



United States  
General Accounting Office  
Washington, D.C. 20548

**Resources, Community, and  
Economic Development Division**

B-265654

September 19, 1995

The Honorable Ron Wyden  
Ranking Minority Member,  
Subcommittee on Oversight  
and Investigations  
Committee on Commerce  
House of Representatives

The Honorable Elizabeth Furse  
House of Representatives

This letter responds to your request that we review the Bonneville Power Administration's (BPA) potential to increase its practice of selling and exchanging power outside the Pacific Northwest. BPA has authority to exchange power with utilities outside the region, which means that it sends power to utilities that need it in return for power received by BPA when it may need additional electricity to meet demand. BPA can also sell power outside the Pacific Northwest if the power is surplus to the region's needs.

The need to seek increases in sales or exchanges has come about because of planned or existing changes in power generation on the Columbia River and its major tributaries, including the Snake River. The Columbia and Snake rivers are the focus of efforts to aid the recovery of endangered or threatened salmon species. Changes caused by these salmon recovery efforts can lead to releasing more water through Columbia River dams in the spring and early summer as a means of helping young salmon migrate downstream. This may leave BPA with added hydroelectric power at a time of year when it already has more power than its regional customers consume.

As agreed with your offices, we focused our efforts on (1) describing BPA's current use of exchanges or sales of surplus power outside the region and (2) identifying major constraints to increasing such exchanges or sales.

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With regard to BPA's current use of exchanges or sales, we found the following:

- In 1994, out-of-region sales represented 3.6 percent of the total electricity that BPA marketed. These accounted for a similar portion of BPA's total revenues from sales of electricity (\$75 million out of \$2 billion, or 3.8 percent, in 1994). Exchanges are not reported in out-of-region sales figures but represented less than 1 percent of the electricity marketed. (See enc. I for a summary of information from 1985 through 1994.)
- BPA has nine long-term<sup>1</sup> contracts for exchanges and sales outside the region. Seven of the nine were signed before 1991. In 1994, deliveries under these long-term contracts accounted for about 417 megawatts of capacity plus another 979,993 megawatt-hours of electricity (energy).<sup>2,3</sup> (See enc. I for a listing of the nine contracts.)
- BPA also sells surplus power through short-term contracts, which can last from 1 week to several months. For the past 3 years, most of these contracts were in the April-July period. BPA had about 200 such contracts in 1994, for a total of 1.66 million megawatt-hours in 1994. BPA has been able to sell or exchange its surplus power, but because short-term power generally sells for less on a per-unit basis than long-term power, these sales are not as attractive to BPA as long-term contracts are in generating revenue. For example, comparable short-term prices were 18 to 63 percent lower than prices under the nine long-term contracts. According to BPA, present market conditions have reduced this difference.

With regard to constraints facing BPA's efforts to increase the exchange or sale of surplus power, we found the following:

- Although BPA has been successful thus far in marketing its surplus power, increasing exchanges and sales under long-term contracts, which would mean more revenue for BPA, has proven difficult. The difficulty has come mainly from three market-related factors. The first factor is increased price competition from natural-gas-generated electricity. The price of natural gas in the West has dropped by about 29 percent in the past year, and the efficiency of natural gas generation has improved by 30 percent. The second factor is reduced demand for electricity in

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<sup>1</sup>BPA defines "long-term" as greater than 1 year.

<sup>2</sup>A megawatt is 1 million watts of electricity. In electricity production, capacity is the amount of power that can be produced, and energy is the amount of power delivered over a period. Both capacity and energy can be sold or exchanged.

<sup>3</sup>A megawatt-hour is 1 megawatt of electricity delivered for 1 hour.

California because of the recession and reduced need for generation due to excess generating capacity.<sup>4</sup> The West as a whole has a surplus generating capacity of about 16,000 megawatts and will still have a surplus of about 8,000 megawatts in 2004, according to the Western Systems Coordinating Council. The third factor that has caused utilities to defer making long-term commitments is increased uncertainty over long-term power prices. Moreover, current market conditions have also reduced the difference between long-term and short-term electricity prices, according to BPA.

- To a lesser degree, officials from BPA and the Northwest Power Planning Council<sup>5</sup> have identified statutory restrictions affecting (1) the terms of sales and (2) the types of customers that BPA may have as constraints to future out-of-region sales. For instance, BPA can only sell electricity that is surplus to the needs of the region, and BPA must include a 60-day notice to terminate a sale if the power is needed to meet demand within the region. Furthermore, BPA is prohibited from selling to customers who would resell the power to privately owned utilities. BPA and the Council are studying proposals to relax these and other constraints, but opinions differ over how much impact this would have. For instance, BPA's internal estimates of the long-term revenue increase from relaxing some or all of these provisions range from less than \$10 million to \$60 million annually. BPA and Council officials agree, however, that relaxing these provisions would have little or no effect in the short term or if current market conditions continue. (See enc. II for a listing of these statutory provisions affecting out-of-region sales.)

We provided a draft copy of this report to BPA for its review and comment. We received written comments from BPA's Manager, Extraregional Segment. These comments, along with our responses, appear in enclosure IV. BPA generally concurred with the information presented in our report. BPA stated that it is committed to the efficient marketing of all of its power resources and has recently adopted a new organizational structure to reinforce its extraregional efforts. BPA also provided clarifications that we incorporated in this report where appropriate.

We conducted our review at BPA's headquarters in Portland, Oregon. We reviewed and analyzed BPA's past, current, and planned power exchanges or sales outside the region. To identify major constraints on the exchange or sale of BPA's surplus power,

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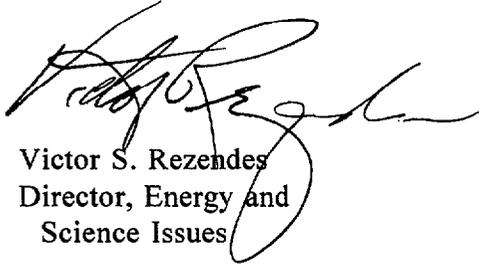
<sup>4</sup>While BPA markets to Canada and the western United States, limits to the transmission of electric power, together with California's large population, have made the state BPA's major out-of-region market. Ninety-five percent of BPA's out-of-region sales in 1994 were to California.

<sup>5</sup>Commonly called the Northwest Power Planning Council, the Pacific Northwest Electric Power and Conservation Planning Council is a multistate body tasked with long-term planning for the Pacific Northwest's power.

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we interviewed various officials both inside and outside BPA. Enclosure III lists the organizations we contacted. Our work was performed from April 1995 through August 1995 in accordance with generally accepted government auditing standards.

As arranged with your offices, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days after the date of this letter. At that time, we will send a copy to the BPA Administrator. We will also make copies available to others upon request. If you have any further questions concerning this report, please call me at (202) 512-3841.



Victor S. Rezendes  
Director, Energy and  
Science Issues

Enclosures - 4

PAST AND CURRENT USE OF OUT-OF-REGION SALES AND EXCHANGES

The Bonneville Power Administration's (BPA) use of seasonal power exchanges dates back at least to the mid-1960s, when it was recognized that the federal power system could be operated more efficiently if electricity could be traded, for example, between the Southwest, which needs more electricity in the summer for air conditioning, and the Northwest, which needs more electricity in the winter for heating. However, the manager of BPA's Extraregional Segment pointed out that recent higher seasonal natural gas prices make the transfers less economical. Nevertheless, by serving part of each area's high electricity demand periods, both areas could avoid adding costly and duplicative electricity generation.

Table I.1 shows BPA's out-of-region sales for 1985-94. Sales or exchanges can be made in one of two ways--capacity or energy. In electricity production, capacity is the amount of power that can be produced, and energy is the amount of power delivered over a period. For example, a capacity sale might be for 10 megawatts (1 megawatt is 1 million watts of electricity) and an energy sale might be 10 megawatt-hours, or 10 megawatts of power supplied for 1 hour. As the table shows, sales vary considerably from year to year. This variation can result from many factors, but two of the main factors have been fluctuations in the amount of water available for generating electricity and fluctuations in the amount of demand from California, BPA's main out-of-region market. Drought can also affect BPA's revenues as we reported in our April 1994 report on BPA's financial condition.<sup>1</sup>

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<sup>1</sup>Bonneville Power Administration: Borrowing Practices and Financial Condition (GAO/AIMD-94-67BR, Apr. 19, 1994)

**Table I.1: Comparison of Out-of-Region Sales With Total BPA Sales, Fiscal Years 1985-94**

Fiscal year	Capacity sales (megawatts) <sup>a</sup>		Energy sales (megawatt-hours) <sup>b</sup>	
	Out-of-region sales	Percent of total sales	Out-of-region sales	Percent of total sales
1985	4,500	2.2	17,345,896	14.3
1986	3,500	2.7	14,786,840	17.4
1987	1,800	1.4	11,416,950	15.2
1988	3,238	2.3	2,720,433	3.7
1989	601	0.4	4,189,540	5.4
1990	473	0.3	8,576,923	10.1
1991	456	0.3	12,648,016	13.6
1992	1,551	1.2	2,076,377	2.7
1993	3,020	2.2	4,894,643	6.2
1994	4,597	3.4	2,687,869	3.6

<sup>a</sup>A megawatt is 1 million watts of electricity.

<sup>b</sup>A megawatt-hour is a measure of electrical energy equal to 1 megawatt of power supplied for 1 hour.

Source: BPA's annual reports.

Table I.2 on the next page shows the nine long-term contracts currently in effect for out-of-region sales or exchanges.

**Table I.2: List of Long-Term Contracts**

Contract parties	Length of contract	Type of contract	Terms and limits
City of Glendale, Calif. (effective 1/28/88)	Jan. 1988 to Apr. 2008	Power sales converting to capacity for energy exchange if surplus insufficient	Annual and seasonal surplus firm power <sup>a</sup> of up to 20 megawatts; no termination provisions
City of Pasadena, Calif. (effective 1/28/88)	Jan. 1988 to Apr. 2008	Power sales converting to capacity for energy exchange if surplus insufficient	Annual and seasonal surplus firm power of up to 12 megawatts; no termination provision
City of Burbank, Calif. (effective 1/31/88)	Jan. 1988 to Jan. 2008	Power sales converting to capacity for energy exchange if surplus insufficient	Annual and seasonal surplus firm power of up to 40 megawatts; no termination provisions
Southern California Edison (effective 10/18/88)	Oct. 1988 to May 2009	Power sales converting to seasonal capacity for energy exchange if surplus insufficient	Annual surplus firm power of up to 250 megawatts, subject to 5-year notice termination clause
Modesto Irrigation District, Cities of Santa Clara and Redding, Calif. (effective 10/31/89)	Oct. 1989 and for up to 20 years after first power delivery date	Power sales converting to energy exchange if surplus insufficient	Surplus firm power of up to 100 megawatts, subject to several termination clauses
City of Anaheim, Calif. (effective 6/15/90)	June 1990 to June 2010	Exchange contract	Firm peaking capacity <sup>b</sup> of 24 megawatts in summer and fall; no termination clause
City of Riverside, Calif. (effective 6/15/90)	Apr. 1990 to Apr. 2010	Exchange contract	Firm peaking capacity of 23 megawatts in spring and summer and 16 megawatts in winter; no termination clause
City of Riverside, Calif. (effective 8/12/94)	Starting in Apr. 1996 for 20 years	Exchange contract	Firm peaking capacity of up to 50 megawatts in spring and summer and of up to 15 megawatts in winter; no termination provisions
Southern California Edison (effective 10/26/94)	Oct. 1994 to Mar. 2005	Energy storage contract	Store between 78,000 and 109,000 megawatt-hours for BPA; BPA pays about 0.8 cents per kilowatt-hour for storage; subject to a termination clause

<sup>a</sup>Surplus firm power, according to BPA, is electricity that can be generated and guaranteed to be provided, but is excess to demand.

<sup>b</sup>Similar to surplus firm power, except peaking electricity is consumed during the utility's "peak" load period.

Source: GAO's analysis of BPA's long-term contracts.

STATUTORY PROVISIONS AFFECTING OUT-OF-REGION SALES

Provision	Statutory language	Citation
Sales limited to surplus energy or capacity	". . . The sale . . . of electric energy . . . and peaking capacity generated at . . . Federal hydroelectric plants in the Pacific Northwest for use outside the Pacific Northwest shall be limited to surplus energy and surplus peaking capacity. . . ."	16 U.S.C. §837a
Sixty-day notice of termination for energy sales	"Any contract for sale . . . of surplus energy for use outside the Pacific Northwest . . . shall provide that the Secretary [of Energy] . . . after giving the purchaser notice not in excess of sixty days, will not deliver electric energy under such contract whenever it can be reasonably foreseen that such delivery would impair [the] ability to meet, either at or after the time of such delivery, the energy requirements of any Pacific Northwest customer."	16 U.S.C. §837b(a)
Sixty-month notice of the sale of capacity	"Any contract for the disposition of surplus peaking capacity shall provide that . . . the Secretary [of Energy] may terminate the contract upon notice not in excess of sixty months. . . ."	16 U.S.C. §837b(c)
Resale limited	"Contracts for the sale of electric energy . . . shall contain a provision forbidding . . . [resale of] electric energy to any private utility or agency engaged in the sale of electric energy to the general public. . . ."	16 U.S.C. §832d(a)
Exchanges not limited if certain conditions met	"The Secretary [of Energy] may enter into contracts for the exchange with areas other than the Pacific Northwest of (1) surplus energy during the Pacific Northwest storage refill period, (2) any hydroelectric energy during the Pacific Northwest storage refill period which will be returned to the Pacific Northwest in equal amounts during the same Pacific Northwest refill period or the succeeding storage drawdown period, (3) any hydroelectric energy which will be returned in equal amounts during the same Pacific Northwest storage drawdown period, (4) hydroelectric peaking capacity, or (5) surplus peaking capacity for energy."	16 U.S.C. §837d
Public notice of sales	"At least 30 days prior to sales. . .the Secretary [of Energy] shall give notice to . . . [Pacific Northwest] customers that [surplus sales] contracts are pending. . . and . . . at any customer's request, make available for its inspection current drafts of the proposed contract."	16 U.S.C. §837a

LIST OF ORGANIZATIONS CONTACTED

Bonneville Power Administration  
California Energy Commission  
Los Angeles Department of Water and Power  
Natural Resources Defense Council  
Nevada Power  
Northwest Power Planning Council  
Pacific Gas and Electric  
Sacramento Municipal Utility District  
Salt River Project  
Southern California Edison  
Western Area Power Administration  
Western Systems Coordinating Council

COMMENTS FROM BONNEVILLE POWER ADMINISTRATION

Note: GAO's comments supplementing those in the report's text appear at the end of this appendix.



**Department of Energy**  
Bonneville Power Administration  
P.O. Box 3621  
Portland, Oregon 97208-3621

September 1, 1995

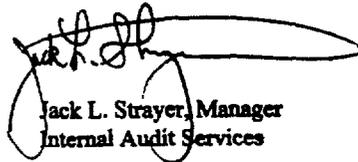
United States General Accounting Office  
Victor S. Rezendes  
Director, Energy and Science Issues  
441 G Street  
Washington, DC 20548

Dear Mr. Rezendes:

Enclosed you will find Bonneville Power Administrations response to your proposed report titled "Bonneville Power Administrations Power Sales and Exchanges".

If you have any questions, please contact Pete Lossner of my staff at (503) 230-3435.

Sincerely,



Jack L. Strayer, Manager  
Internal Audit Services

Enclosure

cc:  
Robin Reid, General Accounting Office



**Department of Energy**  
 Bonneville Power Administration  
 P.O. Box 3621  
 Portland, Oregon 97208-3621

September 1, 1995

Mr. Victor S. Rezendes  
 Director, Energy and Science Issues  
 United States General Accounting Office  
 Washington, DC 20548

Dear Mr. Rezendes:

Thank you for providing us a copy of the General Accounting Office's draft report, **Bonneville Power Administration's Power Sales and Exchanges, GAO/RCED-95-257R**. It is our understanding that the purpose of this study was to examine the Bonneville Power Administration's (Bonneville) ability to increase its sales or exchanges of power with entities outside of the Pacific Northwest, in response to planned or existing changes in power generation on the Federal Columbia River Power System. Bonneville is committed to the efficient marketing of all of its power resources. We recently adopted a new organizational structure that reinforces our extraregional marketing efforts. In this new organization we have a team of market analysts that directly support experienced power sales representatives on a real-time basis. These sales representatives have one-on-one relationships with most electric utilities and marketers within the Western Systems Coordinating Council. Bonneville expects to be considered one of the established, creative, low-cost providers of surplus power in the Western United States.

See comment 1.

Bonneville generally concurs with the facts and conclusions of the draft report, with the following exceptions or elaboration:

See comment 2.

1. Your comparison of prices for short-term sales in contrast with long-term sales concludes that short-term sales result in 18 percent to 63 percent lower prices. This comparison is a vestige of past pricing structures rather than recent market experience. Within the current market, there is little difference between long-term and short-term pricing. In fact, there is some speculation that electricity prices may continue on a downward trend, which may create the need for sellers to discount longer-term agreements in order to sign contracts. In addition, long-term prices have typically considered the value to the buyer of avoiding the capital cost of new generation plant. The current large magnitude of generation capacity surplus on the west coast (i.e., a "buyers' market") means that long-term fixed costs are not being included in prices at this point.

See comment 3.

2. A key factor that affects Bonneville's ability to successfully exchange additional spring and summer power in return for fall and winter power, is the recent change in natural gas seasonal prices. Over the past 3-4 years we have seen significantly higher fall/winter gas prices compared to spring/summer prices. The seasonal price differentials have made it less economical for extraregional thermal-based utilities to generate winter energy returns to Bonneville.

- See comment 4. 3. Exchange transactions require transmission in two directions. This two-way transmission requirement increases losses and costs, and is an important impediment to recognize for exchanges, particularly in the current market where margins on power transactions tend to be minimal (often less than the cost of transmission).
- See comment 5. 4. Although the report discusses the effect of the significant west coast surplus of capacity as a reflection of diminished demand for power, the secondary effect on marketing is to greatly reduce the value of capacity as a product in the near term. This occurs because most utilities know that they can go to the market during any on-peak period and expect to find market-priced energy available due to the market's surplus condition. This situation significantly impacts Bonneville's exchange potential because summer peaking capacity is one of the key products we exchange for winter energy.
- See comment 6. 5. Finally, because the Columbia River fish operation solutions are debated and decided in public venues, Bonneville's potential customers/competitors know if increased power, (hence lower prices) will be available in spring and early summer. This public process is appropriate, but it should be recognized that it does disadvantage Bonneville's marketing efforts. The same condition exists in any market where a manufacturer has a known surplus inventory condition. It is exacerbated in Bonneville's situation by the fact that electricity is difficult to store.

If you have any questions regarding these comments please contact me at 503-230-4116. Once again, thank you for the opportunity to review and comment on your draft report.

Sincerely,



Stephen R. Oliver  
Manager, Extraregional Segment

The following are GAO's comments on BPA's letter dated September 1, 1995.

GAO'S COMMENTS

1. BPA said that it has recently changed its organizational structure to reinforce its out-of-region marketing efforts. We have noted this change in the report.
2. BPA stated that recent market changes such as surplus capacity on the West Coast and diminished demand for power have reduced the price difference between short and long-term electricity sales. We have reflected these market constraints in the report.
3. BPA pointed out that recent changes in the difference in seasonal gas prices between spring/summer and fall/winter have reduced the economic benefit of seasonal power exchanges. We agree and have added this comment to the report.
4. BPA commented that transmission losses and costs can affect the economics of out-of-region sales and exchanges. We agree that transmission losses and costs can also be a factor in out-of-region sales and exchanges, and our report addresses this factor.
5. BPA commented that present market surpluses affect capacity sales out-of-region. We agree that present surpluses make it difficult for BPA to market for capacity outside the region. We believe that the report adequately describes the marketing problems resulting from surplus West Coast generation.
6. BPA contended that potential customers' knowledge of the availability of surplus power in the spring and early summer disadvantages BPA's marketing effort. We agree that this could be a constraint to BPA's marketing out-of-region; however, in our view, it is not a major constraint because of the present market conditions.

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