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Montana

January 4, 2008

MEMORANDUM

TO: Power Committee

FROM: Maury Galbraith

SUBJECT: Initial Response to Public Comment on Interim Wholesale Power Price Forecast Paper (Price Forecast Paper)

Staff has received public comment on the Price Forecast Paper. The primary purpose of the interim power price forecast is to provide estimates of future wholesale power prices to guide the initial resource assessment of for the Sixth Power Plan.

The revised forecast incorporates the recently adopted assumptions about future natural gas, oil, and coal prices and the findings and conclusions of the Biennial Assessment regarding the capital costs and performance of new resources. The forecast also explores the possible effect of current renewable portfolio standards on supplementary resource additions, market prices of electricity and the value of capacity.

The Bonneville Power Administration (BPA) and the Northwest Energy Coalition (NVEC) provided formal written comments regarding the draft paper.¹ The BPA and NVEC comments on the Price Forecast Paper, as well as a Staff summary of these comments, are provided in the Power Committee Packet.

BPA strongly recommends that the Council provide guidance to utilities regarding the use of the price forecasts to evaluate the cost-effectiveness of demand-side and generating resources. BPA also recommends consideration of the need for system capacity and operating flexibility in the price forecasts. NVEC encourages a deeper look at the implications of future carbon regulation. It suggests forecasting power prices with carbon-adder values up to \$100 per megawatt-hour. NVEC also recommends examining the carbon content of the wholesale market under various scenarios.

The Power Committee will discuss proposed staff responses to the public comment and the next steps in the development of the Price Forecast Paper.

¹ Staff also received informal comments from employees of the Chelan Public Utility District.

**SUMMARY OF COMMENTS AND PROPOSED RESPONSES REGARDING THE
REVISED ELECTRICITY PRICE FORECAST PAPER**

January 4, 2008

BPA - Bonneville Power Administration
 NWECC - Northwest Energy Coalition
 Chelan PUD

Comment	Source	Proposed Response
1. Provide clear interpretation of the price forecast for utilities considering resource development and acquisition.	BPA	Re-work the “Interpretation and Recommendations” section of the draft paper to provide further guidance on using the price forecast to evaluate the cost-effectiveness of both demand-side and generating resources.
2. Clarify whether the amount of new resources included in the price forecast is consistent with regional resource adequacy standards (including the economic adequacy standard).	BPA	This is the first time the Council has used the capacity reserve margin capability of the AURORA model. As indicated in the draft paper, the capacity reserve margin targets established by the Pacific Northwest Power Supply Adequacy Forum cannot be directly input into the AURORA model. We converted the Adequacy Forum’s multiple-hour capacity targets to a single-hour target for our modeling purposes. We believe that the modeling is consistent with the regional capacity standard. We will provide additional analysis and discussion of the economic adequacy standard.
3. Consider the potential need for additional system capacity and operating flexibility.	BPA	Our market price modeling considers the potential need for additional system capacity to maintain capacity reserve margin targets. The modeling of intermittent wind resources includes a cost adder to reflect the impact of obtaining operating flexibility from the existing system. However, the model does not include new capacity needed exclusively to supply additional operating flexibility. We will more fully discuss these issues in the revised paper.
4. Re-run the study using various carbon-adder values up to \$100/ton.	NWECC	We will run additional scenarios with high carbon-adder values.

<p>5. Dig deeper into the <i>nature</i> of the wholesale market under various carbon-constrained scenarios, especially cap-and-trade mechanisms.</p> <ul style="list-style-type: none"> a) Describe the carbon content of the wholesale market under various levels of carbon restriction b) How would the behavior of market participants change under a carbon constrained future? c) How do Emissions Performance Standards affect the market? d) Examine a bifurcated market where the CO2 content of power is priced consistent with various types and intensities of CO2 regulation. 	<p>NWEC</p>	<ul style="list-style-type: none"> a) We will add analysis of the CO2 production of the marginal market-clearing resources in the Pacific Northwest under several different scenarios. b) The impact of further carbon regulation on wholesale power markets (both forward and spot), including the potential for differential pricing of CO2 content are issues we intend to consider in the upcoming Sixth Power Plan. c) We will also describe our Emissions Performance Standard modeling and its impact on market prices. While some aspects of emission performance standards can be incorporated in the market price forecast, it is difficult to model the full impact of emission performance standards because of the infeasibility of modeling contracts at the Regional or west-wide level. d) The cost impacts of CO2 control policies are reflected in the forecast market prices to the extent that these policies can be modeled as a cost penalty on CO2 production (e.g., a carbon tax), or as mandates for acquisition of renewable or other low-carbon resources (e.g., renewable portfolio standards).
<p>6. Provide monthly on-peak and off-peak price forecasts for use in Integrated Resource Planning.</p>	<p>Chelan PUD</p>	<p>We will provide this information upon request.</p>

Interim Wholesale Power Price Forecast

Initial Responses to Comments

Power Committee

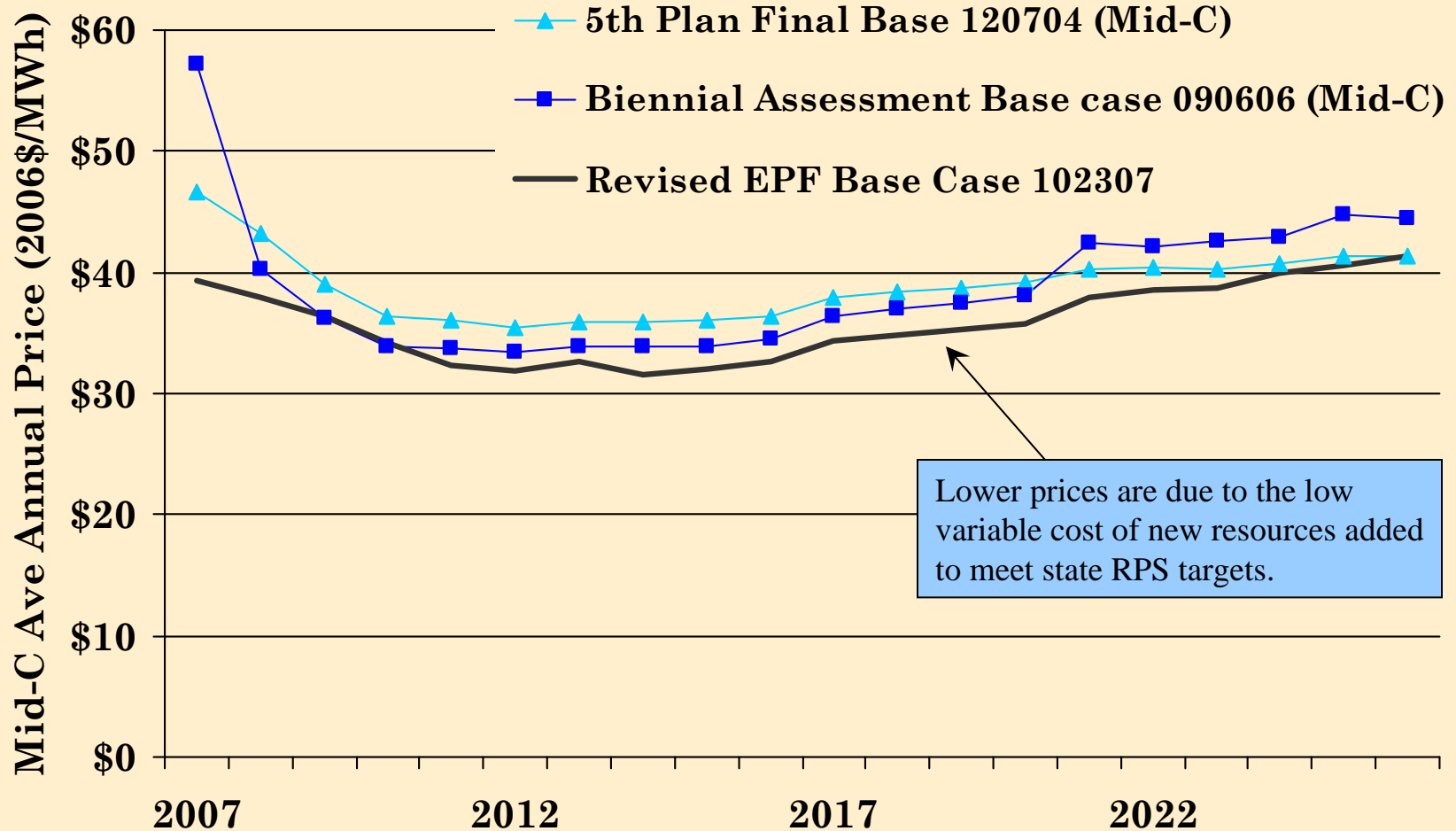
Vancouver, WA

January 15, 2008

Why Forecast Wholesale Power Prices?

- **Used by the Council as the mean value power price forecast in the portfolio risk model.**
- **Used by the Council to evaluate the cost-effectiveness of conservation and generating resources.**
- **Used by the Regional Technical Forum (RTF) to assess conservation measure cost-effectiveness.**
- **Used by the Council to assess the marginal CO₂ offset value of conservation (also used by the RTF).**
- **Used by other organizations to evaluate resource cost-effectiveness and in integrated resource planning.**

Current and Earlier Power Price Forecasts



Formal Comments and Initial Responses

Bonneville Power Administration

1. Provide detailed guidance on the uses of the price forecast.

We will re-work the paper to provide guidance on using the price forecasts to evaluate the cost-effectiveness of demand-side and supply-side resources.

2. Is the price forecast consistent with resource adequacy standards?

Newly implemented capacity reserve margin modeling is consistent with the regional capacity standard. We will provide additional analysis and discussion of the economic adequacy standard.

3. Consider the need for system capacity and operating flexibility.

Current modeling considers the need for system capacity. The modeling of intermittent wind resources includes a cost adder to reflect the impact of obtaining flexibility from the existing system. The model does not reflect any new capacity needed exclusively to supply operating flexibility. Flexibility augmentation is a likely issue for the Sixth Power Plan.

Formal Comments and Initial Responses

Northwest Energy Coalition

1. Forecast prices with carbon-adders up to \$100/ton.

We will run additional scenarios with high carbon adder values.

2. Describe carbon content of the wholesale market under various CO2 regulation scenarios.

We will add analysis of the CO2 production of the marginal market-clearing resources in the Pacific Northwest under several scenarios.

3. Examine behavior of market participants under carbon regulation scenarios.

The impact of future carbon regulation on wholesale power markets (both forward and spot) are likely issues for the Sixth Power Plan.

Formal Comments and Initial Responses

NWEC Continued

4. Examine how Emissions Performance Standards (EPS) affect the wholesale power markets.

We will describe our EPS modeling and its impact on the price forecasts.

5. Examine the possibility of a bifurcated wholesale market based on the CO2 content of power.

Our current modeling reflects the potential cost of future CO2 regulation in the market price forecast. The market impact of CO2 regulation is a likely issue for the Sixth Power Plan.

Informal Comments

Chelan PUD

1. Requested monthly average on-peak and off-peak prices for use in Integrated Resource Planning.

Provided current information to Chelan PUD and will provide revised data after release of the final price forecast paper. Available upon request.

2. Clarify resource cost and operating assumptions.

We will add further information regarding resource costs and operating assumptions.

3. Are the sensitivity cases sufficiently wide?

We will run additional scenarios with high carbon adder values.

Informal Comments

Chelan PUD Continued

- 4. Summarize the characteristics of the marginal market-clearing resources.**

We will provide the fuel type and average CO₂ production of the marginal market-clearing resources in the Pacific Northwest under several scenarios.

- 5. Provide calculation of implied market-clearing heat rates.**

We will provide implied market-clearing heat rates for the base case price forecast.

Other Planned Revisions

- **Improve RPS full and partial achievement cases.**
- **Further limit the building of coal plants without CO2 capture and sequestration (adjacent area problem).**
- **Add “No RPS” and “No Reserve Margin” scenarios to improve understanding of market price impacts.**

Next Steps

Recommended Path:

- **Review revised paper at February Council meeting.**
- **Release final paper without additional public comment (February).**

Alternative Path (Additional Public Comment):

- Review revised paper at February Council meeting.
- Release revised paper for further public comment (February).
- Release final paper (March/April).

Comments of the NW Energy Coalition
on the NW Power and Conservation Council's Nov. 12, 2007 draft
Interim Wholesale Power Price Forecast
Steven Weiss – December 19, 2007

The NW Energy Coalition (NWECC) appreciates the opportunity to comment on the Council's recent draft *Interim Wholesale Power Price Forecast*. Once again we commend the Council staff for its analytical work, and we offer only a few comments. In general we see no problem with the technical work underpinning the paper, but believe its treatment of CO₂ and possible CO₂ regulation is deficient. This leaves the reader with a flawed view of future markets. We suggest some additions that would add to its relevance, especially to run the study using higher, and more realistic values of carbon adders.

- Our first suggestion is to redo the study using various carbon-adder values up to perhaps \$100/ton.

The paper's conclusions may at first seem counter-intuitive: in a period of rising infrastructure costs, RPS mandates (which require the acquisition of higher price renewables), possibly higher fuel costs, and probable CO₂ regulation, wholesale prices are expected to fall significantly.

However, as the paper points out this result should not be unexpected. RPS mandates essentially cause utilities to "over-build," causing supply to outstrip demand. This may be especially true when the resource of choice is wind, an intermittent resource with low capacity contribution. With more supply, it is natural that prices would fall.

The problem with this description is that it leaves out future carbon regulation. While the *market price* might fall, the *actual price* seen by a purchasing utility would likely rise due to carbon regulation. The reason for this is that the market might be awash in surplus fossil fueled power—mainly coal-fired generation—priced very low, but the actual price a utility would incur from buying the dirty power would be much higher due to its carbon content. Without accounting for the carbon content of the power, the paper's explanation leads to a misleading conclusion.

The utility industry is entering into the uncharted waters of Carbon regulation which adds complications to what used to be more of a simple supply and demand question. NWECC believes that the Council should dig deeper into the *nature* of the wholesale market under various carbon-constrained scenarios, especially cap-and-trade mechanisms. Some questions and suggestions:

1. Describe the nature of the market—that is, the carbon content and make-up of different sources, and its prices. Would these attributes tend to change under various levels of carbon restriction?
2. Would utilities and IPPs change their behavior in the face of this new market? For example, would those with cleaner resources move toward selling under

dedicated contracts rather than sell into the generic (unspecified) wholesale market? How would that behavior affect the market's price and carbon content? Would utilities' plans change vis-à-vis the market? What would be the price utilities would actually incur when purchasing from this market? This is a truer measure of price.

3. How would various Emissions Performance Standards, now in place in WA and CA, and possibly in other states or nationally, affect the market?
4. It would be enlightening to examine a bifurcated (or trifurcated?) market where the CO2 content of power was priced consistent with various types of regulation (cap-and-trade, CO2 tax, etc.) and intensities of that regulation. Is this a likely outcome? What would be the prices in such a market?

Certainly this is not an exclusive list of questions that could be listed under the heading, "nature of the market," and we hope the Council and its staff will investigate the issue further. It is not clear to us how the market will behave in the future, but we are fairly certain that the simple supply and demand model used in the current paper will not describe future market(s) adequately as carbon regulation goes forward.

Thank you for this opportunity to comment. If there are any questions, please contact:

Steven Weiss
Sr. Policy Associate
NW Energy Coalition
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503-851-4054



Department of Energy

Bonneville Power Administration
P.O. Box 3621
Portland, Oregon 97208-3621

POWER SERVICES

December 19, 2007

In reply refer to: P-6

Mark Walker, Director of Public Affairs
Northwest Power and Conservation Council
851 SW. Sixth Avenue, Suite 1100
Portland, OR 97204

Dear Mark:

I appreciated the opportunity to visit with the Power Four last week on the Wholesale Market Price Forecast. I understand that the Council is substantially reworking this paper. Please consider the following thoughts as you do so.

This price forecast could have significant effects on regional resource development decisions. For instance, it may be used by various parties to gauge the cost effectiveness of both demand-side and generating resources. It may be used by utilities trying to choose between developing resources and relying on the short-term wholesale market to meet their load growth. The draft forecast might have been interpreted to indicate that it would be prudent to rely on the short-term market rather than develop demand-side or generating resources to meet load growth. Since the draft forecast was a set of point forecasts of spot market prices, these would not in our view be appropriate uses, and such uses could have run counter to the Council's Plan. Our suggestion is that in the next draft the Council simply be clear as to how it suggests the price forecast be interpreted by utilities considering resource development and acquisition, to avoid misinterpretation.

It is not clear that the amount of new resources assumed to be added in market price analysis is consistent with the resource adequacy standards (including the nascent economic adequacy standard). Such consistency seems important, since the Council has played a very effective leadership role in development of those standards.

As you know, we are increasingly concerned that Federal system capacity and operating flexibility are being reduced and resources with limited or no contribution to capacity are being added, while demands for capacity and flexibility are increasing. This points to the potential need for additional sources of capacity – a potential need that we suggest the Council consider both in price forecast revision and in development of the Sixth Plan.

Thanks for your consideration of these thoughts.

Sincerely,

A handwritten signature in black ink, appearing to read "P. E. Norman", followed by a long horizontal line extending to the right.

Paul E. Norman
Senior Vice President