United States Entity

US Department Of Energy, Bonneville Power Administration
US Army Corps of Engineers, North Pacific Division

Delivery of the Canadian Entitlement
Final Environmental Impact Statement

Record of Decision

Summary

The United States Entity (the Administrator of the Bonneville Power Administration [BPA] and the Division Engineer, North Pacific Division of the US Army Corps of Engineers) has decided to fulfill its obligation under the Columbia River Treaty (Treaty) between the United States and Canada by delivering Canada's Entitlement under the Treaty to a point on the United States/Canada border near Oliver, British Columbia (BC). Delivering the Entitlement at that location will require BPA to construct and operate a new single-circuit 500-kV transmission line from Grand Coulee or Chief Joseph Substation to the United States/Canada border, a distance of 135 to 155 kilometers (85 to 95 miles), depending on the alignment selected.

The Treaty, signed in 1961, led to the construction of three storage dams on the Columbia River system in Canada and one in the United States. Under the Treaty, Canada and the United States equally share the benefits of the additional power that can be generated at dams downstream in the United States because of the storage at the upstream Treaty reservoirs. Canada's half of the downstream power benefits, known as the "Canadian Entitlement," is estimated to be approximately 1,200 to 1,500 megawatts (MW) of capacity and 550 to 600 average megawatts (aMW) of energy. Canada sold its share of the power benefits for 30-year periods to a consortium of US utilities. The 30-year sale will begin to expire in 1998, when the first installment of the Canadian Entitlement must be delivered to Canada. The Treaty specifies that the Entitlement must be delivered to Canada at a point on the border near Oliver unless other arrangements are agreed upon by the Entities. An interim agreement allows the Entitlement to be delivered over existing facilities between 1998 and 2003.

Over a period of several years, the United States and Canadian Entities made a concerted effort to find a mutually agreeable alternative at commercially acceptable terms to delivery at Oliver. In the Delivery of the Canadian Entitlement Final Environmental Impact Statement (DOE/EIS-0197, issued in January, 1996), the United States Entity evaluated the potential environmental impacts of a range of alternatives for delivering the Entitlement to Canada, including various combinations of delivery points, power purchases, resource development, and use of the Intertie System. This decision to deliver the full Entitlement to Oliver reflects the inability of the United States and Canadian Entities to agree to an alternative arrangement to the delivery point specified in the Treaty.

To comply with the Treaty, the United States Entity must be able to deliver the full Entitlement to Canada by April 1, 2003. In order to meet that schedule and to provide time

for environmental analysis, public involvement, planning, and construction of a transmission line, BPA will issue a Notice of Intent to prepare the Oliver Delivery Project EIS, and begin scoping activities to support that EIS. The Oliver Delivery Project EIS will address the construction and operation of the transmission line required to implement the United States Entity's decision to deliver the full Entitlement at Oliver.

The United States Entity continues to be open to discussion with the Canadian Entity regarding commercially acceptable alternative delivery arrangements to full delivery at Oliver. In the event the United States Entity and the Canadian Entity mutually agree on an alternative disposition of the Canadian Entitlement, within a timeframe that allows the United States Entity to timely fulfill its obligation to Canada, the United States Entity will revisit its decision to deliver the full Canadian Entitlement to Oliver. The Delivery of the Canadian Entitlement EIS will be evaluated to determine whether it adequately covers the environmental inputs of that alternative, or whether a supplement to the EIS needs to be prepared.

For Further Information Contact: Ms. Katherine Pierce - ECN, Bonneville Power Administration, at (503) 230-3962. Copies of the Delivery of the Canadian Entitlement Final EIS and additional copies of this Record of Decision (ROD) are available from BPA's Public Involvement Office, P.O. Box 12999, Portland, Oregon 97212. Copies of the documents may also be obtained by using BPA's nationwide toll-free document request line, 1-800-622-4520.

Supplementary Information

1. Background

The Columbia River Treaty (Treaty) between Canada and the United States of America (United States), signed in 1961, required three storage dams (Duncan, Keenleyside, and Mica Dams) to be constructed on the Columbia River system in Canada, and allowed for one additional dam in the United States (Libby Dam). The dams help control floods in both countries, and the regulated stream flow provided by the three Treaty reservoirs in Canada enables dams downstream in the United States to produce additional power (the "downstream power benefits"). Under the Treaty, Canada and the United States share the downstream benefits equally.

In 1964, Canada sold its half of the downstream benefits to a consortium of United States utilities for 30-year periods. The 30-year sale begins to expire in 1998 and will completely expire in 2003, at which time the Canadian Entitlement (Entitlement)--Canada's share of the downstream power benefits--must be delivered to Canada. An interim agreement, signed in 1992, allows the Entitlement to be delivered over existing transmission facilities between 1998 and 2003. The Entitlement is currently estimated to be approximately 1,200 to 1,500 MW capacity and 550 to 600 aMW energy (the amounts decline over time).

Pursuant to the Treaty, the Administrator of the Bonneville Power Administration (BPA) and the Division Engineer, North Pacific Division of the US Army Corps of Engineers (Corps) are designated as the "United States Entity," which is responsible for representing United States interests pursuant to the Treaty. British Columbia Hydro and Power Authority (BC Hydro), a Crown corporation, is the Canadian Entity.

At the expiration of the 30-year sale, the United States Entity needs to fulfill the United States' obligation under the Treaty to deliver the Entitlement to Canada. The Treaty specifies that the Entitlement must be delivered to Canada at a point on the border near Oliver, British Columbia (BC), unless the Entities agree to other arrangements.

2. The Delivery of the Canadian Entitlement Environmental Impact Statement

BPA, which markets and transmits power from United States Federal hydroelectric projects in the Pacific Northwest (PNW) and California, potentially needed to implement some portions of the United States Entity's decision. Therefore, BPA used its expertise and prepared the Delivery of the Canadian Entitlement Environmental Impact Statement (EIS). The United States Department of State (Department of State) was a cooperating agency in the preparation of the EIS. Depending on the alternative chosen, the Department of State may have needed to conduct negotiations to authorize the disposition of benefits within the United States, since a disposition must be evidenced by an exchange of notes between the respective governments. In Canada, the government of British Columbia led the consultation team; BC Hydro potentially needed to implement some portions of the Canadian Entity's decision.

A Notice of Intent to prepare an EIS on the Delivery of the Canadian Entitlement was signed on May 24, 1993. Scoping meetings were held in June 1993 in Portland, Oregon; and in Pasco, Seattle, and Spokane, Washington. The comments received during scoping were considered in the preparation of the Draft EIS, which was circulated for review and comment in April 1994.

Comments on the Draft EIS were incorporated, where applicable, into the Final EIS, which was issued in January, 1996.

3. Alternatives Evaluated in the EIS

Alternatives for the delivery of the Entitlement were analyzed in terms of components and actions. As shown in Figure 1, components are the building blocks of the alternatives. Components included delivering the Entitlement to the border at different delivery points, the development and operation of energy resources, purchases of the Entitlement, and use of the Intertie system. Actions are the activities that must occur in the United States to implement each component. For most alternatives, a connected action in Canada would also be required. Focusing the analysis in terms of components, actions, and connected actions allows decisionmakers to understand the environmental consequences of the full range of alternatives for the delivery of the Entitlement.

Figure 1: How this EIS Evaluates Alternatives and Their Environmental Impacts

The National Environmental Policy Act (NEPA) requires an agency to include the alternative of no action. In this case, **No Action** would mean that the United States Entity would not deliver the Entitlement to Canada, as required by the Columbia River Treaty. Not delivering the Entitlement would violate the Treaty, and would have unacceptable social, political, and legal consequences on both sides of the border. The No Action Alternative is not acceptable to either the United States Entity or the Canadian Entity, and was dismissed from further consideration in the EIS.

The Treaty specifies that the Entitlement is to be delivered at a point on the United States/Canada border near Oliver, BC, "or at such other place the entities may agree upon." The **Base Case** for this EIS is the delivery of the Entitlement in its entirety at Oliver. Delivering the full Entitlement at Oliver would require:

Base Case Components

UNITED STATES

Transmission Construction. One new single-circuit 500 -kilovolt (kV) line from Grand Coulee or Chief Joseph Substations to the United States/Canada border near Oliver by 2003:

- 135 to 155 kilometers (km)--85 to 95 miles (mi.) long.
- Right-of-way (new or expansion of existing): 38 meters (m)--125 feet (ft) wide for standard lattice steel structures.
- New or upgraded access roads: 2 km/km of line--(2 mi./mi. of line).
- Potential improvements at or expansions of existing substations.

East-West Standby Transmission. The United States would provide East-West Standby transmission service in accordance with Article X of the Columbia River Treaty. It appears that no new transmission facilities would be required to provide this service.

Base Case Construction Date Assumptions for Cross-Cascades Transmission Lines. Two 200- to 240-km (125- to 150-mi.) cross-Cascades lines are needed by the end of the second and third decades of the 21st century.

Resource Development and Operation. The PNW would develop 550 aMW of energy and 1,400 MW of capacity by 2003 and would operate the system to serve Entitlement load.

CANADA

Transmission Construction. Border-to-Oliver: One new single-circuit 500-kV line and substation by 2003:

- 13 to 46 km (8 to 29 mi.) long.
- Right-of-way (new or expansion of existing): 49 to 64 m (161 - 210 ft) wide.
- New or upgraded access roads: Likely.
- New 500 -kV switching station or substation (approx. 9 hectares (ha) (22 acres).

Base Case Construction of Interior-to-Lower-Mainland Transmission Lines. The following transmission lines may be needed to transmit the Entitlement to Canadian load centers in the Lower Mainland. These lines are not anticipated before 2008, but they may be required before the end of the study period (2024). The need is related to the location of future generation in BC.

- Oliver-to-Nicola: 138-km (86-mi.) 500-kV line.
- Nicola-to-Lower-Mainland: 248-km (154-mi.) 500-kV line.

In order to implement this alternative, BPA would prepare a tiered, site-specific EIS that would address route alternatives and site-specific environmental impacts.

Alternative A (Partial Purchase and Partial Delivery at Blaine) combines several delivery and purchase components. Specifically:

- The United States would deliver to Canada the energy component of the Entitlement (approximately 550 aMW) and 650 MW of its capacity component.
- The United States would purchase, with a single payment, the balance of Canada's entitlement to capacity (approximately 750 MW).

Deliveries would be to Blaine or other points on BPA's existing transmission system as specified by Canada. For purposes of analysis, it is assumed that deliveries would be at Blaine.

The following actions would be required:

Alternative A Components

UNITED STATES

Transmission Construction. One cross-Cascades 500-kV transmission line would be accelerated by 3 to 4 years compared to the Base Case if the majority of future generation occurs east of the Cascades. A second cross-Cascades line may also be accelerated.

Transmission Use. BPA would deliver power over the Northern Intertie at Blaine and BPA could purchase the right to store energy on the BC Hydro system for return at a later date.

Resource Development and Operation. The PNW would develop up to 550 aMW of energy and 650 MW of capacity, probably combustion turbines (CTs), and operate the system to serve Entitlement load.

Purchases. The PNW would purchase approximately 750 MW of capacity.

CANADA

Resource Development and Operation. In the long term, Canada would develop and operate 750 MW of capacity resources, probably new generators at existing hydroelectric facilities.

Transmission Construction. Compared to the Base Case, the need for the Nicola-to-Lower-Mainland (Meridian) and Oliver-to-Nicola 500-kV lines would most likely be delayed by several years.

In **Alternative B (PNW Purchase)**, PNW utilities would purchase the entire Entitlement. The following actions would be required:

Alternative B Components

UNITED STATES

Purchases. The PNW would purchase up to 1,400 of capacity and 550 aMW of energy.

Transmission. Requirements for cross-Cascades transmission are the same as the Base Case.

CANADA

Resource Development and Operation. In the long term, Canada would develop and operate up to 550 aMW of energy and 1,400 MW of capacity resources (probably CTs and new generators at existing hydroelectric facilities) to replace the Entitlement energy and capacity sold to the PNW.

Transmission Construction. Compared to the Base Case, the need for the Nicola-to-Lower Mainland (Meridian) and Oliver-to-Nicola 500-kV lines most likely would be delayed by several years. The need for a third 500-kV line segment, Selkirk-to-Oliver (164 km, 102 mi.) may be slightly accelerated from when it might otherwise be needed, depending on the location of Canadian generation resources.

In **Alternative C (Pacific Southwest [PSW] Purchase)**, the PSW would purchase the entire Entitlement, which would be delivered to the PSW over the PNW-PSW Intertie. The following actions would be required:

Alternative C Components

UNITED STATES

Transmission Use. BPA would deliver power over the PNW-PSW Intertie to the PSW. In addition, BPA could purchase the right to store energy on the BC Hydro system, or could sell surplus energy to BC when transmission was constrained. Requirements for cross-Cascades transmission are the same as the Base Case.

Resource Development and Operation. The PNW would develop up to 550 aMW of energy and 1,400 MW of capacity resources (probably CTs) and operate the system to serve the Entitlement obligation.

Purchase. The PSW would purchase up to 1,400 MW of capacity and 550 aMW of energy.

CANADA

Resource Development and Operation. Canada would develop and operate up to 550 aMW of energy and 1,400 MW of capacity resources (probably CTs and new generators at existing hydroelectric facilities) to replace the Entitlement energy and capacity sold to the PSW.

Transmission Construction. Requirements are the same as for Alternative B. Specifically, compared to the Base Case, the need for the Nicola-to-Lower Mainland (Meridian) and Oliver-to-Nicola 500-kV lines most likely would be delayed by several years. The need for a third 500-kV line segment, Selkirk-to-Oliver (164 km, 102 mi.) may be slightly accelerated from when it might otherwise be needed.

Alternative D (Partial Purchase and Partial Delivery at Blaine and Selkirk) would combine purchase and sale components.

- The PNW would deliver 650 MW of capacity and a portion of the 550 aMW of energy over existing facilities at Blaine.
- The PNW would deliver 300 MW of capacity and the remaining portion of the 550 aMW of energy over existing facilities at Selkirk.
- The PNW would purchase 450 MW of capacity.

Alternative D Components

UNITED STATES

Transmission Construction. One cross-Cascades 500-kV transmission line would be accelerated 3 or 4 years compared to the Base Case if the majority of future generation occurs east of the Cascades. A second cross-Cascades line might also be accelerated.

Transmission Use. BPA would deliver power over the Northern Intertie at Blaine and Selkirk.

Resource Development and Operation. The PNW would develop up to 550 aMW of energy and 950 MW of capacity resources (probably CTs) and operate the system to serve 550 aMW/950 MW of Entitlement load.

Purchase. The PNW would purchase 450 MW of capacity.

CANADA

Resource Development and Operation. In the long term, Canada would develop and operate 450 MW of capacity resources, probably new generators at existing hydroelectric facilities.

Transmission Construction. Requirements are nearly the same as for Alternatives B and C.

The Base Case and four alternatives evaluated in the EIS represent a range of possible alternatives. Additional alternatives can be derived and compared by selecting components and reviewing their associated environmental impacts.

4. Environmental Evaluation

The environmental consequences of the action alternatives were identified and compared to the Base Case (Figures 2 and 3). The environmental analysis in the EIS examined effects in Canada, as well as within the United States, in the spirit of providing full and complete information to the United States Entity on the consequences, both direct and indirect, of United States actions. The assessment of impacts in Canada was based on the United States Entity's perspective and interpretation of the Treaty requirements. The Canadian Entity did not necessarily agree with or endorse this analysis of the environmental effects in Canada.

5. Decision-Making Process

In April 1993, consultations began between the United States and Canadian Entities on how to accomplish delivery of the Entitlement through 2024, the earliest date under Article XIX that the Treaty can be terminated. Several other organizations actively participated in this process, including the mid-Columbia generating utilities (those utilities that own and operate several hydroelectric dams along the mainstem of the Columbia River) and the Department of State. As a result of these consultations, the United States and Canadian Entities and the Province of British Columbia executed a non-binding Memorandum of Negotiators' Agreement and Principles for Delivery and Disposition of the Canadian Entitlement (MONA) on September 9, 1994. Together, these established a framework for future negotiations of comprehensive agreements for delivery of Canada's Treaty power.

Major components of the MONA included: a one-time $180 million payment by the United States to Canada to reduce the amount of the capacity Entitlement obligation to 950 megawatts (MW); delivery of the remaining Canadian Entitlement--approximately 950 MW of capacity and about 550 average MW of energy--over existing transmission facilities or its resale by Canada in the United States; and other provisions needed to implement the Treaty. Execution of the MONA was followed by extensive negotiations to draft final, detailed, binding agreements. While negotiating with the Canadians, the United States Entity also worked with the mid-Columbia utilities to negotiate their share of the Entitlement obligation. Negotiations included a proposal for the utilities to make the $180 million payment in lieu of their obligation to deliver their portion of the capacity obligation.

After the MONA was signed, the electric utility market changed dramatically, resulting in a significant reduction in the value of the proposed Entitlement agreements to the United States. The key factor responsible for this change was the dramatic reduction in the value of capacity in the western United States. Electricity from gas-fired combustion turbine power plants, once priced well-above hydropower, is now priced competitively with, and in some cases, below the price of hydropower. This situation, coupled with requirements imposed on Columbia River hydropower operations as a result of listings under the United States' Endangered Species Act, resulted in a significant drop in the value of capacity. The mid-Columbia utilities advised the United States Entity that they could not go forward with the $180 million payment under the MONA.

Following a thorough review of the economics of the MONA, the United States Entity concluded that the agreement contemplated by the MONA no longer had an economic advantage over building the required transmission facilities to deliver the Entitlement to

Oliver, BC, and that it could not reach final agreement with the Canadian Entity and the Government of British Columbia. In accordance with the terms of the Treaty, if agreement can not be reached between the United States and Canada regarding alternative arrangements for delivery of the Canadian Entitlement, the Entitlement is to be delivered to Oliver, BC.

Negotiations between the United States and Canadian Entities continued periodically through May, 1995. However, the two Entities were not able to reach agreement on an alternative means to fulfill the Treaty obligation to deliver the Entitlement to Oliver.

6. Comments on the Final EIS

The Notice of Availability of the Final EIS was published in the Federal Register on Friday, January 26, 1996. During the ensuing 30-day No Action period, the United States Entity received comments on the Final EIS from the Canadian Entity. The following summarizes the Canadian Entity's comments (in **bold**) and the United States Entity's response:

- **BPA can deliver the Entitlement over existing transmission lines at least through the year 2005.** Assumptions used in the EIS indicate that the Entitlement can be delivered over existing lines through the year 2005. However, the Canadian Entity has evidenced no willingness to take delivery at existing points of interconnection at commercially acceptable terms. The date by which a new cross-Cascades transmission line will be needed is sensitive to the amount and location of new generation resources and loads. Given the rapidly changing energy market, decisions have recently been made to cancel or delay projects previously proposed to be developed west of the Cascades. This means that additional cross-Cascades transmission capacity will be needed sooner than previously anticipated.

- **The discussion of environmental impacts of transmission in Canada is highly speculative.** BPA attempted to obtain specific input from Canada on the preparation of this material. The EIS recognizes that the timing and location of new transmission and generation in Canada is indeed highly uncertain, and will depend on the location and growth of loads and resources. The EIS provided information about likely impacts in Canada based on available published information. Suggestions from BC Hydro were incorporated into the Final EIS.

- **The EIS should have addressed new transmission technologies, such as real-time reactive compensation, which might allow new transmission to be postponed or eliminated.** BPA did factor in the use of new technologies, such as shunt reactive control devices, in determining the need and schedule for new transmission. BPA has utilized these technologies, which can delay but not eliminate the need for new transmission lines.

- **The EIS misstates the costs of cross-Cascades transmission.** The EIS provided information about both typical costs per kilometer of double-circuit transmission line and the estimated costs of the complete project. The $360 million figure is the estimated costs for the entire cross-Cascades Project, including new transmission lines, substations, and removal of existing lines for the right-of-way.

- **The EIS does not address alternatives that reduce loading on the cross-Cascades transmission line; for example, siting new generation on the west side of the Cascades.** At present the West Coast wholesale power market is driven by the variable cost of existing resources. The market price is low (below the cost of a new combined cycle combustion turbine), such that the costs of new resources are not competitive. Because there is a surplus of low-cost power, it is not likely new resources will be built in the near term.

  Moreover, BPA does not control the siting of new generation resources. Although a mix of west- and east-side resources is likely to be developed in the future, there are reasons that a significant share of this new generation may be developed east of the Cascades, including air quality concerns west of the Cascades and limitations on existing west-side gas pipeline capacity.

- **The EIS does not include a meaningful comparison of the economic aspects of the alternatives.** The purpose of the EIS is to identify and compare environmental impacts of alternative actions. However, economic information based upon studies prepared by the United States and Canadian Entities was included in the EIS and was used as one aspect of the comparison of alternatives (see Chapter 4 of the Final EIS).

Figure 2: Summary of Environmental Consequences of Action Alternatives
(Figure 2.4-1 of Final EIS)

page 1 of 2

Figure 2: Summary of Environmental Consequences of Action Alternatives
(Figure 2.4-1 of Final EIS)

page 2 of 2

Figure 3: Comparison of Environmental Consequences of Action Alternatives (Compared to Base Case)

(Figure 2.4-2 of Final EIS)

7. Decision Factors

The United States Entity used the purposes identified in the Delivery of the Canadian Entitlement EIS as decision factors to evaluate alternatives for the delivery of the Canadian Entitlement. The United States Entity needs to fulfill the United States' obligations under the Columbia River Treaty to deliver Canada's share of the downstream benefits of the Columbia River Treaty dams. The purposes of the action are to:

- **Meet the Treaty obligations cost-effectively**. In a period of increasingly competitive energy markets and the deregulation of transmission and generation, BPA's financial viability requires that the United States Entity give heavy emphasis to lower cost alternatives for delivering the Canadian Entitlement.
- **Avoid or minimize adverse environmental effects of fulfilling the Treaty obligation.** Selecting an alternative for the delivery of the Entitlement with lower environmental impacts was one goal of the United States Entity.
- **Develop means for fulfilling the Treaty that are acceptable to the Canadian and United States Entities.** Any alternative for delivering the Entitlement other than the Treaty-specified delivery at Oliver requires agreement by both the Canadian and United States Entities.
- **Maintain the reliability of BPA's power system.** Any alternative for delivering the Canadian Entitlement must not impede BPA's ability to operate the transmission system to meet its obligations to its customers.

8. The United States Entity's Decision Regarding the Preferred Alternative

As described above, during 1994 and 1995, dramatic changes in the electric utility market led to a substantial drop in the market value of capacity. This market change greatly reduced the economic benefits of the proposal in the MONA that had been reached between the United States and Canadian Entities. The two entities have not been able to reach an agreement on an alternative for the delivery of the Entitlement.

The Delivery of the Canadian Entitlement Final EIS identified the environmentally preferred alternative as Alternative B - PNW Purchase, because it would avoid the environmental impacts of constructing new transmission lines in the United States and Canada. However, Alternative B would accelerate the need for a cross-Cascades transmission line. Because the United States and Canadian Entities are unable to agree to alternative arrangements for delivery of the Entitlement, and because the Treaty requires that the United States Entity deliver the Canadian Entitlement to Oliver, BC, when there is no mutually agreed upon alternative, the United States Entity has therefore selected the Base Case, Full Delivery at Oliver.

9. Oliver Delivery Project EIS

In order to deliver the Canadian Entitlement to Oliver, BPA must construct a new single circuit 500-kV line from Grand Coulee or Chief Joseph Substation to the United States/Canada border, a distance of 135 to 155 kilometers (or 85 to 95 miles), depending on the alignment chosen. Although the Delivery of the Canadian Entitlement EIS identified the typical environmental impacts of transmission line construction and provided information about the likely environmental effects of a transmission line from Grand Coulee or Chief Joseph Substation to Oliver, the EIS recognized that BPA would have to complete additional

environmental analysis to fulfill its NEPA requirements for the construction of this new transmission line. In order to be able to deliver the Entitlement at Oliver by 2003, BPA must immediately initiate planning, public involvement, and environmental analysis for the Oliver delivery transmission line. BPA therefore intends to issue a Notice of Intent to prepare the Oliver Delivery Project EIS and begin scoping activities.

Issued in Portland, Oregon, on: March 12, 1996

/s/ Randall W. Hardy
Randall W. Hardy
Chair, United States Entity

/s/ Russell L. Fuhrman
Major General Russell L. Fuhrman
Member, United States Entity