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TESTIMONY OF

PATRICK G. MCRAE, LYNN M. HART, AND MEGAN T. CAPPER

Witnesses for Bonneville Power Administration

SUBJECT: Value of Reserves

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4 **SUBJECT: VALUE OF RESERVES**

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

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

7 A. My name is Patrick G. McRae. My qualifications are contained in WP-02-Q-BPA-47.

8 A. My name is Lynn M. Hart. My qualifications are contained in WP-02-Q-BPA-27.

9 A. My name is Megan T. Capper. My qualifications are contained in WP-02-Q-BPA-10.

10 *Q. Please state the purpose of your testimony.*

11 A. The purpose of this testimony is to explain Bonneville Power Administration (BPA)
12 Power Business Line's (PBL) proposal for valuing and, if necessary, procuring
13 Supplemental Contingency Reserves (Supplemental Reserves) from its Direct Service
14 Industrial (DSI) customers. In the event that PBL decides to purchase Supplemental
15 Reserves from a DSI, the value of the reserves will be negotiated on a case-by-case basis
16 within the limits established in this rate case, and payment will be reflected as an
17 adjustment to the Industrial Firm Power (IP-02) rate of the DSI providing the reserves.

18 *Q. How is your testimony organized?*

19 A. The introduction is this Section 1. Section 2 defines the different types of reserve
20 products that can be provided by the DSI loads and generally summarizes BPA's current
21 approach to this issue. Section 3 outlines the criteria that will govern decisions regarding
22 the procurement and valuation of Supplemental Reserves.

23 **Section 2: Background**

24 *Q. What are Supplemental Reserves?*

25 A. Supplemental Reserves refers to generating capacity, and associated energy, fully
26 available within ten minutes notice of a system disturbance. According to Northwest

1 Power Pool (NWPP) Operating Manual, Appendix 1, a system disturbance occurs when
2 generation is lost due to unit trips, loss of power house transmission, plant internal
3 equipment problems, or the failure of a generating unit to start. Supplemental Reserves
4 are required to insure that firm load can continue to be served during these system
5 disturbances, and include both off-line generation fully available within ten minutes
6 notice, or interruptible load that can be off-line within ten minutes notice. In BPA's 1996
7 Rate Case these reserves were called Forced Outage Reserves.

8 *Q. Why are you changing the name from Forced Outage Reserves?*

9 A. We changed the name to be consistent with Federal Energy Regulatory Commission
10 (FERC) and Northern American Electric Reliability Council (NERC) terminology, and to
11 avoid confusion with another PBL product called Forced Outage Reserves that provides
12 backup power after Supplemental Reserves have been exhausted.

13 *Q. Why does BPA need to have access to Supplemental Reserves?*

14 A. As noted above, Supplemental Reserves are required to insure that firm load can continue
15 to be served during system disturbances. The NWPP Operating Reserves Sharing
16 Program requires BPA, as a control area operator, to carry reserves equal to 5 percent of
17 its on-line hydroelectric generation and 7 percent of on-line nonhydroelectric generation.
18 Up to half of this reserve amount may be Supplemental Reserves, while the rest must be
19 spinning and responsive to frequency. Spinning Reserves are 'on-line' and responsive to
20 frequency, while as noted above Supplemental Reserves may be 'off-line.' While the
21 exact number of Supplemental and Spinning Reserves fluctuates depending on the level
22 of on-line generation, the federal system reserve requirement is on average 525 MW. *See*
23 *Wholesale Power Rate Development Study, WP-02-E-BPA-05.*

24 *Q. Does BPA procure other kinds of reserves from the DSIs?*

25 A. Yes. BPA also procures Stability Reserves from the DSIs.
26

1 Q. *What are Stability Reserves?*

2 A. Stability Reserves are loads that are available to be instantaneously disconnected from the
3 electrical power system for specific system disturbances. A system disturbance is an
4 event that results in the unplanned outage of transmission facilities. In comparison,
5 Supplemental Reserves support unplanned outages due to loss of generation.

6 Q. *Does BPA have a proposal for Stability Reserves in this rate case?*

7 A. No. As noted above, Stability Reserves are provided in connection with insuring
8 transmission reliability in the event of a transmission outage. Because BPA is conducting
9 a bifurcated rate case, Stability Reserves will not be addressed in the power rate case.

10 Q. *Why would BPA's Power Business Line procure Supplemental Reserves from a DSI?*

11 A. Deregulation has resulted in a great deal of uncertainty with respect to how the emerging
12 markets for reserve products will function in the future. This fact, in combination with
13 other risks associated with the Federal hydropower system, has made it important to
14 maintain as much operational flexibility as possible. For example, under certain water
15 conditions PBL may achieve maximum machine capability on a specific hour. In such a
16 situation, arranging for DSI Supplemental Reserves could provide PBL with additional
17 flexibility to meet flood control, spill requirements, or other system operation obligations.
18 The ability to acquire DSI reserves could also supplement PBL's ability to support BPA's
19 Transmission Business Line (TBL) in its responsibility to offer reserve products under
20 BPA's open access tariff. Therefore, PBL is proposing a mechanism that enables it to
21 purchase Supplemental Reserves from one or more DSI customers if a need arises. This
22 proposal keeps such options open without obligating PBL to acquire any specific level of
23 DSI Supplemental Reserves or precluding the TBL from also purchasing Supplemental
24 Reserves directly from the DSIs.

25

26

1 *Q. How has BPA procured its Supplemental Reserves in the past?*

2 A. BPA has traditionally acquired all its reserve requirements from the DSIs using a value of
3 reserves credit determined in a rate case and applied to some or all of the BPA's DSI
4 load. Currently the value of reserves credit, as determined in the last rate case, is
5 approximately \$2.73/MW-hour and is being applied as a uniform credit to the IP-96 rate.

6 *Q. Is BPA proposing a different approach to procuring Supplemental Reserves in this rate
7 case?*

8 A. Yes. At this time, PBL has not decided whether it will purchase any Supplemental
9 Reserves, and if it does whether it would purchase some or all of them from the DSIs.
10 Therefore, any Supplemental Reserves purchased from a DSI by PBL will be negotiated
11 on an individual customer basis, but the maximum amount of any negotiated credit to a
12 DSI for these reserves will be determined in this rate case. The maximum amount will be
13 expressed in the IP-02 rate schedule as a dollar-per-kilowattmonth rate. As a
14 consequence of this approach, PBL will not be providing the DSIs with a uniform reserve
15 credit to the IP rate, as it has traditionally done. Instead, PBL will negotiate with
16 individual DSIs and provide appropriate credits to reflect the value of what is being
17 provided.

18 *Q. How is BPA proposing to reflect this new approach in the rate schedule?*

19 A. BPA will post a range, from 0 to \$5.92/kW-mo that reflects the credit an individual DSI
20 may get for supplying Supplemental Reserves. The negotiated price will fall within this
21 range.

22 **Section 3: Procurement and Pricing**

23 *Q. How is PBL proposing to establish the rate that would be applicable to any purchases of
24 Supplemental Reserves from a DSI?*

25 A. As noted above, PBL is proposing a flexible rate with a cap that will permit BPA to
26 negotiate a price according to the quality of reserves provided. The maximum amount

1 PBL may pay for Supplemental Reserves from a DSI will be capped in the schedule at
2 \$5.92/kW-mo. The proposed cap is established to be equivalent to the maximum price
3 PBL would sell operating reserves to the TBL. This amount, in turn, is based on an
4 embedded cost methodology, which is discussed more fully in other testimony. *See*
5 DeClerk, *et al.*, WP-02-E-BPA-26.

6 *Q. Will a flat credit be given for Supplemental Reserves under the IP rate schedule to all*
7 *DSIs?*

8 A. No. As explained above, if such reserves are needed, PBL may separately negotiate a
9 deal with interested DSIs. The price paid by BPA will be determined, within the cap
10 established in the schedule, based on the quality of Supplemental Reserves provided.

11 *Q. Is the methodology for calculating the value of Supplemental Reserves the same*
12 *methodology that has been used in prior rate cases?*

13 A. No. From 1982 through the most recent rate case, a Combustion Turbine (CT) Method
14 was used to calculate the value of Supplemental Reserves. Use of this methodology was
15 based on the assumption that CTs would have provided the least cost alternative to the
16 DSI reserves and a credit reflecting that value was subtracted from the IP rate. In this
17 rate case, an embedded cost methodology is being used to establish the ceiling price that
18 would be paid for DSI reserves.

19 *Q. Why is a change from the CT Method being proposed?*

20 A. Deregulation is changing the markets for reserve products, and it is not clear that
21 establishing the value of reserves by reference to a historical, fixed-cost resource is an
22 appropriate means of determining the least-cost alternative to PBL's own generating
23 capacity. In the future, prices for such products are likely to be more dependent on the
24 wide variety of factors that influence supplies and demand, including time of day,
25 seasonality, population shifts, and availability of transmission capacity. Further, the CT
26 Method was used to establish a fixed credit to be applied uniformly against the IP rate.

1 For the next rate period, PBL needs the flexibility to negotiate different prices for the
2 varying quality of reserves that individual DSIs might provide. The CT Method was not
3 designed to account for this type of variability.

4 *Q. Why does PBL propose to cap the DSI Supplemental Reserves rate at the embedded cost
5 of generation inputs for operating reserves that PBL proposed to charge TBL?*

6 A. BPA has proposed a price that TBL would pay PBL for generation inputs for operating
7 reserves. This price is based upon the embedded costs of FCRPS generation. Generation
8 inputs for operating reserves have essentially the same electrical characteristics as the
9 highest-quality Supplemental Reserves that PBL might purchase from the DSIs. These
10 products are in many ways fungible. In certain conditions, Supplemental Reserves
11 purchased from the DSIs could release additional generation capacity for use as
12 generation inputs for operating reserves. Thus, it is appropriate to cap the DSI
13 Supplemental Reserves rate at the embedded cost price that PBL charges TBL for similar
14 services. Moreover, PBL could face cost under-recovery with a higher cap.

15 *Q. How will you determine the quality of Supplemental Reserves?*

16 A. The suitability and quality of the Supplemental Reserves will be measured by whether
17 they have certain characteristics, some of which are required and others optional. Any
18 Supplemental Reserves purchased by PBL must be consistent with NERC, Western
19 System Coordinating Council (WSCC), and NWPP criteria:

- 20 1. The interruptible load must be off-line within 5 minutes after a call by BPA;
- 21 2. In the event of a system disturbance, the interruptible load must be accessible
22 prior to a request for reserves from other NWPP parties;
- 23 3. The interruptible load must be available to be off-line for up to 60 minutes.

24 In addition to these required characteristics, the issues identified below will help
25 define when PBL may pay the maximum value for Supplemental Reserves:

1 1. The extent to which PBL has discretion over when and how to use all reserves
2 and to determine what resources to call on in the event of a system disturbance;

3 2. Whether there are limitations on the number of times or total minutes the reserves
4 may be utilized.

5 *Q. Could you briefly summarize the procedure for implementing this construct?*

6 A. PBL will generally take the following steps: 1) determine its Supplemental Reserves
7 needs, if any; 2) canvass its DSI customers and other entities to see if one or more of
8 them wants to meet that need; and 3) negotiate with one or more to procure products in
9 sufficient quantity to meet those needs.

10 *Q. What quantity of Supplemental Reserves is PBL forecasting to purchase from the DSIs?*

11 A. PBL is currently forecasting to purchase zero Supplemental Reserves from the DSIs.
12 PBL's future need for these reserves is uncertain. The DSIs may find it advantageous to
13 provide reserves directly to TBL or other power marketers. Nor is there any certainty
14 that TBL will acquire the generation component of Supplemental Reserves from PBL if
15 competitive markets for such services emerge. In that event, DSI-provided reserves
16 could only have value to BPA if they were purchased by the TBL because of FERC's
17 prohibition on self-supply by a merchant affiliate. Additionally, the potential
18 establishment of a Northwest Independent System Operator creates uncertainty
19 surrounding how and who would provide reserves under that framework. There is also
20 uncertainty as to the number of DSIs that would be willing and able to provide
21 Supplemental Reserves given the criteria outlined in this testimony. Finally, NERC,
22 WSCC, and NWPP are continuing to look at their structure and requirements with regard
23 to FERC's ancillary services and we do not know how the Supplemental Reserves criteria
24 may change in the next rate period. For all of these reasons, there is no basis to conclude
25 that any specific level of Supplemental Reserves will be purchased from the DSIs by
26 PBL.

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Q. If no acquisitions from the DSIs are projected, then why establish a rate now?

A. Rate directives in the Northwest Power Act applicable to the DSIs require that the value of the reserves credit be established in the rate case. PBL needs the flexibility to purchase Supplemental Reserves from the DSIs without initiating a separate Section 7(i) process.

Q. Does that conclude your testimony?

A. Yes.