

2007 Supplemental Wholesale Power Rate Case Initial Proposal

REBUTTAL TESTIMONY
SUPPLEMENTAL MARKET PRICE
FORECAST

May 2008

WP-07-E-BPA-82



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REBUTTAL TESTIMONY OF
ROBERT J. PETTY, ROBERT W. ANDERSON,
SIDNEY L. CONGER, JR., and ARNOLD L. WAGNER
Witnesses for Bonneville Power Administration

SUBJECT: SUPPLEMENTAL MARKET PRICE FORECAST

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4 Witnesses for Bonneville Power Administration

5
6 **SUBJECT: SUPPLEMENTAL MARKET PRICE FORECAST**

7 **Section 1: Introduction and Purpose of Testimony**

8 *Q. Please state your names and qualifications.*

9 A. My name is Robert J. Petty. My qualifications are contained in WP-07-Q-BPA-44.

10 A. My name is Sidney L. Conger, Jr. My qualifications are contained in WP-07-Q-BPA-10.

11 A. My name is Robert W. Anderson. My qualifications are contained in WP-07-Q-BPA-01.

12 A. My name is Arnold L. Wagner. My qualifications are contained in WP-07-Q-BPA-50.

13 *Q. Have you previously submitted testimony in this Supplemental Proceeding?*

14 A. Yes. Mr. Petty, Mr. Conger, and Mr. Anderson submitted direct testimony identified as
15 exhibits WP-07-E-BPA-56 and WP-07-E-BPA-66. Mr. Conger and Mr. Wagner, with
16 other witnesses, submitted direct testimony identified as exhibits WP-07-E-BPA-67 and
17 WP-07-E-BPA-73. Mr. Wagner submitted direct testimony, with other witnesses,
18 identified as exhibits WP-07-E-BPA-72.

19 *Q. What is the purpose of your testimony?*

20 A. The purpose of this testimony is to respond to the direct testimony filed by Cowlitz
21 County PUD (Cowlitz), Schoenbeck, WP-07-E-CO-01, regarding BPA's market price
22 forecast. It also responds to the manner in which Cowlitz has described BPA's forecast
23 surplus sales revenues.

1 **Section 2: Forecast Surplus Sales Revenues and the Market Price Forecast**

2 *Q. Cowlitz states that BPA's forecast surplus sales revenue for FY 2009 in the Supplemental*
3 *Proposal is \$575.6 million, and \$566.4 million in the WP-07 Final Proposal.*
4 *Schoenbeck, WP-07-E-CO-01 at 1. Are these numbers correct?*

5 *A. Yes, but it is important to keep in mind that forecasts of surplus sales revenues and*
6 *balancing power purchases together comprise forecasts of net secondary or net surplus*
7 *revenues. By looking only at the forecast of surplus sales revenues, only part of the net*
8 *secondary revenue equation is addressed. In addition, BPA sells a considerable amount*
9 *of secondary energy to consumer-owned utilities under the PF Slice rate. The revenues*
10 *stated above are after the sale of surplus energy under the PF Slice rate.*

11 *Q. What was BPA's forecast of net secondary revenue for FY 2009 in the Supplemental*
12 *Proposal?*

13 *A. The net secondary revenue forecast for FY 2009 in the Supplemental Proposal was*
14 *\$508 million. See Supplemental WPRDS Documentation, WP-07-E-BPA-49A at 73, 76.*

15 *Q. Cowlitz states it disagrees with BPA's approach used in the assessment of whether the*
16 *market price forecast should have been updated. Schoenbeck, WP-07-E-CO-1 at 2.*
17 *Please address this point.*

18 *A. Cowlitz disagrees with our approach for two reasons. First, Cowlitz correctly notes that*
19 *market prices at the Mid-Columbia (Mid-C) trading hub in the Pacific Northwest (PNW),*
20 *as forecast using the AURORA model, are influenced by load levels and available*
21 *resources throughout the Western Electricity Coordinating Council (WECC), not just*
22 *those within the PNW. Cowlitz believes we have failed to take this fact into account. In*
23 *developing our testimony in this proceeding, however, we did consider forecasted loads*
24 *and resources throughout the WECC. We highlighted only the PNW loads and resources*
25 *in our testimony. In addition, later in this rebuttal testimony we address the updated load*
26 *and resource data for the entire WECC.*

1 *Q. What is Cowlitz's second issue with your approach?*

2 A. Cowlitz believes our market price forecast should have reflected an updated natural gas
3 price forecast. Schoenbeck, WP-07-E-CO-1 at 2-3. Cowlitz argues that a re-evaluation
4 of the gas price forecast assumptions through the FY 2009 rate period, along with a
5 cursory review of current forward gas price curves for either the Henry or Sumas trading
6 hubs (which Cowlitz concludes are 50 percent higher than our FY 2009 gas price
7 forecast), would have revealed that a gas price update was warranted.

8 *Q. How do you respond to Cowlitz's arguments?*

9 A. We have reviewed our gas price forecast again, and conclude that based on current
10 information, the gas price forecast for the final Supplemental Proposal will likely
11 increase relative to the Supplemental Proposal. In November 2007, in preparation for the
12 Supplemental Proposal, we reviewed the WP-07 Final Proposal gas price forecast. Since
13 we undertook that review, natural gas prices, and the outlook for natural gas prices, have
14 increased significantly.

15 In November 2007, the U.S. average wellhead price was \$6.60/MMBtu. The
16 March 2008 average wellhead price was \$9.03/MMBtu, a 37 percent increase from
17 November 2007. Several factors have contributed to this price escalation. First, natural
18 gas storage inventories have declined sharply over the past five months. On
19 November 23, 2007, the Energy Information Administration reported natural gas storage
20 was three percent higher than the equivalent week from the previous year. By
21 April 4, 2008, storage inventories had declined to 22 percent less than the previous year.
22 Year-on-year storage inventory comparisons have a significant impact on expected
23 natural gas prices and this factor has contributed to a higher gas price forecast. This
24 unexpectedly large storage withdrawal was driven by an unusually cold winter and
25 reduced natural gas imports from Canada.

1 Second, oil prices have also increased approximately 18 percent from
2 November 2007 to April 2008. This has contributed to upward pressure on natural gas
3 prices through substitution effects and the linkages of oil prices to liquefied natural gas
4 (LNG) prices. Increased oil prices and high demand for LNG in European and Asian
5 markets have increased prices for imported U.S. LNG, putting additional upward price
6 pressure on U.S. natural gas prices. In addition, LNG supplies were constrained during
7 the winter of 2007/2008 due to LNG production project delays and liquefaction
8 performance issues. These factors developed during the past winter and, in addition to
9 driving natural gas prices upward, created increased market expectations for natural gas
10 prices over the near term, including FY 2008 and FY 2009.

11 We have reviewed the fundamental factors affecting the natural gas market. We
12 also reviewed the NYMEX futures market for natural gas and a number of external gas
13 price forecasts. Based on this review, most industry analysts expect natural gas prices for
14 Henry Hub to be in the range of approximately \$7.50/MMBtu to \$11.00/MMBtu
15 (nominal \$) for FY 2008 and FY 2009. We consider it likely that the natural gas price
16 forecast for the final Supplemental Proposal will fall within this range. We will continue
17 to monitor the natural gas market and the resulting gas price forecast for the final
18 Supplemental Proposal will be based on a review of the most current information.

19 *Q. Cowlitz states BPA should have compared market prices forecast by AURORA for*
20 *FY 2009 with current forward prices, and examined the AURORA-derived market heat*
21 *rate with the current market heat rate for the Mid-C hub. Schoenbeck, WP-07-E-CO-1 at*
22 *3-4. How do you respond?*

23 *A.* We disagree with Cowlitz's assessment. Cowlitz states that the Mid-C market heat rate
24 implicit in our forecast for the Supplemental Proposal is 9,218 Btu/kWh based upon our
25 flat Mid-C price of \$50.68/MWh and projected gas price of \$5.50/MMBtu. This is far
26 greater than the current market heat rate for FY 2009 of about 7,600 Btu/kWh.

1 Schoenbeck, WP-07-E-CO-1 at 3. The focal point of Cowlitz's testimony is the forecast
2 market price that is used in determining the net secondary revenue forecast. As stated in
3 Petty, *et al.*, WP-07-E-BPA-66 at 4, the average forecast market price of 50 different
4 AURORA runs was \$48.07/MWh for HLH periods and \$41.97/MWh for LLH periods.
5 Using the rule of thumb of 57 percent for HLH periods and 43 percent for LLH periods,
6 this would translate into a flat price of \$45.45/MWh. Using the natural gas price of
7 \$5.50/MMBtu from the Supplemental Proposal, this would translate into an implied heat
8 rate of 8,263 Btu/kWh. Furthermore, as stated in Petty, *et al.*, WP-07-E-BPA-66 at 4, we
9 use 50 different AURORA runs in determining the net secondary revenue forecast. The
10 implied heat rates of all 50 different price forecasts for net secondary revenues show a
11 range from a high of 9,664 Btu/kWh to a low of 6,936 Btu/kWh. Therefore, the
12 7,600 Btu/kWh implied heat rate falls within the range of implied heat rates that we
13 calculated in determining its net secondary revenue forecast for the Supplemental
14 Proposal. As we have stated above, we will update the natural gas price forecast for the
15 final Supplemental Proposal. Thus, when we update our price forecast and net secondary
16 revenue forecast, these implied heat rates most likely will change.

17 *Q. Cowlitz states that the current flat forward price curve for FY 2009 is about 30 percent*
18 *higher than the BPA forecast market, and that even the current average forward off-peak*
19 *price for FY 2009 is higher than BPA's all hour flat price projection. Schoenbeck,*
20 *WP-07-E-CO-1 at 4. How do you respond?*

21 *A.* As stated above, we expect that the Henry Hub natural gas price forecast will likely fall
22 into the \$7.50/MMBtu to \$11.00/MMBtu range. Such an increase in the natural gas price
23 forecast would increase the electricity price forecast.

24 *Q. Cowlitz claims that BPA's net secondary revenue forecast is too low based on its low*
25 *projection of natural gas prices and electricity prices. Schoenbeck, WP-07-E-CO-1 at 4.*
26 *Cowlitz projects that if BPA were to incorporate the current forward market heat rate*

1 with an updated natural gas price forecast, a conservative rough estimate of the increase
2 in surplus sales revenue from updating the gas price forecast and current market heat
3 rate expectations is \$150 million. *Id.* How do you respond?

4 A. Again, we expect that the natural gas price forecast will likely fall into the \$7.50/MMBtu
5 to \$11.00/MMBtu range and thus we expect the market price forecast to increase
6 correspondingly. However, as noted earlier in this testimony, Cowlitz erred by only
7 looking at the surplus sales revenues and ignoring the costs of balancing power purchases
8 and augmentation. Thus, although we do expect the surplus revenues to increase, a
9 higher market price forecast also increases the cost of balancing power purchases and
10 augmentation and those costs can be expected to increase as well - all else being held
11 constant. However, we expect BPA to be a net seller on average, and thus we expect the
12 net secondary revenue forecast to increase relative to the forecast in the Supplemental
13 Proposal

14 Q. Cowlitz asserts that BPA should submit a revised market price forecast as soon as
15 possible using a much more simplified and transparent modeling method, and that
16 parties should be given the opportunity to submit supplemental testimony on the revised
17 price forecast prior to the first hearing day Schoenbeck. *WP-07-E-CO-1 at 5.*
18 Alternatively, Cowlitz proposes BPA could increase the surplus sales revenue by
19 \$150 million as a reasonable resolution of this issue. *Id.* How do you respond?

20 A. First, we have used the AURORA model and its methodology for determining net
21 secondary revenue in numerous rate cases including, and since, the WP-02 rate
22 proceeding. The AURORA model remains an accurate tool for forecasting electricity
23 market prices and the best model available at this time, so we do not support changing
24 that methodology for this proceeding. Second, we provided the supporting data in the
25 Supplemental Proposal. Cowlitz has had the opportunity to respond to our forecast
26 through discovery and its direct testimony. In response to Cowlitz's recommendation, we

1 are reviewing and, in fact, adopting some of Cowlitz's proposed changes. Third, we will
2 respond to Cowlitz's concerns regarding the timing of updates by making available the
3 inputs to be updated through data responses. These updates are largely, if not
4 exclusively, with respect to load and resource data, and represent the updates that we
5 noted in our testimony that we did not have time to incorporate into the market price
6 forecast prior to the Supplemental Proposal. *See Petty, et al., WP-07-E-BPA-66.*

7 *Q. Please describe each update.*

8 A. First, as explained above, we will review our natural gas price forecast and expect it to
9 increase for the final Supplemental Proposal. Second, we plan to use the WECC 10-Year
10 Coordinated Plan Summary (2006-2015) for the load forecast. If a new WECC 10-Year
11 Coordinated Plan is released prior to the final Supplemental Proposal, we will use that
12 forecast. We have also updated the resources in the WECC region. Due to the quantity
13 of information contained in this update, we will make available the updated load and
14 resource data in response to data requests.

15 *Q. Please respond to Cowlitz's proposal to simply increase the surplus sales revenue
16 projection by \$150 million.*

17 A. BPA uses many models in the ratesetting process. These models include HydSim,
18 AURORA, RiskMod, and ToolKit. It is important, especially when determining net
19 secondary revenues for use in the Risk Analysis, to have electricity prices and hydro
20 conditions correlated. Because there will be a new hydro regulation study for the final
21 Supplemental Proposal, it will be important to run each of these models using the updated
22 hydro generation levels. Also, updated market prices, loads and resources change the risk
23 associated with 3,000 different revenue games that must be addressed in evaluating
24 Treasury Payment Probability. Thus, simply adding \$150 million to surplus sales
25 revenues is not a viable option. That said, we have described the inputs that we intend to

1 update, and that we expect the net secondary revenue forecast to increase as a result. The
2 amount that Cowlitz suggests is not an unreasonable expected outcome.

3 *Q. Does this complete your testimony?*

4 *A. Yes.*