DOE/EIS-0123F

Final Environmental Impact Statement

BONNEVILLE POWER
ADMINISTRATION

DIRECT SERVICE INDUSTRY OPTIONS

U.S. Department of Energy

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COVER SHEET

Responsible Agency: U.S. Department of Energy, Bonneville Power Administration (BPA).

Title of Document: Direct Service Industry Options Final Environmental Impact Statement (EIS).

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Abstract: BPA proposes to implement one or more options to reduce load fluctuations and revenue uncertainty resulting from its electrical service to 10 aluminum smelters and its other direct service industrial customers. BPA believes these options will give BPA greater ability to plan for power needs and help to maintain its relatively strong financial position during the current period of power surplus. They also are expected to enhance BPA's ability to repay the U.S. Treasury. In turn, BPA rates to other customers would stabilize.

The final EIS evaluates the effects of four options and their alternatives: No Action; the Variable Rate; the aluminum smelter Conservation/Modernization Program; and the IP-PF Rate Link. The EIS also evaluates the cumulative effect of implementing more than one option. The major effects examined include aluminum smelter operations, resource operations and development, and socioeconomic impacts.

Potential environmental impacts (generally benefits) and potentially major, localized adverse socioeconomic impacts are likely under the no action alternative, a result of closures of or reduced operations at certain Northwest aluminum smelters. The options have a varying effect on the operation and continued viability of Northwest aluminum smelters with consequent environmental and socioeconomic impacts.

No decision on any of the four options will be made until 18 days after the Environmental Protection Agency has published the Notice of Filing of this final EIS in the FEDERAL REGISTER.

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SUMMARY

EXECUTIVE SUMMARY

A. Introduction

The purpose of this environmental impact statement (EIS) is to identify and evaluate the potential environmental effects of implementing one or more of the options described herein for stabilizing the load on the Bonneville Power Administration (BPA) of BPA's direct-service industrial customers (DSIs).

The EIS and its Appendices describe in detail the physical and socioeconomic environment of each of the DSI aluminum smelters, including each plant's environmental impact at various levels of production. (Appendices A, B, and H have not been reprinted with the final EIS since the information presented therein did not change.) The EIS then evaluates the potential environmental effects that could result from implementing each one of the options and certain combinations of the options. The analyses in the EIS are performed primarily by using BPA's Decision Analysis Model (model). The conclusions in the EIS are based on the model results and interpretations of those results using studies performed in the Variable rate design process, knowledge of the DSIs themselves gained through BPA's dealings with them over the years, the DSI Options Study, external consultants, and other sources.

B. Purpose and Need

The purpose of implementing one or more of the DSI options is to maintain and stabilize the DSIs' power load on BPA. BPA desires to stabilize the DSI load in order to facilitate resource operational planning and to protect BPA's revenues. Achieving these objectives would enhance BPA's ability to make the necessary payments to the U.S. Treasury and would stabilize rates to BPA's customers.

The need for measures designed to stabilize the DSI load arises from dramatic fluctuations in the loads of the DSIs, particularly the loads of the aluminum smelters, in recent years. Load swings have resulted from the unstable and declining world price of aluminum and the production costs of Northwest smelters relative to others. BPA's rates to the DSIs for electric power have risen dramatically during the last 6 years and are now higher than for many aluminum smelters worldwide. Electricity is necessary for aluminum smelting and represents a significant portion of the smelters' production (variable) costs.

Aluminum smelter loads represent about 90 percent of DSI loads; DSI loads represent over 25 percent of BPA power sales. The stability of DSI loads is thus important to BPA for resource planning, which determines the levels of future costs and rates. The level and stability of DSI loads also influence the health of the economy of the Pacific Northwest as a whole. DSI loads are desirable loads from a utility perspective because of their high load factors and interruptibility which provide system operating reserves and planning reserves. Reduction in this load could affect the operations of BPA's generation resources.

BPA is required to repay, using revenue from power (and transmission service) sales, the U.S. Treasury for the Federal investment in the Pacific Northwest's power generation and transmission systems. Unstable revenues can jeopardize these payments. Stable revenue levels are also necessary to maintain the stability of BPA's rates to all its customers.

C. Alternatives and Their Impacts

Potential environmental impacts (generally benefits), and major adverse socioeconomic impacts are likely under the no action alternative, a result of projected closures of certain Northwest aluminum smelters. The options have a varying effect on the likelihood of aluminum smelter closures with consequent effect on the expected impacts.

1. No Action Alternative

The no action alternative is not undertaking any of the Variable rate or Conservation/Modernization (Con/Mod) alternatives or implementing the IP-PF rate link (a relationship between the rate charged the DSIs and the rate paid by BPA's preference customers). It assumes current DSI rate design, including the availability of short-term Incentive rate offers, and asserts nothing about DSI power sales contracts renewals. Other variables not under BPA's control could change the future, however. Future aluminum prices, BPA's future load growth, the costs of the resources needed to meet this load growth, and streamflow conditions are such variables.

The no action alternative was modeled as the base case for the EIS. The other options were compared with the base case to determine the potential environmental impacts of implementing the alternatives.

The identified environmental impacts of the no action alternative itself result principally from the probable closure of one or more aluminum smelters. The physical environmental effects of a plant closure would generally be positive. All the smelters operate within approved pollution limits, however, and are not seen as major contributors to environmental problems. The socioeconomic effects are likely to be negative. Socioeconomic impacts are substantial if viewed in the context of some of the smaller smelter communities, but are less significant in the context of the larger communities or the region as a whole. Several of the plants have already curtailed production or closed, so their environments have already felt much of the effects. BPA's generation resource operation could change if the level of loads changed significantly. Most likely, much of the firm power freed as a result of smelter closures could be exported under firm contracts. Nonfirm sales may decrease, and spill increase, with both positive and negative potential effects on fish through effects on migration and level of nitrogen supersaturation. The overall effect on fish would be expected to be positive though. As BPA's loads grow and BPA's power surplus diminishes, closure of aluminum

plants could avert the construction of thermal generation resources with their attendant environmental impacts.

2. The Variable Rate

The proposed Variable rate would establish a long-term tie between input price (electricity) and output price (aluminum) for the aluminum smelters in order to encourage higher aluminum production levels than would be economic under a fixed power rate. The proposed Variable rate is designed to discourage plant closures in the short run, 1 to 3 years.

The proposal and two alternative rate designs were analyzed. The two alternatives were designed largely to bracket an expected range of potential environmental impacts. The three rate designs are BPA's actual proposed Variable rate, an alternative designed primarily to protect BPA's revenue, and an alternative designed primarily to maintain DSI load.

The analysis concluded that the revenue protection alternative would most likely result in reduced Northwest aluminum smelter operation compared to the no action alternative. The proposal and load maintenance alternative would maintain more smelter load and production than the no action alternative. Environmental conditions would generally improve with smelter closures or reduced operation, but not substantially since the smelters are regulated to limit their impacts. Minor environmental improvements would be traded for a degree of localized adverse socioeconomic impact.

3. Aluminum Smelter Conservation/Modernization Program

Conservation/Modernization (Con/Mod) would consist of onsite modifications and retrofits to improve the production efficiency of aluminum smelters. BPA would pay incentives based on the energy saved to encourage participation. Incentives offered would be limited to levels which would not adversely affect other regional consumers.

Con/Mod incentive levels of 3, 5 and 10 mills/kWh were analyzed. Low levels of incentive produce limited efficiency improvements at the low cost smelters. A 10 mills/kWh incentive appears to be sufficient to induce some higher cost smelters to modernize, potentially averting plant closures, and maintaining production and load. Loads would be higher on average because smelter economics would be improved and they would tend to produce more aluminum over time. Peak loads of the smelters would be reduced though, and the contract limitations on load growth to be imposed under the program on participating smelters could preclude need for new resources sometime in the future. Impacts on rates are expected to be negligible with all three incentive levels, although somewhat greater with the 10 mills incentive than with the lower incentive levels.

4. IP-PF Rate Link

A long-term link between BPA's firm power rate to the DSIs, the Industrial Firm Power (IP) rate, and BPA's rate to its preference customers, currently the Priority Firm Power (PF) rate, was proposed by the DSIs in BPA's 1985 general rate adjustment proceeding. The IP-PF rate link would apply to all DSIs, not just the aluminum smelters.

Alternative forms of an IP-PF rate link considered for the EIS include limiting the duration of the link to 5 years or extending the link for the duration of the DSI power sales contracts, i.e., through June 30, 2001. The EIS also examines the impact if the link were implemented as a DSI power sales contract modification or as a policy.

The effects of an IP-PF rate link are virtually impossible to quantify by BPA, since they would result from the perception of the DSIs about the degree of additional certainty provided by implementing a long-term rate link. The EIS thus discusses the potential impacts of the link qualitatively rather than quantitatively. The link could be expected to be generally supportive of aluminum smelter loads, and may provide some reinforcement of positive investment or operating decisions by smelter managers.

5. Variable Rate - Con/Mod Combinations

Implementing combinations of the IP-PF rate link, the Variable rate, and the Con/Mod options is also discussed in the EIS. Combinations including the revenue protection Variable rate alternative have essentially the same impacts as the revenue protection alternative alone; that is, aluminum smelter loads would be reduced. Other combinations of Variable rate and Con/Mod alternatives result in a reinforcement of the impacts of the part which alone has the greatest effect: there is an effect greater than that of any part of the combination, but the effects are not additive. Including the IP-PF rate link with these combinations may slightly enhance the effects.

D. Areas of Controversy

Throughout the DSI Options Study and the scoping of the EIS, the principal physical environmental concerns have focused on the changes in operations of the aluminum plants, potential effects on the need for additional energy resources to serve electric power needs, and potential effects of a changed DSI load on the operation of the Federal Columbia River Power System. The types of environmental changes that may result from implementation of the proposed actions are fairly well understood and have not created substantial controversy. However, the socioeconomic effects of the proposals are a significant concern that has been raised by aluminum company employees, unions, representatives of communities where smelters are located, and others throughout the region concerned with electricity rates.

E. Issues to be Resolved

There are three basic issues to be resolved related to the DSI options described in this EIS.

First, which, if any, of the DSI options should be implemented? Second, if implemented, in what form (design) and for what term would the options be most economic for the DSIs and the rest of BPA's service region? And third, would the implementation of any (or any combination) of the alternatives significantly affect the environment?

The issues related to rate design and incentive levels are myriad and complex. The Variable rate proposal has been released and, as required by section 7(i) of the Pacific Northwest Power Act, a rate hearing process is nearing completion. The Con/Mod program, released as a draft proposal, is being refined in a public process. The IP-PF rate link is still under consideration. Prior to implementation, a proposed link will be evaluated in a section 7(i) process.

This final EIS presents BPA's analyses of the potential environmental effects. Information gathered through the 7(i) processes, public meetings, and the National Environmental Policy Act process will contribute to resolution of the issues.

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Appendices

(Appendices A, B, and H have not been reprinted for the final EIS. Appendix A is a report prepared for BPA by Battelle Pacific Northwest Laboratories entitled An Environmental and Socioeconomic Analysis of Northwestern Aluminum Smelters. Appendix B consists of a description of the Decision Analysis Model, and Appendix H is BPA's 1986 Variable Rate Proposal: Variable Industrial Power Rate Design Study, December 1985. Refer to the draft EIS Appendices volume for these, or if you do not have this volume, contact the person identified on the Cover Sheet to secure copies.)

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