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TESTIMONY OF

JON A. HIRSCH, GORDON H. MATTHEWS, JANET ROSS KLIPPSTEIN,
FEVREL W. PRATT, AND TERRY H. MORLAN

Witnesses for Bonneville Power Administration

SUBJECT: Load Forecasts

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6 **SUBJECT: LOAD FORECASTS**

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

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

9 A. My name is Jon A. Hirsch and my qualifications are contained in WP-02-Q-BPA-28.

10 A. My name is Gordon H. Matthews and my qualifications are contained in WP-02-Q-BPA-45.

11 A. My name is Janet Ross Klippstein and my qualifications are contained in
12 WP-02-Q-BPA-38.

13 A. My name is Fevrel W. Pratt and my qualifications are contained in WP-02-Q-BPA-59.

14 A. My name is Terry H. Morlan and my qualifications are contained in WP-02-Q-BPA-52.

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

16 A. The purpose of our testimony is to sponsor the public utility, investor-owned utility
17 (IOU), and direct service industry (DSI) sales forecast portions of the Loads and
18 Resources Study, WP-02-E-BPA-01, and the Loads and Resources Study Documentation,
19 WP-02-E-BPA-01A.

20 *Q. How is your testimony organized?*

21 A. Section 2 discusses the Northwest Power Planning Council's energy use forecast.
22 Section 3 describes Bonneville Power Administration's (BPA) Priority Firm (PF) sales
23 forecasting process. Section 4 addresses BPA's forecast of sales to the IOUs and DSIs.
24
25
26

1 **Section 2. Northwest Power Planning Council's (NWPPC) Regional Forecast**

2 *Q. Please describe the process used to produce the NWPPC's forecast.*

3 A. The NWPPC uses several models to produce a forecast of electricity demand at the
4 sectoral level for four consuming sectors: residential, commercial, industrial and
5 irrigation. The residential, commercial, and large industrial sector models are detailed
6 representations of consumers' energy decision processes for specific building types and
7 end-uses. Industrial sectors that use less electricity are forecast using econometric
8 equations. Irrigation forecasts are based on assumptions about changes in irrigated acres
9 and responses to changing electricity prices. The forecast is generated with input and
10 review from public Forecasting Advisory Committees established by the NWPPC. The
11 forecast then undergoes public review and comment before being adopted as the basis for
12 the NWPPC's plan.

13 *Q. When was the NWPPC's demand forecast produced?*

14 A. The NWPPC produced its energy use forecast in 1995 as part of its Draft Fourth
15 Northwest Conservation and Electric Power Plan, which was published in March 1996.

16 *Q. Is it reasonable to continue to use a forecast that is four years old?*

17 A. Subsequent reviews by NWPPC staff in 1997 and 1998, as reported in Addenda to the
18 Power Plan (Document Nos. 97-7 and 98-23), concluded that the energy use forecast
19 remains appropriate as the basis for the final plan. A comparison of the forecast to actual
20 weather adjusted demands from 1994 through 1997 shows that the average absolute
21 percent error of the forecasts has been less than 1 percent in recent years.

22 *Q. With the opening of markets and the higher market prices for electricity now being
23 experienced, would it not be reasonable to expect a lower load forecast by the NWPPC?*

24 A. Deregulation was a significant issue at the time the forecast was done. The NWPPC
25 made some adjustments to its price forecasting methods in anticipation of some of the
26 effects of competition in wholesale markets. However, demand forecasts rely on retail

1 electricity rates which have not been widely affected by competition yet, especially in the
2 residential and commercial sectors. This is due partly to continuing regulation of retail
3 markets, and partly to the fact that wholesale electricity prices have not diverged
4 dramatically from average electricity generation costs in the Pacific Northwest. Although
5 a detailed analysis has not been done, the NWPPC's forecasts of retail electricity prices
6 appear to be generally consistent with recent forecasts of competitive wholesale
7 electricity prices contained in the NWPPC's "Analysis of the Bonneville Power
8 Administration's Potential Future Costs and Revenues" (Publication 98-11).

9 **Section 3. PF Sales Forecasting Process**

10 *Q. Please generally describe BPA's sales forecasting process.*

11 A. BPA prepared Federal system sales forecasts as part of this ratemaking process. The
12 NWPPC's regional demand forecast described above was used as the basis for BPA's
13 Priority Firm (PF) sales forecast. The NWPPC's forecast was disaggregated to customer
14 class (Full or Partial Service) by state and by month. This was accomplished using
15 historical shares calculated from Financial and Operating (F&O) data. F&O data are
16 historical retail sales by consuming sector submitted to BPA by its public agency
17 customers. Details pertaining to BPA's Federal sales forecasting process are contained in
18 the Documentation for Loads and Resources Study, WP-02-E-BPA-01A.

19 *Q. Why did you adopt the NWPPC's regional forecast as the basis for your sales forecast?*

20 A. The NWPPC's forecast is a current, regional forecast that projects loads by consuming
21 sector.

22 *Q. Why did you deem a forecast by consuming sector desirable?*

23 A. BPA wanted the forecast process to incorporate the capability to reflect the differing
24 timing and conditions of the Northwest states enacting retail access legislation. Further,
25 BPA believes that the various consuming sectors will react to such choice differently.
26

1 That is, industrial consumers may opt for different energy suppliers at a different rate
2 than residential consumers.

3 *Q. Did you consider other options for developing sector-specific forecasts?*

4 A. BPA considered using the load forecast from the 1996 rate proceeding and dividing it
5 into sectors using shares derived from the F&O data. A major drawback to such an
6 approach, however, is that it would result in static sector shares. That is, the relative
7 shares of the consuming sectors would remain constant over time. BPA thought a more
8 dynamic approach where the sector shares are allowed to change would be preferable.
9 This is especially true since BPA assumes different responses by sector to retail access
10 options.

11 *Q. With the opening of markets and the higher market prices for electricity now being
12 experienced, would it not be reasonable to expect a lower load forecast?*

13 A. While typically one expects sales of a product to decrease as its price rises, in this case
14 the consumers of the public agency customers in the Pacific Northwest are not exposed to
15 those higher market prices. Even if deregulation occurs, the bulk of these loads are
16 expected to be served by either Federal resources or by resources owned by the utilities.
17 Because the Federal resources are priced at PF, which has not increased during this
18 period and is not projected to increase in the next rate period, consumers are largely
19 insulated from the market, so no price response is expected.

20 *Q. What data were used to develop the shares for spreading the NWPPC's annual forecast
21 to customer classes, states, and months?*

22 A. F&O data submitted by the individual utilities for the years 1992 through 1996 were used
23 in determining the shares by customer class, by state and by month.

24 *Q. Why was 1992-1996 data used for developing shares?*

25 A. BPA used the 1992–1996 period data because BPA did not want to use a single year of
26 data where weather or temperature variations for any given year could skew the shares.

1 Using multiple years of data averages out such variations. BPA used 1992 as the initial
2 year because BPA did not want to go back too far to introduce structural changes within
3 the utilities. BPA used 1996 as the most recent year because that is the last year for
4 which BPA has complete data.

5 *Q. Please describe each of the specific load forecasts.*

6 A. As indicated earlier, load forecasts are needed for both the Full and Partial service
7 customer groups. BPA is proposing to use different demand billing determinants for
8 these two customer groups. Load at the time of BPA's generation system peak will be
9 the demand billing determinant for the Full Service customers. The demand billing
10 determinant for the Partial Service customers is the utility's maximum heavy load hour
11 (HLH) entitlement from BPA, adjusted by a generation system peak factor.

12 *Q. How does BPA use load factor in this Study?*

13 A. Load factor, traditionally defined as the relationship between a utility's monthly energy
14 and its monthly peak load, is defined slightly differently here. For this process, load
15 factors are defined as the relationship between a utility's energy and its basic demand
16 billing determinant. Load factors for Full Service customers were calculated as the
17 monthly energy divided by the load at the time of BPA's generation system peak, while
18 those for Partial Service customers were calculated as the monthly energy divided by the
19 utility system peak loads.

20 *Q. How did BPA forecast public agency Full Service customer energy sales?*

21 A. A description of BPA's process for forecasting public agency Full Service customer
22 sales is contained in the Loads and Resources Study, WP-02-E-BPA-01, and in Section 2
23 of Documentation for the Loads and Resources Study, WP-02-E-BPA-01A. The general
24 process begins with the NWPPC's annual sector specific energy forecast and allocates it
25 to the monthly level by state for each sector. After adjusting for retail access
26

1 implementation, the energy projections are split into HLH energy and light load hour
2 (LLH) energy forecasts.

3 *Q. Please describe how the HLH and LLH splits were developed.*

4 A. Monthly sector sales are split into HLH totals and LLH totals using shares estimated by
5 the data in BPA's Hourly Electric Load Model (HELM). Hourly totals by sector were
6 summed according to the parameters defining HLH. This figure was then divided by the
7 monthly total to derive a percentage for HLH. The LLH is then calculated as total
8 monthly megawatthours (MWh) minus HLH.

9 *Q. How did BPA forecast public agency Full Service demand sales?*

10 A. A description of BPA's process for forecasting Full Service peak sales is contained in the
11 Loads and Resources Study, WP-02-E-BPA-01, and Section 3 of Documentation for
12 Loads and Resources Study, WP-02-E-BPA-01A. Monthly load factors are calculated
13 from historical data and applied to the monthly energy sales forecasts to project demand
14 sales.

15 *Q. Please summarize BPA's forecast for public agency Full Service customer energy sales
16 growth.*

17 A. Full Service sales are projected to grow at an average annual rate of approximately
18 0.9 percent for FY 2002-2006.

19 *Q. How did BPA forecast energy sales to public agency Partial Service customers?*

20 A. A description of BPA's process for forecasting Partial Service sales is contained in the
21 Loads and Resources Study, WP-02-E-BPA-01, and Section 3 of Loads and Resources
22 Study Documentation, WP-02-E-BPA-01A. The general process begins with the
23 NWPPC's annual sector specific energy forecast which is allocated to the monthly level
24 by state for each sector. The Partial Service customers' energy resources are subtracted
25 from the energy load forecast to derive energy sales. After adjusting for retail access
26

1 implementation, the energy projections are split into HLH and LLH forecasts using the
2 process described above for the Full Service class.

3 *Q. How did BPA forecast public agency Partial Service peak sales?*

4 A. A description of BPA's process for forecasting Partial Service customer peak sales is
5 contained in Section 2 of the Loads and Resources Study, WP-02-E-BPA-01, and
6 Section 3 of the Loads and Resources Study Documentation, WP-02-E-BPA-01A.
7 Monthly load factors are applied to the energy load forecasts to derive peak load forecasts
8 by month. The Partial Service customers' peak resources are then subtracted to derive
9 the demand sales forecast. This is then multiplied by the ratio of load at the time of
10 BPA's generation system peak and divided by the Partial Service customers' system peak
11 to derive the demand billing determinant for the Partial Service customers.

12 *Q. Please summarize BPA's forecast for public agency Partial Service energy sales growth.*

13 A. Partial Service loads are projected to grow at an average annual rate of about 1.2 percent
14 for FY 2002-2006. Partial Service sales, however, are projected to grow at an average
15 annual rate of about 3.5 percent for FY 2002-2006. This is based on the assumption that
16 BPA will serve all of the Partial Service customers' load growth.

17 *Q. What assumptions were made with respect to retail access?*

18 A. BPA assumed that there would either be no retail access legislation enacted in Idaho,
19 Oregon, or Washington, or, if legislation is enacted, it will be of the portfolio type. In
20 either case, public utilities would maintain their levels of sales and BPA would retain its
21 level of sales.

22 *Q. What would be the impact if retail access legislation of a more open type is enacted?*

23 A. Given that BPA's proposed rates are significantly below its projections of market prices,
24 there would be no substantial change to the sales forecast if a more open market approach
25 is enacted.
26

1 Q. Given that BPA has assumed no retail access legislation in the rate period, why did BPA
2 continue to use a sector-level forecast?

3 A. Using a sector-level forecast allows BPA the flexibility to review the forecast if
4 legislative changes occur before the final rate proposal is approved.

5 Q. How was the billing determinant for the Load Variance charge estimated?

6 A. The Load Variance charge will be charged against a utility's total retail load unless that
7 utility's purchases from BPA are flat blocks of power. It was assumed that only utilities
8 with substantial generating resources (such as Seattle City Light, Tacoma Public Utilities,
9 and Grant County PUD) would purchase flat blocks of power from BPA. Forecasts of
10 such utilities' total retail load were about 25 percent of the region's total public agency
11 retail load. The total load forecast was reduced by 25 percent to estimate the total load
12 that would be subject to the Load Variance charge.

13 **Section 4. IOU and DSI Sales Forecasts**

14 Q. What is BPA's forecast for IOU sales during the rate period?

15 A. BPA forecasts the IOUs will purchase 1000 aMW in power from BPA for their
16 residential and small farm loads. Actual power deliveries will be in equal hourly
17 amounts over the contract period. See Loads and Resources Study, WP-02-E-BPA-01
18 and Documentation for Loads and Resources, WP-02-E-BPA-01A.

19 Q. What is BPA's forecast for DSI sales during the rate period?

20 A. BPA forecasts the DSIs will purchase 1,440 aMW of power from BPA through the
21 Targeted Adjustment Charge. BPA will meet its obligations with its existing Federal
22 power system and, to the extent necessary, cost-effective power purchases consistent with
23 BPA's overall rate and financial goals. See Loads and Resources Study,
24 WP-02-E-BPA-01 and Documentation for Loads and Resources, WP-02-E-BPA-01A.

25 Q. Does this conclude your testimony?

26 A. Yes.