Northwest Power and Conservation Council

March 4, 2005

MEMORANDUM

TO: Council Members

FROM: Terry Morlan

SUBJECT: Staff Analysis on the Effects of the Administration's Budget Proposals

At the February Council meeting, the staff was instructed to do an analysis of the effects of the Administration's budget proposals affecting Bonneville Power Administration's pricing of its power and the way that third party debt is counted against its borrowing authority. The Council was provided a draft of the analysis on February 24. Council comments were incorporated and the revised four-page paper was provided to the Congressional delegation on Friday, February 25. The report was immediately used in a press release by the Congressional delegation. It has received quite a lot of press attention since.

The report and a one-page summary of the estimated effects are attached. I will be available at the Council meeting to summarize the analysis and answer questions.

Attachments

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q:\tm\ww\ieab\members\market price effects memo 0304005.doc

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Northwest Power and Conservation Council

Staff Discussion of the Effects of the Administration's Budget Proposals Requiring the Bonneville Power Administration To Sell at Market Rates

February 25, 2005

Introduction:

The Administration's budget proposal calls for Power Marketing Agencies (PMAs) to charge market rates for their power. Recognizing that this could cause a very large increase in prices, the proposal limits the annual increase in rates to a maximum of 20 percent. It isn't clear whether this annual-increase limit applies to the PMA rates or to consumer rates (there are different versions of this in the materials we have received).

In addition, the Administration's proposal calls for counting Bonneville's third party debt toward the cap on its borrowing authority. BPA's borrowing authority is raised by $200 million in the proposal, but the effects of the redefinition of debt on BPA's ability to finance system maintenance and expansion are unclear at this time. If Bonneville's ability to borrow is severely constrained, it will affect its ability to carry out much needed maintenance and expansion of the transmission system as well as its statutory responsibilities to mitigate for fish and wildlife impacts and acquire cost effective conservation and renewable resources.

The Council staff has been asked to do a quick assessment of the possible effects of this proposal on Bonneville and the region. The effects of the proposal to charge market rates will clearly raise the cost of electricity to the region's consumers, assuming today's expected market rates relative to Bonneville rates. These increases in electricity costs will affect all aspects of the regional economy. In the short run, consumers will experience the cost increase as if it were an additional tax, which reduces their disposable income. In turn this will reduce their expenditures and depress the local economy. Businesses will experience the price increase as well and it will reduce their net income or increase the price they must charge consumers of their products. Some industries will not be able to change the price of their products because of competitive pressures and the reduction in net income will drive them to reduce costs and in some cases simply go out of business.

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In this analysis, staff makes some simple but reasonably accurate assessments of the effects of these higher electricity costs on personal income, employment and tax revenues. The budget proposal is placed in context, by describing the already significant impacts the regional economy has suffered as a result of the 2001 western electricity crises and its aftermath. Some issues and uncertainties in implementing the market rate proposal are also addressed.

Effect of Selling Bonneville Electricity at Market Price:

What are Market Prices?

At the outset, the proposal is not clear about what it really means for Bonneville to sell power at market rates. The market encompasses a large variety of rates. One definition could be the spot market price of electricity. However, a relatively small share of electricity market transactions occur in the spot market. Many more are based on long-term contracts or ownership arrangements for a variety of electricity products. Market prices vary by season and time of day, can change with transmission constraints, and apply to a variety of ancillary services, such as shaping, regulation and various types of reserves. The region's hydroelectric system is particularly well adapted to providing ancillary services and peak energy.

For the calculations in this analysis, it is assumed that market price is represented at the margin by the spot price of electricity. But it is important to recognize that Bonneville selling its power at market prices could mean something quite different, with potentially important implications for the entire Western electricity market.

Spot market prices for electricity are volatile. Charging market rates based on spot market prices would mean unpredictable and changing rates for Bonneville's power. That in turn would mean unpredictable and changing rates for utilities that rely on Bonneville for their power supply. This would be intrinsically detrimental to customer interests and would certainly lead to decreased demand for Bonneville power if alternative arrangements with better stability were available in the market. Even with cost-based rates, the price of Bonneville power, as recently as the late 1990s, has been more expensive than the market. Accordingly there is an increased risk in this proposal that at times Bonneville would not be able to cover its full costs.

Effects on Electricity Costs and Rates

In 2004 Bonneville rates were $32.7 per megawatt-hour, compared with an average Mid-Columbia spot market price of $41.5. Forecasts of market rates in the Council's 5th Power Plan show market rates increasing to $51 by 2006, and then declining to $41 by 2010 as natural gas prices moderate. If market pricing were to go into effect in 2006, market rates would be about $20 per megawatt-hour (65 percent) higher than Bonneville rates. Bonneville's firm resources are about 8000 average megawatts, or 70,080,000 megawatt-hours. These megawatt-hours sold at a $20 per megawatt-hour higher price would increase electricity costs in the region by $1.4 billion. If the annual increase cap of 20 percent applies to the Bonneville wholesale rates, this increase might be spread over three years, but that would be small comfort to the families and businesses that have to pay the higher costs.

What effects might a 65 percent increase in Bonneville rates have on the region? Average retail electricity rates for the region's customer-owned utilities would have to increase by about 39

percent. For a typical household this would be an increase of $24 in the monthly electricity bill. The effect would be larger for customers of utilities that rely heavily on Bonneville power. These utilities tend to be smaller and more rural and are likely to have a greater share of electric heat. A household with an all-electric home would see larger increases - about $40 per month.

Also heavily affected would be industries for which electricity is an important component of cost. This is particularly true of aluminum plants, but also holds true for manufacturing of other primary metals, chemicals, pulp and paper, lumber products, some types of high technology plants, and processed food. Businesses that sell products trading in a nationwide or worldwide market will not be able to pass through higher costs to customers. Their profits will be directly affected.

The implementation of market rates for Bonneville power would also increase the electricity rates of residential and small farm customers of investor-owned utilities. These customers benefit from the residential exchange provisions of the Pacific Northwest Electric Power Planning and Conservation Act that were intended to eliminate inequities between the rates paid by customers of consumer-owned utilities and those paid by residential and small farm customers of investor-owned utilities. With Bonneville power priced at market rates, it is likely that the residential exchange would end because in all likelihood Bonneville rates would be higher than those of investor-owned utilities. This would increase the cost of serving investor-owned utility residential and small farm loads by about $300 million a year. (The value of exchange benefits in the future is still in dispute, but would likely be near $300 million given the market price and Bonneville price assumptions above.) An increase of $300 million revenue requirements would increase the monthly bill of a residential investor-owned utility customer by $10 a month.

While this would adversely impact the customers of investor-owned utilities, an additional effect would be to reverse the inequities that were addressed by the residential exchange provisions. Currently, investor-owned utilities and customer-owned utilities in the region both sell power at cost based rates. Implementation of the Administration's proposal would result in customers in customer-owned utility service areas paying market prices, while customers of investor-owned utilities will continue to pay cost based rates.

Effects of the Western Electricity Crisis

The Pacific Northwest economy is still reeling from the Western electricity crisis of 2001, the technology bust and economic recession. The increase in retail electricity rates in the region between 1999 and 2002 was 36 percent - the same order of magnitude as the expected impacts of the market-pricing proposal. The effects on the region were dramatic. Between 2000 and 2003, the region lost 72,000 jobs. Unemployment rates increased from 5 percent to more than 7 percent. In both 2002 and 2003, Oregon and Washington had the highest unemployment rates in the nation (except for Alaska, and in 2003 Oregon's unemployment was even higher than Alaska's). The region's ten aluminum smelters shut down. Only three aluminum plants are operating partially today. Price increases caused by the Administration's proposal would certainly push even those plants over the edge, and a regional industry that recently provided half of the U.S. aluminum production and one-tenth of the world production would be gone. Other energy-intensive plants in the region also closed, and many remain closed. Total electricity

consumption decreased by nearly 15 percent between 2000 and 2001, wiping out a decade of modest electricity growth, and demand has not recovered.

Customer-owned utilities were particularly hard hit by the energy crisis. In 2000 customer-owned utilities, which purchase much of their power from Bonneville, still had prices that were substantially lower than the rates of investor-owned utilities. By 2003 average customer-owned utility rates were equal to or greater than investor-owned utility rates.

Effects of Market-Priced Bonneville Power on the Regional Economy

As a result of the electricity crisis, the regional economy is already quite fragile. What further effects could be expected from the market-pricing proposal? A $1.7 billion average increase in electricity costs is estimated to result in a $1.3 billion decrease in personal income and a loss of 13,000 more jobs in the region.[1] This estimate does not include any further impacts on the aluminum industry. There would be additional effects outside of the region because consumers and businesses buy from and sell to businesses outside of the region.

Decreases in income will affect tax revenues both to federal and state governments. A $1.3 billion decrease in personal income could reduce federal income taxes by $217 million. Pacific Northwest states rely on personal taxes, such as income taxes, sales taxes, and gross receipts taxes, for about 75 percent of their revenues. A loss of $1.3 billion in personal income would reduce such state tax receipts in the region by $59 million.[2] Additional effects on tax revenues would arise from changes in corporate taxes to the extent that corporate profits are reduced by market pricing of Bonneville power.

Effects on the Electricity Market

The 2001 electricity crisis illustrated clearly that wholesale electricity markets in the West are not yet reliably competitive during periods of tight supplies. Currently Bonneville sells only surplus power into the market, but concerns already exist among market participants about the degree of influence that Bonneville potentially can exert over market prices. For this reason, the Comprehensive Review of Northwest Energy System [3] and the Council's power plan[4] both called for limiting the role of Bonneville in electricity markets. To the extent that charging market prices reduces Bonneville's sales to customer-owned utilities, Bonneville could end up selling substantially more power in deregulated wholesale markets. Private participants in the market would see increased competition from a huge supplier that is an agency of the federal government and has enough market power much of the time to influence prices to its own advantage. This would likely be a serious setback to the viability and competitiveness of the very market that the budget proposal is relying on to price Bonneville's power.

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[1] $1.7 billion is $1.4 billion in increased Bonneville revenues plus $300 million in increased cost to exchange customers of investor-owned utilities. Estimates of income and employment impacts are based on an extrapolation of effects of power system cost increases that were estimated for the Corps of Engineers' Lower Snake River Juvenile Salmon Migration Feasibility Study.

[2] Tax revenue effects are based on the ratio of tax revenues to personal income levels.

[3] Final Report of the Comprehensive Review of the Northwest Energy System. "Toward a Competitive Electric Power Industry for the 21st Century". December 12, 1996.

[4] Northwest Power and Conservation Council. "The 5th Power Plan: A Guide for the Northwest's Energy Future. 2005.

Summary of Effects of Bonneville Charging Market Rates

Change in Regional Electricity Costs

- $ 1.4 billion increase in cost of power from Bonneville
- $ 300 million increase in cost of power to residential and small farm IOU customers
- $ 1.7 billion total increase (spread over 3 years)

Effect on Utility Rates and Consumer's Monthly Bills

Utility / Customer Type	Percent Increase in Rates	Increase in Monthly Residential Bill
Consumer-Owned Average	39 %	$ 24
IOU Exchange Customer	13 %	$ 10

Effect on the Regional Economy

- $ 1.3 billion dollar decrease in personal income
- 13,000 decrease in regional jobs
- Additional effects on aluminum and other energy intensive industry
- Decreased income and jobs in other regions

Effect on Tax Revenues

- $ 217 million dollar decrease in federal personal income tax revenues
- Additional loss in federal revenues corporate profits taxes

- $ 59 million dollar decrease in state personal tax revenues
- Additional loss in state revenues from corporate taxes

Methods

Rate impacts:

Average COU - Increase in BPA revenue collection equals the difference between BPA and market rate times the megawatt-hours BPA sells.

= $20 * 8000 MWa *8760 hours = $1,401,600

Average COU rate increase equals increase in revenue collected divided by the megawatt-hour sales of COUs.

= $1,401,600 / 63,419,310 MWhr (COU 2003) = $22.10 per MWh

Percent Rate increase = (22.10 + 56.86)/56.86 = 1.3887 or 38.9 %

COU Residential Monthly Bill increase equals the rate increase ($/MWhr) times the annual electricity consumption of a household (MWhr) divided by 12 months.

= $22.10 * 13 / 12 = $24

IOU Exchange rate increase equals $ 300 million divided by residential consumption

= $ 300,000,000 / 34,161,572 MWhr = $8.78 per Mwhr)

- Percent rate increase = ($8.78 + 65.50) / 65.50 = 13.4%

IOU Monthly bill increase equals rate increase time annual consumption (MWhr) divided by 12 months

= $8.78 * 13 / 12 = $9.50

Effects on Regional Economy:

Estimates are based on an extension of the regional impact analysis done for the Lower Snake River Juvenile Migration Feasibility Report/EIS. In that analysis, a net increase in power costs of $308.38 million a year was estimated, using an input/output analysis to cause a decrease in regional personal income of $232.07 and a decrease in jobs of 2,383. I used the ratio of personal income and job change to energy expenditures change to estimate the effects of the $1.7 billion increase in power costs.

Personal income effects: $1.7 billion * (-232.07 / 308.38) = - $1.279 billion personal income

Job effects: $1,700 million * (-2,383 / 308.38) = - 13,137 jobs

Effects on Tax Revenues:

Federal Personal Taxes - including personal income tax and employment tax

I used the ratio of total income and employment tax revenues for WA, OR and ID to the total personal income for the 3 states in 2003, times the change in personal income estimated due to charging market prices.

= - $ 1,279 million * (58,061,063 / 341,448,219) = - $ 217 million

State Personal Taxes - including income tax, sales tax, gross receipts tax

I used similar methods as for federal personal taxes, above.

= - $ 1,279 million * (15,812,770 / 341,448,219) = - $ 59 million

Staff Analysis of Market Pricing BPA Electricity

Council Presentation

March 17, 2005

Northwest Power and Conservation Council

Outline

- The calculations
- Some refinements to the calculations
- Some other considerations

Assumptions

- Bonneville sells 8000 average megawatts of energy each year
- Market prices expected to be $51 in 2006
- Bonneville rates expected to be $31 in 2006
- Average household electricity consumption is 13,000 Kilowatt-hours per year
- IOU exchange benefits remain $300 million per year

Effect on Revenue Requirements

Bonneville

+ $ 1,401 million

$20 market less BPA rate

times 8,000 MWa

times 8,760 hour/year

Exchange

+ $ 300 million

Value of exchange benefits

Total + $ 1,700 million

Effect on Consumer Rates

Customer-owned utilities

+ $ 22.1 per MWhr

(+ 39 %)

$ 1,401 million revenue increase divided by 63,419,310 MWhr sales of utilities

Exchange

+ $ 8.78 million

(+ 13 %)

$ 300 million revenue increase divided by 34,161,572 MWhr of IOU residential sales

Context

- Between 1999 and 2002 regions retail rates increased 36 percent
- Between 2000 and 2003 region lost 72,000 jobs
- In both 2002 and 2003 regional had highest unemployment rates in nation (except Alaska)
- Aluminum and some other energy intensive plants closed

Effect on Consumers' Monthly Power Bills

Customer-owned utilities

+ $ 24 per Month

$ 22.10 per MWhr rate increase times 13 MWhr annual household consumption divided by 12 months

Exchange

+ $ 9.50 per Month

$ 8.78 per MWhr rate increase times 13 MWhr annual household consumption divided by 12 months

Effect on Bonneville Rates: Phased in at 20% increase

	Percent Increase	Rate ($/MWhr)	Cost increase (Million $/year)
1st Year	20	$ 37.2	$ 435
2nd Year	20	$ 44.6	$ 956
3rd Year	13	$ 51	$ 1,401
Total 3 year cost increase			$ 2,792

Effects on Regional Economy

- Loss of $ 1,300 million dollars personal income
- Loss of 13,137 jobs
- Calculations based on Corps Lower Snake River Juvenile Salmon Migration Fesibility Study (Reviewed by IEAB)
  - Used ratios of personal income and employment change to change in electricity costs (may be conservative)

Tax Revenue Effects

- Loss of $217 million in federal personal tax revenues
- Loss of $ 59 million in state personal tax revenues
- Calculations based on ratios of tax revenues to personal income for both federal and state personal taxes

Other Considerations

- What are market prices?
- Bonneville role in the market
- All regulated utilities sell at cost-based rates
  - Mix of resources and cost
  - California again?
- Expose customers to market volatility?
- Effects on bills will vary with share of electricity from BPA and level of consumption