

EXHIBIT NO. ___(DEM-3C)
DOCKET NO. UE-07 ___
PCA 7 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 2009 Power Cost
Adjustment Mechanism Report**

Docket No. UE-09 ___

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

REDACTED VERSION

MARCH 31, 2009

PUGET SOUND ENERGY, INC.

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

I. INTRODUCTION..... 1

II. PROGRAMMATICALLY MANAGED HEDGE..... 2

III. OCTOBER 2004 4

IV. ██████████ 4

V. ██████████ – MAY 2008 7

VI. FUNDAMENTALS AND MARKET PRICES AFFECTING MAY 2008 8

VII. MAY 2008 – WITHIN MONTH OVERVIEW 11

REDACTED

1 **PUGET SOUND ENERGY, INC.**

2 **ILLUSTRATION OF PSE'S PORTFOLIO AND**
3 **RISK MANAGEMENT ACTIVITIES FOR PCA PERIOD 7**
4 **POWER SUPPLY FOR THE SINGLE MONTH MAY 2008**

5 **I. INTRODUCTION**

6 The purpose of this exhibit is to illustrate the manner in which Puget Sound Energy
7 ("PSE" or "the Company") manages its electric portfolio, including risk management
8 activities, by describing how PSE managed power supply and costs for a single month
9 during PCA period 7: May 2008. Power and Gas Supply Operations Staff ("Staff") follow
10 the Energy Management Committee ("EMC") approved programmatic hedging plan to
11 guide them in the specific time periods and quantities of energy to hedge. The original
12 programmatic hedging strategy was approved by the EMC on July 22, 2004, with a Staff
13 transactional purview of [REDACTED] months. The term of the EMC approved strategy consisted of
14 the last [REDACTED] months of the [REDACTED] months purview ("Programmatically Managed Hedge"). The
15 first [REDACTED] months of the [REDACTED] months purview are actively managed ("Actively Managed
16 Hedge") in accordance with the Energy Supply Hedging and Optimization Procedures
17 Manual. In October 2007, the Company extended Staff's transactional purview from [REDACTED] to
18 [REDACTED] months. At that time, the first full [REDACTED] months became the Actively Managed Hedge
19 period in accordance with the Energy Supply Hedging and Optimization Procedures
20 Manual and the remaining [REDACTED] months became the period Programmatically Managed
21 Hedge in accordance with the EMC approved strategy. The Programmatically Managed
22 Hedge is designed to reduce the Company's net power portfolio exposure starting months

REDACTED

1 in advance of delivery, subject to minimum and maximum exposure reduction, based upon
2 a fundamental view. Staff can make recommendations to hedge further out in time,
3 departing from this plan, but execution of such hedges are subject to EMC approval. The
4 majority of transactions for May 2008 were executed after the extension of the hedging
5 strategy and at least ■ months prior to delivery, leaving primarily only balancing
6 transactions needed to respond to changes in market heat rates and hydro conditions. The
7 EMC is responsible for providing oversight and direction on all portfolio risk issues in
8 addition to approving long-term resource contracts and acquisitions.

9 II. PROGRAMMATICALLY MANAGED HEDGE

10 On July 22, 2004, the EMC approved the Rolling ■ Month Hedging Plan as
11 recommended by Staff to guide hedging decisions for the ■ to ■ months time frame. On
12 January 7, 2006, the Rolling ■ Month Hedging Plan was amended to be a Rolling ■
13 Month Hedge to guide hedging decisions for the ■ to ■ month time frame. In October
14 2007, this hedging plan was extended and now covers the ■ to ■ months time frame.
15 The strategy authorizes Staff to use dollar cost averaging hedging, informed by Margin at
16 Risk (“MaR”) analysis, with defined minimum and maximum monthly exposure limits.
17 See Exhibit No. ___(DEM-4). This hedging plan increases Staff’s ability to react to
18 position changes due to stream or hydro flow variation, forced thermal plant outages, and
19 changing market conditions.

20 The Programmatically Managed Hedge is designed to reduce the power portfolio’s
21 total net exposure for each month, so that the total net exposure will fall below the EMC

REDACTED

1 exposure limits when each month falls into Staff's Actively Managed Hedge. The
2 "maximum" monthly hedge is calculated by dividing the total net exposure by the
3 remaining months prior to the time when the position falls into the Actively Managed
4 Hedge. The "minimum" monthly hedge is calculated by dividing the total net exposure
5 (plus or minus the Director's limit authority) by the remaining months prior to the time
6 when the position falls into the Actively Managed Hedge. If such a month's position
7 already falls within the Director's limit authority, there is no monthly hedge requirement.
8 (The Director has exposure authority up to the CFO level (\$■■■■)); exposure above the CFO
9 level requires notification to the EMC.)

10 During this Actively Managed Hedge purview, Staff manages the monthly net
11 exposure in accordance with the Energy Supply Hedging and Optimization Procedures
12 Manual. The exposure is calculated individually for peak, off-peak, and gas for power
13 positions. The authority limit is calculated on the net spot exposure of all three. Spot
14 market exposure is measured by multiplying the open position by the hourly spot price. *See*
15 Exhibit No. ___(DEM-5C).

16 Margin at Risk measures risk reduction as a result of incremental hedging. As
17 PSE's hedging strategy evolved, the MaR concept was added to the evaluation process in
18 May 2004 for the Programmatically Managed Hedge strategy to measure risk reduction for
19 various alternatives and was extended in October 2007. MaR analysis shows how much
20 risk reduction is gained by month and by strategy – providing an additional tool to
21 determine which commodity is the best choice and for which month given a credit
22 constrained environment. The MaR calculation shows the amount of portfolio risk

REDACTED

1 removed for each hedging dollar spent when 25 MW of power or 5,000-mmbtu/day of gas
2 is purchased.

3 The remainder of this report will illustrate the systems and tools used by Staff and
4 their application for PCA Period 7 by describing actual hedging strategy decisions and their
5 execution undertaken by PSE. Detailed explanation is provided in section IV for one
6 specific month – [REDACTED], with respect to power supply for delivery in May 2008.
7 For all subsequent months, please reference section V and VI which provides a summary of
8 [REDACTED] – May 2008, and reviews the analysis and fundamental views relied upon
9 by Staff to make hedging decisions for May 2008. See Exhibit No. ___(DEM-4) through
10 Exhibit No. ___(DEM-13C) for additional detail supporting this narrative.

11 III. OCTOBER 2004

12 In October 2004, Staff entered into two long-term, fixed gas supply agreements to
13 supply fuel for its gas-fired generating fleet for the period November 2005 through June
14 2008, as described in more detail in the Company's 2005 Power Cost Only Rate Case,
15 Docket No. UE-050870. These contracts effectively replaced the 1993 CanWest contract
16 that CanWest prematurely terminated in October 2005.

17 IV. [REDACTED]

18 In [REDACTED], May 2008 rolled into Staff's Programmatically Managed Hedge
19 purview. At the beginning of [REDACTED], the position report indicated the May 2008 net
20 exposure was [REDACTED] with a [REDACTED] MW on-peak power [REDACTED] position, [REDACTED] MW off-
21 peak power [REDACTED] position and [REDACTED]-mmbtu/day natural gas [REDACTED] position. See Exhibit

REDACTED

1 No. ___(DEM-6C). In this example, the current portfolio position indicates that [REDACTED] MW
2 peak power to be purchased at the current market price, results in a peak power exposure of
3 [REDACTED]. This exposure combined with the [REDACTED] natural gas exposure and [REDACTED] off-peak
4 power exposure totals a net exposure of [REDACTED]. See Exhibit No. ___(DEM-6C).

5 With [REDACTED] months remaining before May 2008 falls into Staff's Actively Managed
6 Hedge, the maximum reduction in exposure to be accomplished by Staff is approximately
7 [REDACTED] and the minimum reduction is approximately [REDACTED]
8 ([REDACTED]).

9 Looking at delivery month May 2008, PSE's MaR analysis indicates that hedging
10 May 2008 would reduce the exposure for the second quarter of 2008 and the greatest
11 exposure reduction would be to purchase gas. See Exhibit No. ___(DEM-7C). For
12 example, if 5,000-mmbtu/day gas was purchased for May 2008, it would reduce risk by
13 [REDACTED] for every dollar spent, compared to [REDACTED] with the purchase of 25 MW peak power.
14 Based on this analysis, greater risk reduction would be gained from the purchase of [REDACTED].
15 However, since the position report shows a [REDACTED] position, Staff was not able to
16 purchase [REDACTED] and instead purchased [REDACTED].

17 On-peak market heat rates (the power price divided by the gas price) for May 2008
18 were anticipated to be in the [REDACTED] plus range. At that heat rate, the Company's [REDACTED]
19 [REDACTED] and [REDACTED] combustion turbines ("CT") would be, on a probabilistic basis,
20 "out of the money". See Exhibit No. ___(DEM-8C).

21 In [REDACTED], as part of the Programmatically Managed Hedge, Staff reviewed

REDACTED

1 market fundamentals and came up with a hedging strategy for the [REDACTED] through
2 May 2008 time frame. Staff elected to keep the hedging strategy for the Programmatically
3 Managed Hedge period for the Power Portfolio at [REDACTED], but indicated it could be
4 switched to

5 [REDACTED]
6 [REDACTED]
7 [REDACTED] For these
8 reasons, the May 2008 hedging remained at [REDACTED].

9 On [REDACTED], to hedge an April 2008 power short, Staff purchased [REDACTED]
10 MW Mid-C [REDACTED] power for the second quarter 2008 period, April 2008 through June
11 2008, for [REDACTED]/MWh because only quarter strips were available as April 2008 was not a
12 liquid market. See Exhibit No. ___(DEM-9C).

13 An overview of PSE's hedging activities for May 2008 can be found in Exhibit
14 No. ___(DEM-10C). The hedges are charted by transaction date and transaction price for
15 peak (also referred to as "heavy load" which represents the sixteen hours ending 0700
16 through 2200), off-peak (also referred to as "light load" which represents the eight hours
17 ending 0100 through 0600 and 2300 through 2400, as well as all 24 hours of NERC defined
18 holidays and Sundays), and gas for power. The charts show the mid-mark (as provided by a
19 third-party, independent source) and the price at which the hedge was executed relative to
20 the market price movement for May 2008. It may appear for some hedges, that the
21 transaction price is above the May 2008 mid-mark. This is a result of purchasing a
22 quarterly strip hedge for purposes of individual month exposure reduction, also referred to

REDACTED

1 as “Q2”, which includes the months of April, May, and June. Oftentimes, the forward
2 power market – especially for delivery beyond six months from execution – is only liquidly
3 traded on a quarterly basis and does not trade monthly until the delivery date approaches 4-
4 6 months.

5 By mid [REDACTED], the net exposure for May 2008 increased from [REDACTED] to [REDACTED]
6 [REDACTED] as a result of including a higher, more recent customer load forecast, F06, in the
7 forward power position. See Exhibit No. ___(DEM-6C). The position report showed a [REDACTED]
8 MW on-peak power [REDACTED], [REDACTED] MW off-peak power [REDACTED], and [REDACTED] mmbtu/day natural
9 gas [REDACTED].

10 Fundamental variables affecting supply for Q2 2008 included: gas prices (another
11 active hurricane season could cause significant gas supply losses and production
12 disruptions), weather, and precipitation (recall that October 1, 2007 marks the start of the
13 new water year).

14 V. [REDACTED] – MAY 2008

15 During the months [REDACTED] through [REDACTED], Staff managed the May
16 2008 spot market exposure similar to the previous month – pursuant to the
17 Programmatically Managed Hedge strategy – with an eye towards market conditions and
18 fundamentals, water supply, and weather.

19 In [REDACTED] the hedging strategy for the Programmatically Managed Hedge was
20 changed. Staff noted that the forward markets were at a [REDACTED] month low and natural gas
21 supply was ample as winter weather had been mild. It therefore made sense to hedge in

REDACTED

1 more than [REDACTED] levels for the high risk [REDACTED], however the remaining
2 months, including May 2008, would remain at [REDACTED]. This trend continued through the
3 [REDACTED]. As colder weather appeared in the following months and hedging
4 strategies moved to [REDACTED], then to [REDACTED], May 2008 continued, for the most part, at
5 [REDACTED]. Staff noted that Q2 2008 would be kept at [REDACTED] hedge levels since the
6 forward power prices for this period were [REDACTED] compared to recent historical
7 metrics.

8 The weather in [REDACTED] was not a significant influence on price support and even
9 exerted some bearish influence by [REDACTED] as the hurricane premium diminished with the
10 end of the tropical storm season. Overall, the 2007 hurricane season was virtually a non-
11 event, with almost no loss of production. See Exhibit No. ___(DEM-11C).

12 In [REDACTED], May 2008 rolled into Staff's Actively Managed Hedge due to the
13 extension of the hedging tenure from [REDACTED] to [REDACTED] months. This allowed Staff to more
14 actively manage the May 2008 position for a greater period of time prior to delivery. Staff
15 continued to closely monitor the hydro situation [REDACTED]
16 [REDACTED] Staff continued to hedge by [REDACTED] [REDACTED] through the end of [REDACTED].

17 VI. FUNDAMENTALS AND MARKET PRICES 18 AFFECTING MAY 2008

19 From [REDACTED] to May 2008, forward prices for power and natural gas
20 [REDACTED]. By
21 [REDACTED] the geopolitical concerns in Iran, which had previously driven prices up, had
22 come to an end yet crude oil prices remained high. Natural gas also seemed [REDACTED]

REDACTED

1 [REDACTED]. In 2005 when two hurricanes directly hit the Gulf of
2 Mexico and wiped out all of the production, Sumas daily gas prices from May – October
3 averaged \$7.50/MMBtu. The forward market in [REDACTED] for that time period was
4 \$[REDACTED]/MMBtu. Also, the water year for 2005 was only 89% of normal, whereas in [REDACTED]
5 [REDACTED] the latest Northwest River Forecast Center predicted a water year at [REDACTED] of normal
6 for the [REDACTED] period. And finally, the overall natural gas storage
7 inventory for the United States was 320 Bcf higher, and the western region was 32 Bcf or
8 16% ahead of where it was in 2005.

9 As a result, market heat rates remained steady in the 6,000 range then rose to the
10 mid 7,000's from [REDACTED] when it began falling to return to the 6,000 range
11 [REDACTED]. During this time period Staff continued to reduce the net exposure of
12 its power portfolio for May 2008 at [REDACTED] levels. Heading into delivery month the
13 position was relatively flat as a result of the hedges Staff had transacted. Beginning May 1,
14 2008, Staff managed the position on a daily basis.

15 Monthly spot market exposure for May 2008 over the period [REDACTED]
16 through April 2008 can be found in the exposure charts in Exhibit No. ___(DEM-6C).
17 These charts illustrate peak power, off-peak power, and gas for power exposure as they
18 evolve over the [REDACTED]-month (and then [REDACTED]-month) period and contain our monthly hedging
19 strategy for the Programmatically Managed Hedge. (Note that this hedging strategy can
20 vary for a specific month during the period if Staff's fundamental view warrants
21 accelerating or decelerating that hedging strategy.) For example, in [REDACTED], the hedging
22 strategy for the Programmatically Managed Hedge was changed from [REDACTED] exposure

REDACTED

1 reduction limits to [REDACTED] exposure limits, except for Q2 2008. Staff recommended to
2 hedge to [REDACTED] exposure reduction limits because significant weather related price risks
3 were likely to materialize in the near future. Staff noted that on the hydro front, everything
4 but the Cascades and British Columbia looked in dismal shape. There was no spring
5 miracle for the Sierras – their current average snow water content ranged from 17 – 46% of
6 average. Most of the rest of the Western region was averaging around 50% of normal.
7 With BPA raising its flood elevation target 10 feet at Grand Coulee in the early part of
8 [REDACTED] and with the Mica and Revelstoke dams in British Columbia still at 111% above
9 normal, there was hope there would be more hydro generation than normal in the upper and
10 middle Columbia over the next few months. However, this was likely to be off-set by
11 Columbia Generating Stations’s nuclear refueling outage which would take 1,100 MW of
12 base load power off-line until the middle of [REDACTED].

13 Monthly MaR analysis for May 2008 can be found in Exhibit No. ___(DEM-7C).

14 As stated previously, MaR analysis shows how much risk reduction is gained by month and
15 by strategy – providing Staff with an additional tool to evaluate which commodity to hedge
16 given a credit constrained environment.

17 Daily heat rate trends for May 2008 can be found in Exhibit No. ___(DEM-8C).

18 Heat rates fluctuate daily depending on the power and gas prices, and are part of the
19 dispatch logic used to determine which CT’s are “in the money”.

20 Daily commodity prices for May 2008 can be found in Exhibit No. ___(DEM-11C).

21 This chart illustrates peak power, off-peak power, and gas for power prices as they evolved
22 over the [REDACTED]-month period.

REDACTED

1 The Northwest River Forecast Center (“NWRFC”) issued its first official water
2 supply forecast of the 2008 water year on December 13, 2007. Thousands of Acre Feet
3 (“KAF”) for the January-July period at Grand Coulee was projected at 63,900 KAF. The
4 30-year average (1971-2000), also referred to as “normal,” for the January-July period at
5 Grand Coulee is 62,900 KAF. Thus, NWRFC predicted January-July runoff at 102% of
6 normal at Grand Coulee (63,900 KAF/62,900 KAF). All subsequent forecasts for the 2008
7 water year can be found in Exhibit No. ___(DEM-12). Also found in Exhibit
8 No. ___(DEM-12) are the monthly runoff volumes at Grand Coulee for water years 2006,
9 2007, 2008 and October through March for water year 2009.

10 Staff’s monthly Hedging Outlook Summaries and Energy Market Drivers Reports
11 can be found in Exhibit No. ___(DEM-13C) . The monthly Hedging Outlook by Staff offer
12 an overview of the power and natural gas markets, weather, oil, and hydro as they relate to
13 the Programmatically Managed Hedge strategy. The Energy Market Drivers offer an
14 overview of current events and what their affects are on forward prices.

15 The above referenced tools, forecasts, and fundamental views were used to manage
16 the monthly spot market exposure for delivery month May 2008. May 2008 hedges were
17 executed in accordance with both the Programmatically Managed Hedge and Actively
18 Managed Hedge strategies and the hedges are shown for both power and gas for power in
19 Exhibit No. ___(DEM-9C).

20 **VII. MAY 2008 – WITHIN MONTH OVERVIEW**

21 Spot prices increased in May from April as the NWRFC revised runoff down two

1 percentage points to 97% at Grand Coulee for April – September in its May 16 mid-month
2 update. Despite the many challenges Staff faced while hedging for May 2008 (including
3 unknown hydro and weather conditions, political turmoil and gas storage levels), Staff
4 succeeded in executing transactions at competitive market prices. From [REDACTED] to
5 April 2008, Staff purchased [REDACTED] MW on-peak power at an average price of [REDACTED] and [REDACTED]
6 MW off-peak power at an average price of [REDACTED]. Staff also sold [REDACTED] MW peak power at an
7 average price of [REDACTED] and [REDACTED] MW off-peak power at an average price of [REDACTED]. From
8 [REDACTED] to April 2008, Staff purchased [REDACTED]-mmbtu/day natural gas at an average price
9 of [REDACTED]/mmbtu and sold [REDACTED] mmbtu/day at an average price of [REDACTED]/mmbtu. *See*
10 Exhibit Nos. ___(DEM-10C) and ___(DEM-9C).

REDACTED