PURPOSE OF AND NEED FOR ACTION

Chapter 1

PURPOSE OF AND NEED FOR ACTION

In recent years, the amount of direct service industrial customer (DSI) power purchases from the Bonneville Power Administration (BPA), particularly those of the aluminum plants, has fluctuated dramatically from year to year. The changing power demand has resulted in uncertainty about BPA's future resource planning, financial strength, and rate stability. Changes in the operation of Northwest aluminum smelters also have contributed to weakness and instability in the region's economy as a whole. Short-term attempts to alleviate these problems have been only partially successful.

BPA desires to stabilize the DSI load in order to facilitate resource operational planning and to stabilize BPA's revenues. Stable revenues would enhance BPA's ability to make the necessary payments to the U.S. Treasury and would stabilize rates to BPA's customers.

1.1 PROBLEMS BPA IS ATTEMPTING TO SOLVE

1.1.1 Aluminum DSI Load

Once a steady, major consumer of BPA power, the Northwest aluminum industry has become a highly unstable power purchaser in the last 5 years. During that time, the 10 aluminum smelting plants have operated at levels ranging from 58 to almost 100 percent of production capacity. Production level changes have followed variations in the price of aluminum ingot.

Currently, almost no Northwest smelters produce at full capacity. Many of the smelters operate as "swing" plants--they reduce production when aluminum prices fall. One plant, the Martin Marietta plant at The Dalles, Oregon, has closed. Others are at risk of closure.

Uncertainty about the viability of Northwest aluminum smelters leads to questions about the future size of the DSIs' electric power load.

1.1.2 Resource Planning and Operation

Load uncertainty hampers BPA's ability to plan for resources to meet future power demand. Errors in load projections could result in acquiring unnecessary costly resources. Or acquisition could be postponed only to find that loads exceed the supply of power necessitating expensive short-term power purchases.

Due to the size and the uniform daily and monthly consumption of energy by DSI customers, DSI load changes could affect BPA's resource operation.

1.1.3 Rates

Power rates to all of BPA's customers have increased dramatically during the last 5 years. For the DSIs, average rates increased from 2.9 mills per kilowatthour (mills/kWh) in 1979 to 22.8 mills in 1985. Power costs now account for about one-third of the total production costs of aluminum in the Northwest. Even small changes in power costs can have significant effects on the competitiveness of the Northwest plants in the world aluminum market. Because aluminum operations are sensitive to the price of electricity, BPA has offered temporary rate discounts when aluminum prices were low. These discounts, or "Incentive rates," resulted in higher DSI operating levels and increased BPA revenues even after consideration of the possibility of marketing this increment of power elsewhere, such as to California utilities.

In 1983 BPA sold low cost, nonfirm energy to the DSIs for increases in production between March 21 and October 31. Twice (from September 1984 through February 1985, and between March and June 1985), BPA provided short-term Incentive rates to the DSIs because aluminum markets were severely depressed and the discounts increased BPA's total revenues. Discounts were again offered September 1, 1985 to last through June 30, 1986. Incentive rates have enabled Northwest smelters to compete and maintain higher production levels. Consequently, power purchases have been higher than they otherwise might have been. The Incentive rates are made available through special provisions in the BPA Industrial Firm Power (IP) rate schedule.

While Incentive rates have been mutually beneficial to BPA and the Northwest aluminum smelters, they have been cumbersome to implement procedurally, and do not provide long-term assurance of rates that the aluminum companies would need to influence long-term business decisions.

1.1.4 Cost Recovery

BPA is required to make scheduled payments to the U.S. Treasury to repay the Federal investment in hydroelectric and transmission facilities in the Northwest. On September 30, 1984, BPA became current on all scheduled interest payments owed the U.S. Treasury. Continued revenue instability resulting from severe DSI load fluctuations would create uncertainty about BPA's ability to meet its scheduled repayment obligations in the future.

1.1.5 Rate Setting

Section 7(c) of the Pacific Northwest Electric Power Planning and Conservation Act (Pacific Northwest Power Act) prescribes a post-July 1, 1985, rate relationship between the IP rate, which is the rate charged the DSIs, and BPA's applicable wholesale rate to its public agency and cooperative customers. In general terms, the post-1985 DSI rate is based upon the applicable wholesale rates to public utilities, plus a margin based upon the typical margins (above power and transmission costs) that public utilities charge their industrial customers, less a credit for BPA system reserves provided by the DSIs through certain interruptibility provisions in the DSI

contracts. Fixing the relationship between the DSI rate and the rate paid by its public agency and cooperative customers on a long-term basis would reduce the rate uncertainty facing the DSIs. It could also reduce contention of some issues related to the DSI rate in future rate hearings conducted under section 7(i) of the Pacific Northwest Power Act.

1.2 THE DIRECT SERVICE INDUSTRIES

The DSIs are 15 corporations that purchase electric power directly from BPA for use in 20 plants in the Pacific Northwest. Table 1 provides the names, locations, products, and other information for all the DSIs.

Nearly all the DSI plants use electrolytic or electrothermal processes. Therefore, substituting other forms of energy for a large portion of their electricity usage is either impossible or impractical.

All the DSIs have contracts with BPA for purchase of power. The contracts were offered in accordance with the Pacific Northwest Power Act; they expire on June 30, 2001. The power sold under terms of these contracts is called Industrial Firm Power.

Industrial Firm Power is subject to certain restriction rights which do not apply to utility customers. Much of the DSI power may be interrupted to ensure a continuous flow of power to other BPA firm power customers whenever conditions require it. BPA's right to restrict is based on "quartiles." Quartiles divide the DSIs' load into 25 percent blocks.

BPA does not plan or acquire resources to serve the first quartile of the DSI load. Rather, BPA uses the flexibility of the hydrosystem to meet this portion of the DSI load. The first quartile is served with a combination of nonfirm energy when available, and "borrowing" energy (advance energy) from the future. Service to the first quartile is not guaranteed. The DSIs' first quartile is the first power load served when BPA has nonfirm energy available. Sometimes, when power supply conditions are not good enough for BPA to serve the first quartile with nonfirm energy, one or more DSIs will ask for "advance" power from BPA and take the chance that streamflow conditions will improve later in the year. Currently, the U.S. Corps of Engineers is reviewing their policy of provisional drafting of reservoirs for serving advance energy. Possible revisions to this policy may have an impact on the amount of service provided the first quartile with nonfirm and advance energy. If advance energy is taken, and is later needed to serve other firm loads, the DSIs have to repay it, either through purchasing energy from another source, or by curtailing their own firm loads. Furthermore, the first quartile may be restricted at any time and for any reason to protect regional firm load.

Table 1

BPA'S DIRECT SERVICE INDUSTRIES

Company	Plants	Product	Contract Demand (MW)	Actual Loads Jan 1985 Avg. MW
Alcoa	Vancouver, WA Wenatchee, WA Addy, WA 1/	Primary Aluminum Primary Aluminum Magnesium & Silicon	600.0	470.5
Columbia Falls Aluminum Co.	Columbia Falls, MT	Primary Aluminum	427.5	333.6
Commonwealth	Goldendale, WA	Primary Aluminum	296.1	288.7
Intalco	Ferndale, WA	Primary Aluminum	456.8	443.2
Kaiser	Mead, WA Tacoma, WA Trentwood, WA	Primary Aluminum Primary Aluminum Aluminum Rolling	737.5	421.0
Martin Marietta	The Dalles, OR	Primary Aluminum	159.5	3.0 2/
Reynolds	Longview, WA Troutdale, OR	Primary Aluminum Primary Aluminum	700.7	577.3
Carborundum	Vancouver, WA	Silicon Carbide	34.0	0.2 3/
Georgia Pacific	Bellingham, WA	Chlorine & Caustic Soda	34.4	26.0
Hanna 4/	Riddle, OR	Ferronickel	120.0	72.4
Oremet	Albany, OR	Titanium	18.0	6.6
Pacific Carbide	Portland, OR	Calcium Carbide	9.3	9.3
Pennwalt	Portland, OR	Chlorine & Caustic Soda	84.0	49.7
Port Townsend	Port Townsend, WA	Pulp & Paper	16.6	14.5
Gilmore Steel	Portland, OR	Ferroalloys	30.0	0.2 5/

1/ Northwest Alloys, Inc., a subsidiary of Alcoa which receives BPA power through Alcoa's Power Sales Contract.

2/ Plant was closed in December 1984 and is currently for sale.

3/ Plant is closed.

4/ Plant receives power at the Special Industrial Power Rate, a rate lower than the rate for the other DSIs, which was established pursuant to section 7(d)(2) of the Pacific Northwest Power Act.

5/ Plant is closed. Gilmore Steel bought the former Elkem ferroalloy plant in 1983, but has not reopened the plant. Gilmore originally intended to use the power at its steel plant, but instead was able to negotiate a more favorable power contract with Portland General Electric.

The second quartile of DSI load provides both planning and emergency reserves. This portion of power can be cut off if the region is short of power because a new resource does not come on line when scheduled, or if a power project is out-of-service for emergency reasons.

BPA may interrupt all DSI loads for up to 15 minutes to alleviate a short-term power outage. To serve other customers, BPA also may restrict up to 50 percent for 2 hours each day during peak hours.

In most cases, advance notice of power curtailments can be given by BPA. If interruptions last no more than 2 hours, and if the entire power supply is not cut off, the aluminum plants switch available power back and forth between potlines to keep the aluminum molten. However, some interruptions can be costly. The pots cool and "freeze" unless the molten metal is removed in time. A long interruption may require one or more potlines to shut down, which damages the pots. To restart an idle potline can take up to 3 months and cost more than $1 million.

Expensive interruptions occur infrequently however. Aluminum producers signed interruptible power contracts because the lower rates they receive in exchange for the risk offset the costs of interruptions.

Over the past 8 years, BPA has had to make long-term interruptions to the DSI first quartile four times (for a total of about 34 months), in order to continue full service to other customers. The DSIs sometimes purchase power from other sources in order to replace the BPA power interruptions.

Short-term interruptions also occur on an irregular basis. For example, when a series of events triggered a Northwest power grid outage on October 2, 1984, six aluminum plants were the first loads cut, helping to minimize the effect on utilities and their customers.

BPA's DSI customers have large, steady electrical loads. While large variations in the total DSI load have occurred with changes in economic conditions, mainly aluminum price, DSI loads vary little from hour-to-hour or day-to-day. This means their monthly load factors are high, differing from the loads of most utilities, which vary from night to day and from winter to summer. The DSIs have a load factor of 98 percent compared to a typical utility load factor of 55 percent.

Much of the region's generating capacity consists of large, multipurpose hydroelectric projects. Operating constraints require minimum flows to be maintained at these projects for fish migration, navigation, recreation, and other purposes. The DSI baseload often allows these minimum flows to be provided with water used for generation rather than being spilled, thereby producing revenue and energy from water which would otherwise have no direct economic value. The DSI baseload also enhances BPA's ability to accept return of peaking energy from other utilities at off-peak times, since BPA can use that returning energy to serve the DSI load and cut back hydro generation, saving water to meet other loads later.

1.3 OVERVIEW OF THE DSI OPTIONS STUDY

Recognizing a need for a more thorough analysis of these problems, in late 1984 BPA began a study of mid- to long-term policy, service, and rate options concerning its DSI customers.

The primary goal of the DSI Options Study was to screen options concepts to see which, if any, should be pursued. BPA focused on its aluminum smelting customers because they have by far the largest impact on BPA's DSI loads and revenues. DSI customers account for between one-quarter and one-third of all BPA electric power sales. About 90 percent of these sales are to 10 aluminum plants.

Five alternatives or options were analyzed in the DSI Options Study. The options were defined from available information and in consultation with interested parties. Several variations of each of the options were tested, as were some options built by combining features from the five options.

The following is a brief discussion of the options and explanation of why some were eliminated from further analysis.

1.3.1 No Action

This option is simply taking no action. Contractual relationships with the DSIs, the rate setting process, and the general form (but not necessarily the level) of rates would remain as they are. To study this option required dealing with future uncertainties, sometimes making certain assumptions about the future, and testing various scenarios.

The no action alternative was found in the DSI Options Study to have fewer benefits than some of the other options.

1.3.2 Increased Interruptibility

The increased interruptibility option analyzed in the study would increase the amount of power interruptible on very short notice from the current level of 25 percent of load to some higher level. In return for agreeing to a greater amount of service interruption, the participating DSI would be eligible for a discount on all of its power purchases from BPA.

The increased interruptibility option was dismissed from further consideration by the study for the time being. The region's current firm power surplus delays any potential benefits to BPA of increased interruptibility far into the future.

1.3.3 Conservation/Modernization

Under this option, BPA would offer incentives for DSI plants to initiate conservation/modernization actions. The greater the incentive, the greater participation expected from DSIs. It is estimated that roughly 300 MW of cost-effective conservation is possible by the aluminum smelters.

Modernization would increase the efficiency of power and labor use, lowering production costs. Lower production costs would enable the smelter to compete in the world aluminum market more effectively, thus maintaining and stabilizing the power load placed on BPA. The DSI Options Study concluded that establishment of a Con/Mod program should be explored further.

1.3.4 Variable Rate

As noted earlier, BPA has provided short-term rate discounts, called Incentive rates, to the DSIs when aluminum markets were severely depressed. The Variable rate option would have much the same purpose. It would provide a predetermined relationship between the price of BPA power and the aluminum ingot price and a mechanism to raise BPA's power price to the smelters when aluminum prices were high, as well as providing a discount when aluminum prices were low. The increase in BPA's revenues during prosperous aluminum markets is intended to offset the decrease in BPA's revenues when aluminum markets are depressed.

Through most of the DSI Options Study, a Variable rate design like that shown as Concept 1 on Figure 1 was considered. However, in this design, a participating smelter would pay a greater amount to BPA if aluminum prices were higher than projected on average; conversely, BPA could experience a revenue shortfall if aluminum prices were lower than expected. A rate design like Concept 2 on Figure 1, which evolved near the end of the Options Study, somewhat reduced these risks.

Constraints could also be imposed on the relationship between power rates and aluminum price. For example, a lower limit to the power rate could be established to recognize the fact that BPA power could have higher value in alternative markets (e.g., sales to California). The DSI Options Study concluded that further work on a "plateau-type" (i.e., a design like Concept 2 on Figure 1) Variable rate was warranted.

1.3.5 Service from Other Power Suppliers

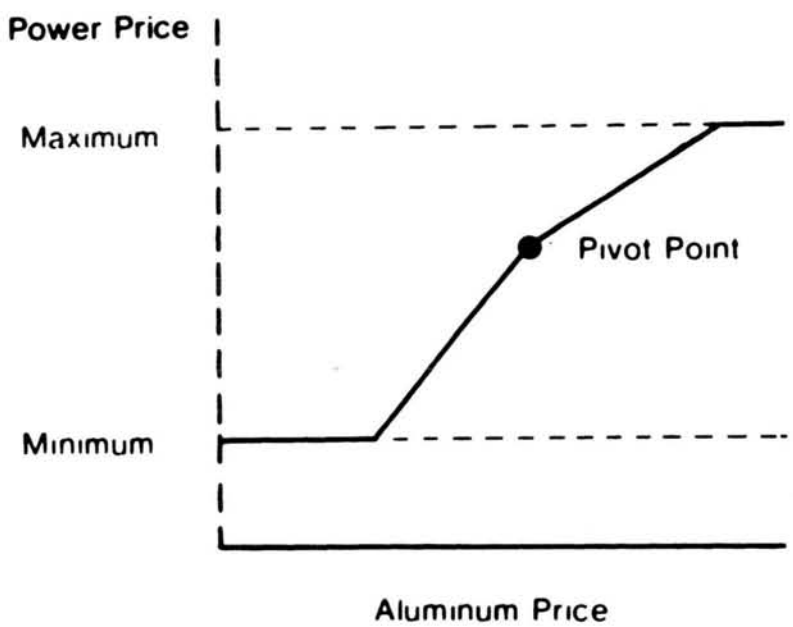
Currently, the Power Sales Contracts between BPA and the DSIs do not allow the DSIs to seek alternative power supplies without BPA's approval. Under the service from other power suppliers option, BPA would waive or agree to modify the current contractual provision to allow the DSIs to be served by other utilities.

This option was dismissed from further consideration because other utilities were unwilling or unable to commit enough power to the aluminum companies at favorable rates for a long enough term for any significant benefits to the DSIs to accrue.

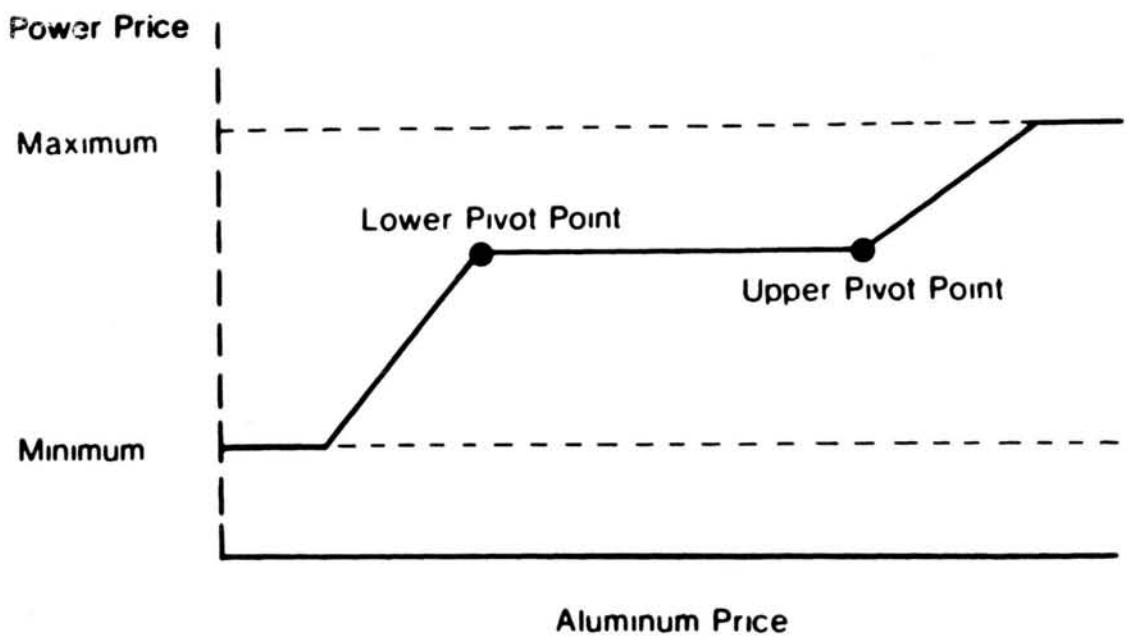
Figure 1

TWO VARIABLE RATE CONCEPTS

Concept 1 - Single Pivot Point



Concept 2 - Plateau Rate with Two Pivot Points



1.4 BPA'S DECISIONMAKING PROCESS FOR THE OPTIONS

BPA's decisionmaking process consists of two separate processes, with possibly a third at some later time, to resolve issues related to the proposals studied in this EIS with respect to the DSI aluminum smelters and BPA's need to plan for power needs and maintain its financial position.

The Variable rate is undergoing a rates public involvement proceeding in accordance with section 7(i) of the Pacific Northwest Power Act. A similar proceeding is contemplated for the IP-PF rate link. The Con/Mod program was designed through a public process -- experts from outside BPA were invited to participate with BPA staff in formulating a design team to develop a draft program proposal.

The EIS analyzes the impacts of the various options and their alternatives, as well as impacts resulting from some possible combination of these options. Upon completion of this EIS, and following the no action period, and completion of the respective public involvement processes for the Variable rate and for the Con/Mod program, BPA's Administrator will prepare a separate Record of Decision (ROD) for each proposal. In reaching a final decision on each of the options, the Administrator will consider comments received from the public and customers during the respective public involvement process and the analysis contained in the final EIS.

Assuming the Administrator decides to proceed with a variable rate for the aluminum smelters, it would become effective upon final or interim approval by the Federal Energy Regulatory Commission. The Pacific Northwest Power Act specifies in section 7(a)(2) that the Commission must review the rate proposal to determine that (1) rates are sufficient to assure repayment of the Federal investment in the FCRPS over a reasonable number of years after first meeting BPA's other costs; and (2) rates are based on BPA's total system costs. Pursuant to section 7(i)(6) of the Pacific Northwest Power Act, the Commission has promulagated rules found at 18 C.F.R. Part 300 establishing procedures for the approval of BPA rates.