18 [REDACTED]" hedge. The Programmatically Managed Hedge is designed to reduce PSE's net  
19 power portfolio exposure starting [REDACTED] in advance of delivery, subject to minimum and  
20 maximum exposure reduction, based upon a fundamental view and is intended to remove  
21 commodity price volatility.

22 All of the transactions for the "sample PCA month" (August 2011) were executed  
23 after the extension of the hedging strategy and many were transacted more than [REDACTED]

1 prior to delivery, leaving primarily shorter-term balancing transactions to respond to  
2 changes in market heat rates, load conditions, unit assumptions and other variables.

3 The Programmatically Managed Hedge is designed to reduce the power portfolio's  
4 total net exposure for each month, so that the total net exposure will fall below the EMC  
5 exposure limits set forth in the Procedures Manual when each month falls into Staff's  
6 Actively Managed Hedge. The "maximum" monthly hedge is calculated by dividing the  
7 total net exposure by the remaining months prior to the time when the position falls into the  
8 Actively Managed Hedge term. The "minimum" monthly hedge is calculated by dividing  
9 the total net exposure (plus or minus the Director's limit authority) by the remaining  
10 months prior to the time when the position falls into the Actively Managed Hedge. The  
11 "mid-point" monthly hedge is the average of the "maximum" and the "minimum" monthly  
12 hedge amounts. If such a month's position already falls within the Director's exposure  
13 limit authority, there is no monthly hedge requirement. As defined in Schedule F of the  
14 Procedures Manual, "Spot Market Exposure for Gas and Power Portfolios", the Director  
15 has exposure authority up to the CFO/CRO level (\$ [REDACTED] monthly or \$ [REDACTED] for the  
16 rolling [REDACTED] period). Spot market exposure above the CFO/CRO level requires  
17 notification to the EMC. See Exhibit No. \_\_\_(DEM-10C) for the Schedule F excerpt from  
18 the Procedures Manual.

19 During the Actively Managed Hedge period, Staff manages the monthly net  
20 exposure in accordance with the Procedures Manual. The exposure is calculated  
21 individually for peak, off-peak, and gas for power positions. The authority limit is  
22 calculated on the net spot exposure of all three positions. Spot market exposure is

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1 measured by multiplying the open position by the hourly spot price. See Exhibit  
2 No. \_\_\_(DEM-10C) for the spot market exposure limits from the Procedures Manual.

3 Margin at Risk measures risk reduction as a result of incremental hedging. As  
4 PSE's hedging strategy evolved, the MaR concept was added to the evaluation process in  
5 May 2004 for the Programmatically Managed Hedge strategy to measure risk reduction for  
6 various alternatives. MaR analysis shows how much risk reduction is gained by month and  
7 by strategy – providing an additional tool to determine which commodity is the best choice  
8 and for which month given a credit-constrained environment. The MaR calculation shows  
9 the amount of portfolio risk removed for each hedging dollar spent when 25 MW of on-  
10 peak or off-peak power or 5,000-MMBtu/day of gas is transacted.

11 The remainder of this report will illustrate the systems and tools used by Staff and  
12 their application for PCA Period 10 by describing actual hedging strategy decisions and the  
13 execution thereof by PSE. Detailed explanation is provided in section II.A for [REDACTED]  
14 [REDACTED] with respect to power supply for delivery in August 2011. For  
15 all subsequent months, please reference sections II.B through V which provide a summary  
16 of [REDACTED], and reviews the analysis and fundamental views relied upon  
17 by Staff to make hedging decisions for August 2011. Section IV provides a description of  
18 the exhibits, Exhibit No. \_\_\_(DEM-4C) through Exhibit No. \_\_\_(DEM-13C), which  
19 provide additional detail supporting this narrative.

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1                                   **II.       PROGRAMMATICALLY MANAGED HEDGE PERIOD**

2       **A.       ██████████ THROUGH ██████████**

3                   In ██████████, August 2011 rolled into Staff's Programmatically Managed  
4 Hedge purview. At the beginning of ██████████, the position report indicated the  
5 August 2011 net exposure was ██████████ with a ██████████ MW on-peak power ██████████  
6 position, a ██████████ MW off-peak power ██████████ position and a ██████████ MMBtu/day natural gas  
7 ██████████ position. The then current portfolio position indicated that the on- and off-peak  
8 power positions, valued at the then current market price, resulted in an on- and off-peak  
9 power exposure of ██████████ and ██████████, respectively. This power exposure,  
10 combined with the ██████████ natural gas exposure totaled a net exposure of ██████████  
11 ██████████. See Exhibit No. \_\_\_\_ (DEM-4C) for the August 2011 exposures over the hedging  
12 period.

13                   The "maximum" monthly reduction in exposure yet to be accomplished by Staff is  
14 the net exposure noted above divided by the remaining months prior to the time when the  
15 position falls into the Actively Managed Hedge. In ██████████, with ██████████  
16 remaining before August 2011 fell into Staff's Actively Managed Hedge, the maximum  
17 monthly reduction was \$ ██████████ ██████████). The "minimum" reduction  
18 is the total net exposure noted above, less the Director's limit authority, divided by the  
19 remaining months prior to the time when the position falls into the Actively Managed  
20 Hedge and is approximately ██████████ ██████████. The  
21 "mid-point" reduction, or the average of the "maximum" and "minimum" amounts, is ██████████

22 ██████████.

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1 During [REDACTED], as part of the Programmatically Managed Hedge, Staff  
2 reviewed market fundamentals and came up with a hedging strategy for the [REDACTED]  
3 through August 2011 time frame. Although a strengthening U.S. dollar and weakening oil  
4 prices put downward pressure on natural gas prices, prompt month natural gas prices  
5 remained fairly strong and volatile given the summer hurricane activity and current  
6 weather forecasts. Long term natural gas prices were still high compared to historic levels.  
7 However, the potential existed for prices to move even higher - rather than lower - if  
8 storage injections were to fall below forecasts, weather in the East were to get warmer,  
9 hurricane activity were to pick up and winter weather forecasts were to start calling for  
10 below normal temperatures. Staff elected to continue hedging to [REDACTED] for the  
11 Programmatically Managed Hedge. See Exhibit No. \_\_\_(DEM-11C) for the fundamentals  
12 and market prices that affected August 2011.

13 Near the end of [REDACTED], the Mint Farm Energy Center ("Mint Farm") gas-  
14 fired combined cycle combustion turbine with 296 MW of additional capacity was added to  
15 the power portfolio. As a result, the August 2011 position became [REDACTED]  
16 [REDACTED] due to the fact that market heat rates were [REDACTED] the dispatch heat rate of Mint  
17 Farm which, therefore, was [REDACTED]. See Exhibit  
18 No. \_\_\_(DEM-12C).

19 By late [REDACTED], signs of a global economic slow down began to emerge  
20 and energy prices appeared to have peaked. In the [REDACTED], the U.S. economy was  
21 falling into what would become the worst economic recession since the Great Depression.  
22 Other economies around the world soon followed the U.S. into recession, pulling energy  
23 prices down with them. See Exhibit No. \_\_\_(DEM-13C).



1 Both near and long-term energy demand and production forecasts were being  
2 revised almost weekly as global economies spiraled deeper into recession. At the same  
3 time, great strides were being made in the unconventional natural gas drilling technologies  
4 used to extract gas from developments - such as shale - in the U.S. As the drilling  
5 technology improved, these once high cost unconventional sites now became more cost  
6 competitive. In addition, production estimates from these developments greatly exceeded  
7 original estimates.

8 Lower energy demand and the potential for greater cost competitive domestic  
9 production continued to keep downward pressure on energy prices. While this was most  
10 evident in the near-term price curve, it was less evident in the Rolling [REDACTED] period as  
11 forecasts and expectations for economic recovery were being discussed. Nonetheless,  
12 prices in the Rolling [REDACTED] were softening and Staff continued to hedge at [REDACTED] to  
13 [REDACTED]. It was unclear  
14 as to how the natural gas markets would respond given concerns that producers might  
15 curtail some production, thereby putting additional upward pressure on natural gas prices.

16 During [REDACTED] through [REDACTED], in accordance with the maximum  
17 hedging strategy, Staff reduced PSE's August 2011 exposure by [REDACTED]  
18 [REDACTED] for August 2011 delivery. By the end of  
19 [REDACTED], due to PSE's hedging program, as well as lower market prices as shown in  
20 Exhibit No. \_\_\_ (DEM-13C), PSE's August 2011 power exposure was [REDACTED], a  
21 reduction of [REDACTED] from the [REDACTED] exposure when August 2011 rolled into  
22 Staff's Programmatically Managed Hedge purview.

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1 An overview of PSE's hedging activities for August 2011 can be found in Exhibit  
2 Nos. \_\_\_(DEM-7C) and \_\_\_(DEM-8C). Exhibit No. \_\_\_(DEM-7C) provides details of  
3 each hedge transacted for August 2011. The hedges are charted by transaction date and  
4 transaction price for on-peak (also referred to as "heavy load hours", which represents the  
5 sixteen hours ending 0700 through 2200 Monday through Saturday, except NERC  
6 holidays), off-peak (also referred to as "light load hours", which represents the eight hours  
7 ending 0100 through 0600 and 2300 through 2400 Monday through Saturday, except  
8 NERC holidays, as well as all 24 hours of NERC defined holidays and Sundays), flat  
9 (which represents hours 0100 through 2400) and gas for power. The charts in Exhibit  
10 No. \_\_\_(DEM-8C) show the mid-mark (as provided by a third-party, independent source)  
11 and the price at which the hedge was executed relative to the market price movement for  
12 August 2011.

13 **B. [REDACTED] through [REDACTED]**

14 During the months [REDACTED] through [REDACTED], Staff managed the August  
15 2011 spot market exposure similar to the [REDACTED] quarter of [REDACTED] –to reduce the monthly  
16 exposures at a [REDACTED] level pursuant to the Programmatically Managed Hedge strategy  
17 – with an eye towards the power and natural gas market fundamentals which include water  
18 supply and weather conditions.

19 Looking at delivery month August 2011 in the [REDACTED] quarter of [REDACTED], PSE's MaR  
20 analysis indicated that the greatest exposure reduction would be to [REDACTED]. See  
21 Exhibit No. \_\_\_(DEM-6C) for the August 2011 MaR over the hedging term. For example,  
22 in [REDACTED], if 5,000 MMBtu/day gas was purchased for August 2011, it would reduce

1 risk by nearly [REDACTED] for every \$100 spent or [REDACTED] for every dollar spent, compared to [REDACTED]  
2 with the purchase of 25 MW of on-peak power or [REDACTED] with the purchase of 25 MW of  
3 off-peak power. The MaR analysis indicates greater risk reduction would be gained from  
4 the [REDACTED]. Staff considers various factors in addition to the MaR when  
5 determining what commodities to purchase and when. During this period of time, the gas  
6 position was [REDACTED] and the power position was [REDACTED] given the [REDACTED] environment.  
7 For example, beginning [REDACTED], the gas exposure was [REDACTED]  
8 (MMBtu/day [REDACTED]) compared to the [REDACTED] (MW) on-peak and [REDACTED]  
9 (MW) off-peak power [REDACTED] positions. Therefore, during the [REDACTED] quarter of [REDACTED], Staff  
10 [REDACTED] for August 2011.

11 During the [REDACTED] and for the remainder of the Programmatically  
12 Managed Hedging period, PSE continued to [REDACTED] the August 2011 exposure at the  
13 [REDACTED] level given similar MaR and power and gas for power positions. In [REDACTED],  
14 PSE updated its customer load forecast to reflect the economic downturn, reducing the  
15 August 2011 demand forecast by [REDACTED].  
16 This demand reduction, combined with the then current [REDACTED] heat rates resulted in a [REDACTED]  
17 [REDACTED] position for August 2011. Staff [REDACTED] a total of [REDACTED]  
18 [REDACTED] for August 2011 delivery during this time. PSE's net exposure was  
19 [REDACTED] during the [REDACTED].

20 During the months of [REDACTED], Staff [REDACTED] an additional  
21 [REDACTED], which, when combined with the continued [REDACTED]  
22 market prices, [REDACTED] August 2011's net exposure to [REDACTED]. By the end of [REDACTED]  
23 [REDACTED], when August 2011 was to roll into the actively managed hedging period, PSE was

1 [REDACTED]  
2 [REDACTED]. In [REDACTED], PSE again updated its customer load forecast to better reflect  
3 the on-going economic impact to its service territory. As a result, the August 2011 demand  
4 forecast [REDACTED].

### 5 III. ACTIVELY MANAGED HEDGING PERIOD

6 In [REDACTED], August 2011 rolled into Staff's Actively Managed Hedge. This  
7 allowed Staff to more actively manage the August 2011 position for a full [REDACTED]  
8 prior to delivery. At the beginning of [REDACTED], the position report indicated the  
9 August 2011 net exposure was [REDACTED] at [REDACTED] with a [REDACTED] or [REDACTED] MW  
10 on-peak power [REDACTED] position, a [REDACTED] or [REDACTED] MW off-peak power [REDACTED] position and  
11 an [REDACTED] or [REDACTED] MMBtu/day natural gas [REDACTED] position. See Exhibit  
12 No. \_\_\_(DEM-4C) for the August 2011 exposures over the hedging period. At this time,  
13 forecast flat heat rates for August 2011 were averaging around [REDACTED], a level  
14 where many of PSE's gas-fired generators are forecast to be economically dispatched,  
15 causing a [REDACTED] gas demand and a [REDACTED] power position. See Exhibit No. \_\_\_ (DEM-  
16 12C). The total net exposure was [REDACTED]  
17 [REDACTED]. In other words, the position was [REDACTED]. However, staff was not  
18 compelled to [REDACTED]

19 [REDACTED].  
20 Moving into the [REDACTED], the U.S. economy had slightly improved and  
21 unemployment rates were still high. The unemployment rate in PSE's service territory was  
22 hovering around nine percent. As discussed in more detail in the following section, gas

1 and power prices continued to fall. As discussed in more detail in Exhibit No. \_\_\_(DEM-  
2 11C), in [REDACTED], the 2011 water year was forecast to be around the normal range.  
3 Through the month of January 2011, the run-off forecast decreased to the mid-90 percent  
4 of normal range, due to unseasonable warm temperatures in the region. However, as the  
5 water year progressed, the January through July 2011 run-off forecast increased and by  
6 April 2011, the 2011 water year forecast was 108 percent so that by the end of the January  
7 through July 2011 hydro period, the actual average was 125 percent of normal. See Exhibit  
8 No. \_\_\_(DEM-9). In large part due to the above average hydro outlook for the 2011 runoff  
9 period, [REDACTED] forecast such that  
10 near the end of [REDACTED], flat heat rates for August 2011 had [REDACTED]  
11 [REDACTED].

12 During [REDACTED], Staff [REDACTED]  
13 [REDACTED]  
14 [REDACTED]. At this heat rate level, only a few of PSE's gas  
15 fired generators were forecast to be economically dispatched, resulting in a [REDACTED]  
16 [REDACTED]. In other words, PSE's position [REDACTED]  
17 [REDACTED]  
18 [REDACTED].

19 During the [REDACTED], PSE also [REDACTED] for the third  
20 quarter 2011 to [REDACTED].

21 Forecast flat market heat rates for August 2011 continued to [REDACTED] and by the beginning of  
22 [REDACTED], flat heat rates were at [REDACTED]. Over the past seven years, the heat rate  
23 for the month of August has averaged 9,578, 10,839 and 7,801 for flat, on-peak and off-

1 peak, respectively. Given the then above normal snow pack and forecasts for cooler  
2 summer temperatures in the Pacific Northwest, it was believed that the above normal hydro  
3 run-off would continue into August and [REDACTED]. Staff did  
4 not [REDACTED]

5 [REDACTED]  
6 [REDACTED]  
7 [REDACTED]. See Exhibit No. \_\_\_ (DEM-12C).

8 In [REDACTED], as PSE switched to a more deterministic set up for August 2011, PSE  
9 [REDACTED]  
10 [REDACTED] in the beginning of the month and expected [REDACTED] in the back half of the  
11 month. Staff also [REDACTED] due to a [REDACTED] position resulting  
12 from [REDACTED] at the beginning of the month and news that the Columbia  
13 Generating Station outage was extended to last through August 2011. Staff also [REDACTED]  
14 [REDACTED] because, given the  
15 BPA planned line outage, PSE would not be able to wheel its entire contract share of  
16 Colstrip generation output to PSE's load. Staff was able to [REDACTED]

17 [REDACTED]  
18 [REDACTED]. In addition, Staff also [REDACTED]  
19 [REDACTED]

20 [REDACTED]. At the end of July 2011, the net exposure for August 2011 was  
21 [REDACTED] and within the Actively Managed hedging limits defined by the Procedures  
22 Manual.

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1 IV. SUPPORTING EXHIBITS

2 The monthly exposure for August 2011 is included in Exhibit No. \_\_\_(DEM-4C).  
3 PSE's PowerPoint presentation on MaR is included in Exhibit No. \_\_\_(DEM-5C). The  
4 monthly MaR analysis for August 2011 can be found in Exhibit No. \_\_\_(DEM-6C). As  
5 stated previously, the MaR analysis shows how much risk reduction is gained by month  
6 and by strategy – providing Staff with an additional tool to evaluate which commodity to  
7 hedge given a credit-constrained environment.

8 August 2011 hedges are shown for both power and gas for power in Exhibit  
9 Nos. \_\_\_(DEM-7C) and \_\_\_(DEM-8C).

10 The Northwest River Forecast Center ("NWRFC") issued its first official water  
11 supply forecast of the 2011 water year on December 16, 2010. The January-July period  
12 run-off at Grand Coulee was projected to be 64,100 thousands of acre feet ("KAF"). The  
13 30-year average (1971-2000), also referred to as "normal," for the January-July period at  
14 Grand Coulee is 62,900 KAF. Thus, the NWRFC predicted the January-July 2011 runoff  
15 to be 102 percent of normal at Grand Coulee (64,100 KAF/62,900 KAF). The actual  
16 January-July 2011 runoff was 125 percent of normal at Grand Coulee, or 78,714 KAF. All  
17 subsequent forecasts for the 2011 water year can be found in Exhibit No. \_\_\_(DEM-9).  
18 The monthly runoff volumes at Grand Coulee for water years 2007 through 2011 are also  
19 shown in Exhibit No. \_\_\_(DEM-9).

20 A copy of Schedule F from the Procedures Manual, "Spot Market Exposure for Gas  
21 and Power Portfolios", which provides the monthly exposure limits, is provided in Exhibit  
22 No. \_\_\_(DEM-10C). Exhibit No. \_\_\_(DEM-11C) provides a summarized retrospective of  
23 the market prices and fundamentals over the hedging term [REDACTED] through July

1 2011 – all of which played a key role in Staff’s management of, and hedging decisions for,  
2 August 2011. The above referenced tools, forecasts, and fundamental views were used to  
3 manage the monthly spot market exposure for delivery month August 2011. August 2011  
4 hedges were executed in accordance with both the Programmatically Managed Hedge and  
5 Actively Managed Hedge strategies and the hedge details are shown for both power and  
6 gas for power in Exhibit No. \_\_\_(DEM-7C).

7 Daily heat rate trends for August 2011 can be found in Exhibit No. \_\_\_(DEM-12C),  
8 as well as the dispatch heat rate of PSE’s gas fired turbines. Implied market heat rates  
9 fluctuate daily depending on the power and gas prices, and are part of the dispatch logic  
10 used in the risk model to determine which gas fired turbines are "in the money" and may  
11 dispatch economically.

12 Daily commodity prices for August 2011 are in Exhibit No. \_\_\_(DEM-13C). This  
13 chart illustrates on-peak power, off-peak power, and gas for power prices as they evolved  
14 over the [REDACTED] hedging period.

15 **V. AUGUST 2011 – WITHIN MONTH OVERVIEW**

16 At the end of July 2011, the net exposure for August 2011 was [REDACTED], which  
17 represented a [REDACTED]  
18 [REDACTED]  
19 [REDACTED]), respectively. As PSE entered August 2011, market observers were  
20 taking into consideration the weather forecasts for the remainder of the summer months, as  
21 above normal temperatures nationally and regionally could lead to increased demand and  
22 potential price spikes. Nationally, July 2011 surpassed the record for the hottest July,



1 based on Population Weighted Cooling Degree Days. Although temperatures were below  
2 normal in the Pacific Northwest for July 2011, the natural gas Consuming Region East  
3 recorded record temperatures for July 2011. Additionally, the 2011 hurricane season was  
4 underway and forecasters were calling for an above normal hurricane season. The higher  
5 the number and severity of hurricanes, the more likely that gas supplies could be  
6 interrupted, which lends support to higher forecast gas prices. In the early days of August,  
7 above normal temperatures continued to develop in the East, while below normal  
8 temperatures were seen in the Northwest. Above normal runoff continued on the Mid-  
9 Columbia as a result of the above normal snow pack and water year. Because stream flows  
10 were expected to subside and August temperatures were expected to be normal, Staff went  
11 into the month with a variable position. Knowing that continued stream flows would  
12 facilitate lower power prices and thus, lower heat rates, PSE was in a [REDACTED] in that  
13 environment. As flows receded, however, PSE expected heat rates to strengthen enough to  
14 economically dispatch both Goldendale and Mint farm, increasing PSE's [REDACTED]  
15 position. The NWRFC forecast for Chief Joe was at 147 kilo cubic feet per second (kcfs) -  
16 which would translate to around 20,000 MWhs of inflows - more than normal for the  
17 month of August.

18 Looking back on August 2011 and viewing it as two halves, PSE's forecast  
19 assumptions played out as heat rates were [REDACTED] of August. August 1<sup>st</sup>  
20 through the 15<sup>th</sup> PSE traded an average of \$31.48 on-peak power and \$16.85 off-peak. The  
21 average daily heat rate was at 6,938 Btu/kWh. During the back half of August, on-peak  
22 prices were slightly higher at \$33.89 and off-peak rose to \$23.14, the flat heat rate for the  
23 last sixteen days of August was at 7,993 Btu/kWh on average. Flows from Chief Joe help

1 explain these differences, as the first 15 days averaged 140 kcfs, while the last 16 days  
2 averaged 132 kcfs

3 From [REDACTED], Staff [REDACTED]  
4 [REDACTED] and [REDACTED]  
5 [REDACTED]. Staff also [REDACTED]  
6 [REDACTED]. From [REDACTED]  
7 [REDACTED] Staff [REDACTED]  
8 [REDACTED].

9 See Exhibit Nos. \_\_\_(DEM-7C) and \_\_\_(DEM-8C).

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