

The Columbia Treaty

Treaty between Canada and the United States of America relating to Cooperative Development of the Water Resources of The Columbia River Basin

The Governments of Canada and the United States of America

Recognizing that their peoples have, for many generations, lived together and cooperated with one another in many aspects of their national enterprises, for the greater wealth and happiness of their respective nations, and

Recognizing that the Columbia River Basin, as a part of the territory of both countries, contains water resources that are capable of contributing greatly to the economic growth and strength and to the general welfare of the two nations, and

Being desirous of achieving the development of those resources in a manner that will make the largest contribution to the economic progress of both countries and to the welfare of their peoples of which those resources are capable, and

Recognizing that the greatest benefit to each country can be secured by cooperative measures for hydroelectric power generation and flood control, which will make possible other benefits as well.

Have agreed as follows:

ARTICLE I *Interpretation*

1. In the Treaty, the expression

(a) “**average critical period load factor**” means the average of the monthly load factors during the critical stream flow period;

(b) “**base system**” means the plants, works and facilities listed in the table in Annex B as enlarged from time to time by the installation of additional generating facilities, together with any plants, works or facilities which may be constructed on the main stem of the Columbia River in the United States of America;

(c) “**Canadian storage**” means the storage provided by Canada under Article II;

(d) “**critical stream flow period**” means the period, beginning with the initial release of stored water from full reservoir conditions and ending with the reservoirs empty, when the water available from reservoir releases plus the natural stream flow is capable of producing the least amount of hydroelectric power in meeting system load requirements;

(e) “**consumptive use**” means use of water for domestic, municipal, stock-water, irrigation, mining or industrial purposes but does not include use for the generation of hydroelectric power;

(f) “**dam**” means a structure to impound water, including facilities for controlling the release of the impounded water;

(g) “**entity**” means an entity designated by either Canada or the United States of America under Article XIV and includes its lawful successor;

(h) “**International Joint Commission**” means the Commission established under Article VII of the Boundary Waters Treaty, 1909, or any body designated by the United States of America and Canada to succeed to the functions of the Commission under this Treaty;

(i) “**maintenance curtailment**” means an interruption or curtailment which the entity responsible therefor considers necessary for purposes of repairs, replacements, installations of equipment, performance of other maintenance work, investigations and inspections;

(j) “**monthly load factor**” means the ratio of the average load for a month to the integrated maximum load over one hour during that month;

(k) “**normal full pool elevation**” means the elevation to which water is stored in a reservoir by deliberate impoundment every year, subject to the availability of sufficient flow;

(l) “**ratification date**” means the day on which the instruments of ratification of the Treaty are exchanged;

(m) “**storage**” means the space in a reservoir which is usable for impounding water for flood control or for regulating stream flows for hydroelectric power generation;

(n) “**Treaty**” means this Treaty and its Annexes A and B;

(o) “**useful life**” means the time between the date of commencement of operation of a dam or facility and the date of its permanent retirement from service by reason of obsolescence or wear and tear which occurs notwithstanding good maintenance practices.

2. The exercise of any power, or the performance of any duty, under the Treaty does not preclude a subsequent exercise of performance of the power or duty.

ARTICLE II

Development by Canada

1. Canada shall provide in the Columbia River basin in Canada 15,500,000 acre-feet of storage usable for improving the flow of the Columbia River.

2. In order to provide this storage, which in the Treaty is referred to as the Canadian storage, Canada shall construct dams:

(a) on the Columbia River near Mica Creek, British Columbia, with approximately 7,000,000 acre-feet of storage;

(b) near the outlet of Arrow Lakes, British Columbia, with approximately 7,100,000 acre-feet of storage; and

(c) on one or more tributaries of the Kootenay River in British Columbia downstream from the Canada-United States of America boundary with storage equivalent in effect to approximately 1,400,000 acre-feet of storage near Duncan Lake, British Columbia.

3. Canada shall commence construction of the dams as soon as possible after the ratification date.

ARTICLE III

Development by the United States of America Respecting Power

1. The United States of America shall maintain and operate the hydro electric facilities included in the base system and any additional hydroelectric facilities constructed on the main stem of the Columbia River in the United States of America in a manner that makes the most effective

use of the improvement in stream flow resulting from operation of the Canadian storage for hydro-electric power generation in the United States of America power system.

2. The obligation in paragraph (1) is discharged by reflecting in the determination of downstream power benefits to which Canada is entitled the assumption that the facilities referred to in paragraph (1) were maintained and operated in accordance therewith.

ARTICLE IV

Operation by Canada

1. For the purpose of increasing hydroelectric power generation in Canada and in the United States of America, Canada shall operate the Canadian storage in accordance with Annex A and pursuant to hydroelectric operating plans made thereunder. For the purpose of this obligation an operating plan if it is either the first operating plan or if in the view of either Canada or the United States of America it departs substantially from the immediately preceding operating plan must, in order to be effective, be confirmed by an exchange of notes between Canada and the United States of America.

2. For the purpose of flood control until the expiration of sixty years from the ratification date, Canada shall

(a) operate in accordance with Annex A and pursuant to flood control operating plans made thereunder

- (i) 80,000 acre-feet of the Canadian storage described in Article II(2)(a),
- (ii) 7,100,000 acre-feet of the Canadian storage described in Article II(2)(b),
- (iii) 1,270,000 acre-feet of the Canadian storage described in Article II(2)(c),

provided that the Canadian entity may exchange flood control storage under subparagraph (ii) for flood control storage additional to that under subparagraph (I), at the location described in Article II(2)(a), if the entities agree that the exchange would provide the same effectiveness for control of floods on the Columbia River at the Dalles, Oregon;

(b) operate any additional storage in the Columbia River basin in Canada, when called upon by an entity designated by the United States of America for that purpose, within the limits of existing facilities and as the entity requires to meet flood control needs for the duration of the flood period for which the call is made.

3. For the purpose of flood control after the expiration of sixty years from the ratification date, and for so long as the flows in the Columbia River in Canada continue to contribute to potential flood hazard in the United States of America, Canada shall, when called upon by an entity designated by the United States of America for that purpose, operate within the limits of existing facilities any storage in the Columbia River basin in Canada as the entity requires to meet flood control needs for the duration of the flood control period for which the call is made.

4. The return to Canada for hydroelectric operation and the compensation to Canada for flood control operation shall be as set out in Articles V and VI.

5. Any water resource development, in addition to the Canadian storage, constructed in Canada after the ratification date shall not be operated in a way that adversely affect the stream flow control in the Columbia River within Canada so as to reduce the flood control and hydroelectric power benefits which the operation of the Canadian storage in accordance with the operating plans in force from time to time would otherwise produce.

6. As soon as any Canadian storage becomes operable Canada shall commence operation thereof in accordance with this Article and in any event shall commence full operation of the Canadian storage

described in Article II(2)(b) and Article II(2)(c) within five years of the ratification date and shall commence full operation of the balance of the Canadian storage within nine years of the ratification date.

ARTICLE V

Entitlement to Downstream Power Benefits

1. Canada is entitled to one half the downstream power benefits determined under Article VII.
2. The United States of America shall deliver to Canada at a point on the Canada-United States of America boundary near Oliver, British Columbia, or such other place as the entities may agree upon, the downstream power benefits to which Canada is entitled, less
 - (a) transmission loss,
 - (b) the portion of the entitlement disposed of under Article VIII(1), and
 - (c) the energy component described in Article VIII(4).
3. The entitlement of Canada to downstream power benefits begins for any portion of Canadian storage upon commencement of its operation in accordance with Annex A and pursuant to a hydroelectric operating plan made thereunder.

ARTICLE VI

Payment for Flood Control

1. For the flood control provided by Canada under Article IV(2)(a) the United States of America shall pay Canada in United States funds:
 - (a) 1,200,000 dollars upon the commencement of operation of the storage referred to in subparagraph (a)(i) thereof,
 - (b) 52,100,000 dollars upon the commencement of operation of the storage referred to in subparagraph (a)(ii) thereof, and
 - (c) 11,100,000 dollars upon the commencement of operation of the storage referred to in subparagraph (a)(iii) thereof.
2. If full operation of any storage is not commenced within the time specified in Article IV, the amount set forth in paragraph (1) of this Article with respect to that storage shall be reduced as follows:
 - (a) under paragraph (1)(a), 4,500 dollars for each month beyond the required time,
 - (b) under paragraph (1)(b), 192, 100 dollars for each month beyond the required time,

and

 - (c) under paragraph (1)(c), 40,800 dollars for each month beyond the required time.
3. For the flood control provided by Canada under Article IV(2)(b) the United States of America shall pay Canada in United States funds in respect only of each of the first four flood periods for which a call is made 1,875,000 dollars and shall deliver to Canada in respect of each and every call made, electric power equal to the hydroelectric power lost by Canada as a result of operating the storage to meet the flood control need for which the call was made, delivery to be made when the loss of hydroelectric power occurs.

4. For each flood period for which flood control is provided by Canada under Article IV(3), the United States of America shall pay Canada in United States funds:

- (a) the operating cost incurred by Canada in providing the flood control, and
- (b) compensation for the economic loss to Canada arising directly from Canada foregoing alternative uses of the storage used to provide the flood control.

5. Canada may elect to receive in electric power, the whole or any portion of the compensation under paragraph 4(b) representing loss of hydroelectric power to Canada.

ARTICLE VII

Determination of Downstream Power Benefits

1. The downstream power benefits shall be the difference in the hydroelectric power capable of being generated in the United States of America with and without the use of Canadian storage, determined in advance, and is referred to in the Treaty as the downstream power benefits.

2. For the purpose of determining the downstream power benefits:

- (a) the principles and procedures set out in Annex B shall be used and followed;
- (b) the Canadian storage shall be considered as next added to 13,000,000 acre-feet of the usable storage listed in Column 4 of the table in Annex B;
- (c) the hydroelectric facilities included in the base system shall be considered as being operated to make the most effective use for hydroelectric power generation of the improvement in stream flow resulting from operation of the Canadian storage.

3. The downstream power benefits to which Canada is entitled shall be delivered as follows:

- (a) dependable hydroelectric capacity as scheduled by the Canadian entity, and
- (b) average annual usable hydroelectric energy in equal amounts each month, or in accordance with a modification agreed upon under paragraph (4).

4. Modification of the obligation in paragraph (3)(b) may be agreed upon by the entities.

ARTICLE VIII

Disposal of Entitlement to Downstream Power Benefits

1. With the authorization of Canada and the United States of America evidenced by exchange of notes, portions of the downstream power benefits to which Canada is entitled may be disposed of within the United States of America. The respective general conditions and limits within which the entities may arrange initial disposals shall be set out in an exchange of notes to be made as soon as possible after the ratification date.

2. The entities may arrange and carry out exchanges of dependable hydroelectric capacity and average annual usable hydroelectric energy to which Canada is entitled for average annual usable hydroelectric energy and dependable hydroelectric capacity respectively.

3. Energy to which Canada is entitled may not be used in the United States of America except in accordance with paragraphs (1) and (2).

4. The bypassing at dams on the main stem of the Columbia River in the United States of America of an amount of water which could produce usable energy equal to the energy component of the down-

stream power benefits to which Canada is entitled but not delivered to Canada under Article V or disposed of in accordance with paragraphs (1) and (2) at the time the energy component was not so delivered or disposed of, is conclusive evidence that such energy component was not used in the United States of America and that the entitlement of Canada to such energy component is satisfied.

ARTICLE IX

Variation of Entitlement to Downstream Power Benefits

1. If the United States of America considers with respect to any hydroelectric power project planned on the main stem of the Columbia River between Priest Rapids Dam and McNary Dam that the increase in entitlement of Canada to downstream power benefits resulting from the operation of the project would produce a result which would not justify the United States of America in incurring the costs of construction and operation of the project, Canada and the United States of America at the request of the United States of America shall consider modification of the increase in entitlement.

2. An agreement reached for the purposes of this Article shall be evidenced by an exchange of notes.

ARTICLE X

East-West Standby Transmission

1. The United States of America shall provide in accordance with good engineering practice east-west standby transmission service adequate to safeguard the transmission from Oliver, British Columbia, to Vancouver, British Columbia, of the downstream power benefits to which Canada is entitled and to improve system stability of the east-west circuits in British Columbia.

2. In consideration of the standby transmission service, Canada shall pay the United States of America in Canadian funds the equivalent of 1.50 United States dollars a year for each kilowatt of dependable hydroelectric capacity included in the downstream power benefits to which Canada is entitled.

3. When a mutually satisfactory electric coordination arrangement is entered into between the entities and confirmed by an exchange of notes between Canada and the United States of America the obligation of Canada in paragraph (2) ceases.

ARTICLE XI

Use of Improved Stream Flow

1. Improvement in stream flow in one country brought about by operation of storage constructed under the Treaty in the other country shall not be used directly or indirectly for hydroelectric power purposes except:

(a) in the case of use within the United States of America with the prior approval of the United States entity, and

(b) in the case of use within Canada with the prior approval of the authority in Canada having jurisdiction.

2. The approval required by this Article shall not be given except upon such conditions, consistent with the Treaty, as the entity or authority considers appropriate.

ARTICLE XII

Kootenai River Development

1. The United States of America for a period of five years from the ratification date, has the option to commence construction of a dam on the Kootenai River near Libby, Montana, to provide storage to meet flood control and other purposes in the United States of America. The storage

reservoir of the dam shall not raise the level of the Kootenai River at the Canada-United States of America boundary above an elevation consistent with a normal full pool elevation at the dam of 2,459 feet, United States Coast and Geodetic Survey datum, 1929 General Adjustment, 1947 International Supplemental Adjustment.

2. All benefits which occur in either country from the construction and operation of the storage accrue to the country in which the benefits occur.

3. The United States of America shall exercise its option by written notice to Canada and shall submit with the notice a schedule of construction which shall include provision for commencement of construction, whether by way of railroad relocation work or otherwise, within five years of the ratification date.

4. If the United States of America exercises its option, Canada in consideration of the benefits accruing to it under paragraph (2) shall prepare and make available for flooding the land in Canada necessary for the storage reservoir of the dam within a period consistent with the construction schedule.

5. If a variation in the operation of the storage is considered by Canada to be of advantage to it the United States of America shall, upon request, consult with Canada. If the United States of America determines that the variation would not be to its disadvantage it shall vary the operation accordingly.

6. The operation of the storage by the United States of America shall be consistent with any order of approval which may be in force from time to time relating to the levels of Kootenay Lake made by the International Joint Commission under the Boundary Waters Treaty, 1909.

7. Any obligation of Canada under this Article ceases if the United States of America, having exercised the option, does not commence construction of the dam in accordance with the construction schedule.

8. If the United States of America exercises the option it shall commence full operation of the storage within seven years of the date fixed in the construction schedule for commencement of construction.

9. If Canada considers that any portion of the land referred to in paragraph (4) is no longer needed for the purpose of this Article Canada and the United States of America, at the request of Canada, shall consider modification of the obligation of Canada in paragraph (4).

10. If the Treaty is terminated before the end of the useful life of the dam Canada shall for the remainder of the useful life of the dam continue to make available for the storage reservoir of the dam any portion of the land made available under paragraph (4) that is not required by Canada for purposes of diversion of the Kootenay River under Article XIII.

ARTICLE XIII *Diversions*

1. Except as provided in this Article neither Canada nor the United States of America shall, without the consent of the other evidenced by an exchange of notes, divert for any use, other than consumptive use, any water from its natural channel in a way that alters the flow of any water as it crosses the Canada-United States of America boundary within the Columbia River Basin.

2. Canada has the right, after the expiration of twenty years from the ratification date, to divert not more than 1,500,000 acre-feet of water a year from the Kootenay River in the vicinity of Canal Flats, British Columbia, to the headwaters of the Columbia River, provided that the diversion does not reduce the flow of the Kootenay River immediately downstream from the point of diversion below the lesser of 200 cubic feet per second or the natural flow.

3. Canada has the right, exercisable at any time during the period commencing sixty years after the ratification date and expiring one hundred years after the ratification date, to divert to the headwaters of the Columbia River any water which, in its natural channel, would flow in the Kootenay River across the Canada-United States of America boundary, provided that the diversion does not reduce the flow of the Kootenay River at the Canada-United States of America boundary near Newgate, British Columbia, below the lesser of 2500 cubic feet per second or the natural flow.

4. During the last twenty years of the period within which Canada may exercise the right to divert described in paragraph (3) the limitation on diversion is the lesser of 1000 cubic feet per second or the natural flow.

5. Canada has the right:

- (a) if the United States of America does not exercise the option in Article XII(1), or
- (b) if it is determined that the United States of America, having exercised the option, did not commence construction of the dam referred to in Article XII in accordance therewith or that the United States of America is in breach of the obligation in that Article to commence full operation of the storage,

to divert to the headwaters of the Columbia River any water which, in its natural channel, would flow in the Kootenay River across the Canada-United States of America boundary, provided that the diversion does not reduce the flow of the Kootenay River at the Canada-United States of America boundary near Newgate, British Columbia, below the lesser of 1000 cubic feet per second or the natural flow.

6. If a variation in the use of the water diverted under paragraph (2) is considered by the United States of America to be of advantage to it Canada shall, upon request, consult with the United States of America. If Canada determines that the variation would not be to its disadvantage it shall vary the use accordingly.

ARTICLE XIV

Arrangements for Implementation

1. Canada and the United States of America shall each, as soon as possible after the ratification date, designate entities and when so designated the entities are empowered and charged with the duty to formulate and carry out the operating arrangements necessary to implement the Treaty. Either Canada or the United States of America may designate one or more entities. If more than one is designated the powers and duties conferred upon the entities by the Treaty shall be allocated among them in the designation.

2. In addition to the powers and duties dealt with specifically elsewhere in the Treaty the powers and duties of the entities include:

- (a) coordination of plans and exchange of information relating to facilities to be used in producing and obtaining the benefits contemplated by the Treaty,
- (b) calculation of and arrangements for delivery of hydroelectric power to which Canada is entitled for providing flood control,
- (c) calculation of the amounts payable to the United States of America for standby transmission services,
- (d) consultation on requests for variations made pursuant to Articles XII(5) and XIII(6),
- (e) the establishment and operation of a hydrometeorological system as required by Annex A,

- (f) assisting and cooperating with the Permanent Engineering Board in the discharge of its functions,
- (g) periodic calculation of accounts,
- (h) preparation of the hydroelectric operating plans and the flood control operating plans for the Canadian storage together with determination of the downstream power benefits to which Canada is entitled,
- (i) preparation of proposals to implement Article VIII and carrying out any disposal authorized or exchange provided for therein,
- (j) making appropriate arrangements for delivery to Canada of the downstream power benefits to which Canada is entitled including such matters as load factors for delivery, times and points of delivery, and calculation of transmission loss,
- (k) preparation and implementation of detailed operating plans that may produce results more advantageous to both countries than those that would arise from operation under the plans referred to in Annexes A and B.

3. The entities are authorized to make maintenance curtailments. Except in case of emergency, the entity responsible for a maintenance curtailment shall give notice to the corresponding Canadian or United States entity of the curtailment, including the reason therefor and the probable duration thereof and shall both schedule the curtailment with a view to minimizing its impact and exercise due diligence to resume full operations.

4. Canada and the United States of America may by an exchange of notes empower or charge the entities with any other matter coming within the scope of the Treaty.

ARTICLE XV

Permanent Engineering Board

1. A permanent Engineering Board is established consisting of four members, two to be appointed by Canada and two by the United States of America. The initial appointments shall be made within three months of the ratification date.
2. The Permanent Engineering Board shall:
 - (a) assemble records of the flows of the Columbia River and the Kootenay River at the Canada-United States of America boundary;
 - (b) report to Canada and the United States of America whenever there is substantial deviation from the hydroelectric and flood control operating plans and if appropriate include in the report recommendations for remedial action and compensatory adjustments;
 - (c) assist in reconciling differences concerning technical or operational matters that may arise between the entities;
 - (d) make periodic inspections and require reports as necessary from the entities with a view to ensuring that the objectives of the Treaty are being met;
 - (e) make reports to Canada and the United States of America at least once a year of the results being achieved under the Treaty and make special reports concerning any matter which it considers should be brought to their attention;

(f) investigate and report with respect to any other matter coming within the scope of the Treaty at the request of either Canada or the United States of America.

3. Reports of the Permanent Engineering Board made in the course of the performance of its functions under this Article shall be prima facie evidence of the facts therein contained and shall be accepted unless rebutted by other evidence.

4. The Permanent Engineering Board shall comply with directions, relating to its administration and procedures, agreed upon by Canada and the United States of America as evidenced by an exchange of notes.

ARTICLE XVI

Settlement of Differences

1. Differences arising under the Treaty which Canada and the United States of America cannot resolve may be referred by either to the International Joint Commission for decision.

2. If the International Joint Commission does not render a decision within three months of the referral or within such other period as may be agreed upon by Canada and the United States of America, either may then submit the difference to arbitration by written notice to the other.

3. Arbitration shall be a tribunal composed of a member appointed by Canada, a member appointed by the United States of America and a member appointed jointly by Canada and the United States of America who shall be Chairman. If within six weeks of the delivery of a notice under paragraph (2) either Canada or the United States of America has failed to appoint its member, or they are unable to agree upon the member who is to be Chairman, either Canada or the United States of America may request the President of the International Court of Justice to appoint the member or members. The decision of a majority of the members of an arbitration tribunal shall be the decision of the tribunal.

4. Canada and the United States of America shall accept as definitive and binding and shall carry out any decision of the International Joint Commission or an arbitration tribunal.

5. Provision for the administrative support of a tribunal and for remuneration and expenses of its members shall be as agreed in an exchange of notes between Canada and the United States of America.

6. Canada and the United States of America may agree by an exchange of notes on alternative procedures for settling differences arising under the Treaty, including reference of any difference to the International Court of Justice for decision.

ARTICLE XVII

Restoration of Pre-Treaty Legal Status

1. Nothing in this Treaty and no action taken or foregone pursuant to its provisions shall be deemed, after its termination or expiration, to have abrogated or modified any of the rights or obligations of Canada or the United States of America under then existing international law, with respect to the uses of the water resources of the Columbia River basin.

2. Upon termination of this Treaty, the Boundary Waters Treaty, 1909, shall, if it has not been terminated, apply to the Columbia River basin, except insofar as the provisions of that Treaty may be inconsistent with any provision of this Treaty which continues in effect.

3. Upon termination of this Treaty, if the Boundary Waters Treaty, 1909, has been terminated in accordance with Article XIV of that Treaty, the provisions of Article II of that Treaty shall continue to apply to the waters of the Columbia River basin.

4. If upon the termination of this Treaty Article II of the Boundary Waters Treaty, 1909, continues in force by virtue of paragraph (2) of this Article the effect of Article II of that Treaty with respect to the Columbia River basin may be terminated by either Canada or the United States of America delivering to the other one year's written notice to that effect; provided however that the notice may be given only after the termination of this Treaty.

5. If, prior to the termination of this Treaty, Canada undertakes works usable for and relating to a diversion of water from the Columbia River basin, other than works authorized by or under-taken for the purpose of exercising a right under Article XIII or any other provision of this Treaty, paragraph (3) of this Article shall cease to apply one year after delivery by either Canada or the United States of America to the other of written notice to that effect.

ARTICLE XVIII

Liability for Damage

1. Canada and the United States of America shall be liable to the other and shall make appropriate compensation to the other in respect of any act, failure to act, omission or delay amounting to a breach of the Treaty or any of its provisions other than an act, failure to act, omission or delay occurring by reason of war, strike, major calamity, act of God, uncontrollable force or maintenance curtailment.

2. Except as provided in paragraph (1) neither Canada nor the United States of America shall be liable to the other or to any person in respect of any injury, damage or loss occurring in the territory of the other caused by any act, failure to act, omission or delay under the Treaty whether the injury, damage or loss results from negligence or otherwise.

3. Canada and the United States of America, each to the extent possible within its territory, shall exercise due diligence to remove the cause of and to mitigate the effect of any injury, damage or loss occurring in the territory of the other as a result of any act, failure to act, omission or delay under the Treaty.

4. Failure to commence operation as required by Articles IV and XII is not a breach of the Treaty and does not result in the loss of rights under the Treaty if the failure results from a delay that is not wilful or reasonably avoidable.

5. The compensation payable under paragraph (1):

(a) in respect of a breach by Canada of the obligation to commence full operation of a storage, shall be forfeiture of entitlement to downstream power benefits resulting from the operation of that storage, after operation commences, for a period equal to the period between the day of commencement of operation and the day when commencement should have occurred;

(b) in respect of any other breach by either Canada or the United States of America, causing loss of power benefits, shall not exceed the actual loss in revenue from the sale of hydroelectric power.

ARTICLE XIX

Period of Treaty

1. The Treaty shall come into force on the ratification date.

2. Either Canada or the United States of America may terminate the Treaty other than Article XIII (Except paragraph (1) thereof), Article XVII and this Article at any time after the Treaty has been in force for sixty years if it has delivered at least ten years written notice to the other of its intention to terminate the Treaty.

3. If the Treaty is terminated before the end of the useful life of a dam built under Article XII then, notwithstanding termination, Article XII remains in force until the end of the useful life of the dam.

4. If the Treaty is terminated before the end of the useful life of the facilities providing the storage described in Article IV(3) and if the conditions described therein exist then, notwithstanding termination, Articles IV(3) and VI(4) and (5) remain in force until either the end of the useful life of those facilities or until those conditions cease to exist, whichever is the first to occur.

ARTICLE XX
Ratification

The instruments of ratification of the Treaty shall be exchanged by Canada and the United States of America at Ottawa, Canada.

ARTICLE XXI
Registration with the United Nations

In conformity with Article 102 of the Charter of the United Nations, the Treaty shall be registered by Canada with the Secretariat of the United Nations.

This Treaty has been done in duplicate copies in the English language.

IN WITNESS WHEREOF the undersigned, duly authorized by their respective Governments, have signed this Treaty at Washington, District of Columbia, United States of America, this seventeenth day of January, 1961.

For Canada

John G. Diefenbaker
Prime Minister of Canada

E.D. Fulton
Minister of Justice

A.D.P. Heeney
*Ambassador Extraordinary and Plenipotentiary of
Canada to the United States of America*

For the United States of America

Dwight D. Eisenhower
President of the United States of America

Christian A. Herter
Secretary of State

Elmer F. Bennett
Under Secretary of the Interior

ANNEX A
Principles of Operation

General:

1. The Canadian storage provided under Article II will be operated in accordance with the procedures described herein.

2. A hydrometeorological system, including snow courses, precipitation stations and stream flow gauges will be established and operated, as mutually agreed by the entities and in consultation with the Permanent Engineering Board, for use in establishing data for detailed programming of flood control and power operations. Hydrometeorological information will be made available to the entities in both countries for immediate and continuing use in flood control and power operations.

3. Sufficient discharge capacity at each dam to afford the desired regulation for power and flood control will be provided through outlet works and turbine installations as mutually agreed by the entities. The discharge capacity provided for flood control operations will be large enough to pass inflow plus sufficient storage releases during the evacuation period to provide the storage space required. The discharge capacity will be evaluated on the basis of full use of any conduits provide for that purpose plus one half the hydraulic capacity of the turbine installation at the time of commencement of the operation of storage under the Treaty.

4. The outflows will be in accordance with storage reservation diagrams and associated criteria established for flood control purposes and with reservoir-balance relationships established for power operations. Unless otherwise agreed by the entities the average weekly outflows shall not be less than 3000 cubic feet per second at the dam described in Article II(2)(a), not less than 5000 cubic feet per second at the dam described in Article II(2)(b), and not less than 1000 cubic feet per second at the dam described in Article II(2)(c). These minimum average weekly releases may be scheduled by the Canadian entity as required for power or other purposes.

Flood Control:

5. For flood control operation, the United States entity will submit flood control operating plans which may consist of or include flood control storage reservation diagrams and associated criteria for each of the dams. The Canadian entity will operate in accordance with these diagrams or any variation which the entities agree will not derogate from the desired aim of the flood control plan. The use of these diagrams will be based on data obtained in accordance with paragraph 2. The diagrams will consist of relationships specifying the flood control storage reservations required at indicated times of the year for volumes of forecast runoff. After consultation with the Canadian entity the United States entity may from time to time as conditions warrant adjust these storage reservation diagrams within the general limitations of flood control operation. Evacuation of the storages listed hereunder will be guided by the flood control storage reservation diagrams and refill will be as requested by the United States entity after consultation with the Canadian entity. The general limitations of flood control operation are as follows:

(a) The Dam described in Article II(2)(a) - The reservoir will be evacuated to provide up to 80,000 acre-feet of storage, if required, for flood control use by May 1 of each year.

(b) The Dam described in Article II(2)(b) - The reservoir will be evacuated to provide up to 7,100,000 acre-feet of storage, if required, for flood control use by May 1 of each year.

(c) The Dam described in Article II(2)(c) - The reservoir will be evacuated to provide up to 700,000 acre-feet of storage, if required, for flood control use by April 1 of each year and up to 1,270,000 acre-feet of storage, if required, for flood control use by May 1 of each year.

(d) The Canadian entity may exchange flood control storage provided in the reservoir referred to in subparagraph (b) for additional storage provided in the reservoir referred to in subparagraph (a) if the entities agree that the exchange would provide the same effectiveness for control of floods on the Columbia River at The Dalles, Oregon.

Power:

6. For power generating purposes the 15,500,000 acre-feet of Canadian storage will be operated in accordance with operating plans designed to achieve optimum power generation downstream in the United States of America until such time as power generating facilities are installed at the site referred to in paragraph 5(a) or at sites in Canada downstream therefrom.

7. After at-site power is developed at the site referred to in paragraph 5(a) or power generating facilities are placed in operation in Canada downstream from that site, the storage operation will be changed so as to be operated in accordance with operating plans designed to achieve optimum power generation at-site in Canada and downstream in Canada and the United States of America, including consideration of any agreed electrical coordination between the two countries. Any reduction in the downstream power benefits in the United States of America resulting from that change in operation of the Canadian storage shall not exceed in any one year the reduction in downstream power benefits in the United States of America which would result from reducing by 500,000 acre-feet the Canadian storage operated to achieve optimum power generation in the United States of America and shall not exceed at any time during the period of the Treaty the reduction in downstream power benefits in the United States of America which would result from similarly reducing the Canadian storage by 3,000,000 acre-feet.

8. After at-site power is developed at the site referred to in paragraph 5(a) or power generating facilities are placed in operation in Canada downstream from that site, storage may be operated to achieve optimum generation of power in the United States of America alone if mutually agreed by the entities in which event the United States of America shall supply power to Canada to offset any reduction in Canadian generation which would be created as a result of such operation as compared to operation to achieve optimum power generation at-site in Canada and downstream in Canada and the United States of America. Similarly, the storage may be operated to achieve optimum generation of power in Canada alone if mutually agreed by the entities in which event Canada shall supply power to the United States of America to offset any reduction in United States generation which would be created as a result of such operation as compared to operation to achieve optimum power generation at-site in Canada and downstream in Canada and the United States of America.

9. Before the first storage becomes operative, the entities will agree on operating plans and the resulting downstream power benefits for each year until the total of 15,500,000 acre-feet of storage in Canada becomes operative. In addition, commencing five years before the total of 15,500,000 acre-feet of storage is expected to become operative, the entities will agree annually on operating plans and the resulting downstream power benefits for the sixth succeeding year of operation thereafter. This procedure will continue during the life of the Treaty, providing to both the entities, in advance, an assured plan of operation of the Canadian storage and a determination of the resulting downstream power benefits for the next succeeding five years.

ANNEX B*Determination of Downstream Power Benefits*

1. The downstream power benefits in the United States of America attributable to operation in accordance with Annex A of the storage provided by Canada under Article II will be determined in advance and will be the estimated increase in dependable hydroelectric capacity in kilowatts for agreed critical stream flow periods and the increase in average annual usable hydroelectric energy output in kilowatt hours on the basis of an agreed period of stream flow record.

2. The dependable hydroelectric capacity to be credited to Canadian storage will be the difference between the average rates of generation in kilowatts during the appropriate critical stream flow periods for the United States of America base system, consisting of the projects listed in the table, with and without the addition of the Canadian storage, divided by the estimated average critical period load factor. The capacity credit shall not exceed the difference between the capability of the base system without Canadian storage and the maximum feasible capability of the base system with Canadian storage, to supply firm load during the critical stream flow periods.

3. The increase in the average annual usable hydroelectric energy will be determined by first computing the difference between the available hydroelectric energy at the United States base system with and without Canadian storage. The entities will then agree upon the part of available energy which is usable with and without Canadian storage, and the difference thus agreed will be the increase in average annual usable hydroelectric energy. Determination of the part of the energy which is usable will include consideration of existing and scheduled transmission facilities and the existence of markets capable of using the energy on a contractual basis similar to the then existing contracts. The part of the available energy which is considered usable shall be the sum of:

- (a) the firm energy,
- (b) the energy which can be used for thermal power displacement in the Pacific Northwest Area as defined in Paragraph 7, and
- (c) the amount of the remaining portion of the available energy which is agreed by the entities to be usable and which shall not exceed in any event 40% of that remainder.

4. An initial determination of the estimated downstream power benefits in the United States of America from Canadian storage added to the United States base system will be made before any of the Canadian storage becomes operative. This determination will include estimates of the downstream power benefits for each year until the total of 15,500,000 acre-feet of Canadian storage becomes operative.

5. Commencing five years before the total of 15,500,000 acre-feet of storage is expected to become operative, estimates of downstream power benefits will be calculated annually for the sixth succeeding year on the basis of the assured plan of operation for that year.

6. The critical stream flow period and the details of the assured plan of operation will be agreed upon by the entities at each determination. Unless otherwise agreed upon by the entities, the determination of the downstream power benefits shall be based upon stream flows for the twenty year period beginning with July 1928 as contained in the report entitled Modified Flows at Selected Power Sites - Columbia River Basin, dated June 1957. No retroactive adjustment in downstream power benefits will be made at any time during the period of the Treaty. No reduction in the downstream power benefits credited to Canadian storage will be made as a result of the load estimate in the United States of America, for the year for which the determination is made, being less than the load estimate for the preceding year.

7. In computing the increase in dependable hydroelectric capacity and the increase in average annual hydroelectric energy, the procedure shall be in accordance with the three steps described

below and shall encompass the loads of the Pacific Northwest Area. The Pacific Northwest Area for purposes of these determinations shall be Oregon, Washington, Idaho, and Montana west of the Continental Divide but shall exclude areas served on the ratification date by the California Oregon Power Company and the Utah Power and Light Company.

Step I - The system for the period covered by the estimate will consist of the Canadian storage, the United States base system, any thermal installation operated in coordination with the base system, and additional hydroelectric projects which will provide storage releases usable by the base system or which will use storage releases that are usable by the base system. The installations included in this system will be those required, with allowance for adequate reserves, to meet the forecast power load to be served by this system in the United States of America, including the estimated flow of power at points of interconnection with adjacent areas, subject to paragraph 3, plus the portion of the entitlement of Canada that is expected to be used in Canada. The capability of this system to supply this load will be determined on the basis that the system will be operated in accordance with the established operating procedures of each of the projects involved.

Step II - A determination of the energy capability will be made using the same thermal installation as in Step I, the United States base system with the same installed capacity as in Step I and Canadian storage.

Step III - A similar determination of the energy capability will be made using the same thermal installation as in Step I and the United States base system with the same installed capacity as in Step I.

8. The downstream power benefits to be credited to Canadian storage will be the differences between the determinations in Step II and Step III in dependable hydroelectric capacity and in average annual usable hydroelectric energy, made in accordance with paragraphs 2 and 3.

ANNEX B - TABLE - BASE SYSTEM

Project	Stream	Stream		Normal Pool Feet	Elev. Tailwater Feet	Gross Head Feet	Initial Install.		Estimated Ultimate Install.	
		Mile Above Mouth	Usable Storage Acre-Feet				# of Units	Plant Kilowatts (Nameplate)	# of Units	Plant Kilowatts (Nameplate)
Hungry Horse	SFk Flathead	5	3,161,000 ⁽⁴⁾	3560	3083	477	4	285,000	4	285,000
Kerr	Flathead	73	1,219,000	2893	2706	187	3	168,000	3	168,000
Thompson Falls	Clark Fork	279	Pondage	2396	2336	60	6	30,000	8	65,000
Noxon Rapids	Clark Fork	170	Pondage	2331	2179	152	4	336,000	5	420,000
Cabinet Gorge	Clark Fork	150	Pondage	2175	2078	97	4	200,000	6	300,000
Albeni Falls	Pend Oreille	90	1,155,000	2062	2034	28	3	42,600	3	42,600
Box Canyon	Pend Oreille	34	Pondage	2031	1989	42	4	60,000	4	60,000
Grand Coulee	Columbia	597	5,232,000 ⁽⁴⁾	1290 ^(3,4)	947	343	18	1,944,000	34	3,672,000
Chief Joseph	Columbia	546	Pondage	946	775	171	16	1,024,000	27	1,728,000
Wells (1)	Columbia	516	Pondage	775	707	68	6	400,000	10	666,700
Rocky Reach	Columbia	474	Pondage	707	614	93	7	711,550	11	1,118,150
Rock Island	Columbia	453	Pondage	608	570	38	10	212,100	10	212,100
Wanapum	Columbia	415	Pondage	570	486	84	10	831,250	16	1,330,000
Priest Rapids	Columbia	397	Pondage	486	406	80	10	788,500	16	1,261,600
Brownlee	Snake	285	974,000	2077	1805	272	4	360,400	6	540,600
Oxbow	Snake	273	Pondage	1805	1683	122	4	190,000	5	237,500
Ice Harbor	Snake	10	Pondage	440	343	97	3	270,000	6	540,000
McNary	Columbia	292	Pondage	340	265	75	14	980,000	20	1,400,000
John Day	Columbia	216	Pondage	265	161	104	8	1,080,000	20	2,700,000
The Dalles	Columbia	192	Pondage	160	74	86	16 ⁽²⁾	1,119,000	24 ⁽²⁾	1,743,000
Bonneville	Columbia	145	Pondage	74	15	59	10	518,400	16	890,400
Kootenay Lk	Kootenay	16	673,000	1745	--	--	--	--	--	--
Chelan	Chelan	0	676,000	1100	707	393	2	48,000	4	96,600
Couer d'Alene L.	Couer d'Alene	102	223,000	2128	--	--	--	--	--	--
TOTAL 24 PROJECTS			13,313,000⁽⁴⁾				3128	11,598,800	258	19,476,600

- (1) The Wells project is not presently under construction; when this project or any other project on the main stem of the Columbia River is completed, they will be integral components of the base system.
- (2) Includes two 13,500 kilowatt units for fish attraction water.
- (3) With flashboards.
- (4) In determining the base system capabilities with and without Canadian storage the Hungry Horse reservoir storage will be limited to 3,008,000 acre-feet (normal full pool elevation of 3560 feet) and the Grand Coulee project will not include the effect of adding flashboards, limiting the storage to 5,072 acre-feet (normal full pool elevation of 1288 feet). The total usable storage of the base system as so adjusted will be 13,000,000 acre-feet.

Protocol

ANNEX TO EXCHANGE OF NOTES

*Dated January 22, 1964 Between the Governments of Canada
And The United States Regarding the Columbia River Treaty*

I. If the United States entity should call upon Canada to operate storage in the Columbia River Basin to meet flood control needs of the United States of America pursuant to Article IV(2)(b) or Article IV(3) of the Treaty, such call shall be made only to the extent necessary to meet forecast flood control needs in the territory of the United States of America that cannot adequately be met by flood control facilities in the United States of America in accordance with the following conditions:

(1) Unless otherwise agreed by the Permanent Engineering Board, the need to use Canadian flood control facilities under Article IV(2)(b) of the Treaty shall be considered to have arisen only in the case of potential floods which could result in a peak discharge in excess of 600,000 cubic feet per second at The Dalles, Oregon, assuming the use of all related storage in the United States of America existing and under construction in January 1961, storage provided by any dam constructed pursuant to Article XII of the Treaty and the Canadian storage described in Article IV(2)(a) of the Treaty.

(2) The United States entity will call upon Canada to operate storage under Article IV(3) of the Treaty only to control potential floods in the United States of America that could not be adequately controlled by all the related storage facilities in the United States of America existing at the expiration of 60 years from the ratification date but in no event shall Canada be required to provide any greater degree of flood control under Article IV(3) of the Treaty than that provided for under Article IV(2) of the Treaty.

(3) A call shall be made only if the Canadian entity has been consulted whether the need for flood control is, or is likely to be, such that it cannot be met by the use of flood control facilities in the United States of America in accordance with subparagraphs (1) or (2) of this paragraph. Within ten days of receipt of a call, the Canadian entity will communicate its acceptance, or its rejection or proposals for modification of the call, together with supporting considerations. When the communication indicates rejection or modification of the call the United States entity will review the situation in the light of the communication and subsequent developments and will then withdraw or modify the call if practicable. In the absence of agreement on the call or its terms the United States entity will submit the matter to the Permanent Engineering Board provided for under Article XV of the Treaty for assistance as contemplated in Article XV(2)(c) of the Treaty. The entities will be guided by any instructions issued by the Permanent Engineering Board. If the Permanent Engineering Board does not issue instructions within ten days of receipt of a submission the United States entity may renew the call for any part or all of the storage covered in the original call and the Canadian entity shall forthwith honor the request.

II. In preparing the flood control operating plans in accordance with paragraph 5 of Annex A of the Treaty, and in making calls to operate for flood control pursuant to Articles IV(2)(b) and IV(3) of the Treaty, every effort will be made to minimize flood damage in both Canada and the United States of America.

III. The exchange of Notes provided for in Article VIII(1) of the Treaty shall take place contemporaneously with the exchange of the Instruments of Ratification of the Treaty provided for in Article XX of the Treaty.

IV. (1) During the period and to the extent that the sale of Canada's entitlement to downstream power benefits within the United States of America as a result of an exchange of Notes pursuant to Article VIII(1) of the Treaty relieves the United States of America of its obligation

to provide east-west standby transmission service as called for by Article X(1) of the Treaty, Canada is not required to make payment for the east-west standby transmission service with regard to Canada's entitlement to downstream power benefits sold in the United States of America.

(2) The United States of America is not entitled to any payments of the character set out in subparagraph (1) of this paragraph in respect of that portion of Canada's entitlement to downstream power benefits delivered by the United States of America to Canada at any point on the Canada-United States of America boundary other than at a point near Oliver, British Columbia, and the United States of America is not required to provide the east-west standby transmission service referred to in subparagraph (1) of this paragraph in respect of the portion of Canada's entitlement to downstream power benefits which is so delivered.

V. Inasmuch as control of historic streamflows of the Kootenay River by the dam provided for in Article XII(1) of the Treaty would result in more than 200,000 kilowatt years per annum of energy benefit downstream in Canada, as well as important flood control protection to Canada, and the operation of that dam is therefore of concern to Canada, the entities shall, pursuant to Article XIV(2)(a) of the Treaty, cooperate on a continuing basis to coordinate the operation of that dam with the operation of hydroelectric plants on the Kootenay River and elsewhere in Canada in accordance with the provisions of Article XII(5) and Article XII(6) of the Treaty.

VI. (1) Canada and the United States of America are in agreement that Article XIII(1) of the Treaty provides to each of them a right to divert water for a consumptive use.

(2) Any diversion of water from the Kootenay River when once instituted under the provisions of Article XIII of the Treaty is not subject to any limitation as to time.

VII. As contemplated by Article IV(1) of the Treaty, Canada shall operate the Canadian storage in accordance with Annex A and hydroelectric operating plans made thereunder. Also, as contemplated by Annexes A and B of the Treaty and Article XIV(2)(k) of the Treaty, these operating plans before they are agreed to by the entities will be conditioned as follows:

(1) As the downstream power benefits credited to Canadian storage decrease with time, the storage required to be operated by Canada pursuant to paragraphs 6 and 9 of Annex A of the Treaty, will be that required to produce those benefits.

(2) The hydroelectric operating plans, which will be based on Step I of the studies referred to in paragraph 7 of Annex B of the Treaty, will provide a reservoir-balance relationship for each month of the whole of the Canadian storage committed rather than a separate relationship for each of the three Canadian storages. Subject to compliance with any detailed operating plan agreed to by the entities as permitted by Article XIV(2)(k) of the Treaty, the manner of operation which will achieve the specific storage or release of storage called for in a hydroelectric operating plan consistent with optimum storage use will be at the discretion of the Canadian entity.

(3) Optimum power generation at-site in Canada and downstream in Canada and the United States of America referred to in paragraph 7 of Annex A of the Treaty will include power generation at-site and downstream in Canada of the Canadian storages referred to in Article II(2) of the Treaty, power generation in Canada which is coordinated therewith, downstream power benefits from the Canadian storage which are produced in the United States of America and measured under the terms of Annex B of the Treaty, power generation in the Pacific Northwest Area of the United States of America and power generation coordinated therewith.

VIII. The determination of downstream power benefits pursuant to Annex B of the Treaty, in respect of each year until the expiration of thirty years from the commencement of full operation in accordance with Article IV of the Treaty of that portion of the Canadian storage described in Article II

of the Treaty which is last placed in full operation, and thereafter until otherwise agreed upon by the entities, shall be based upon stream flows for the thirty-year period beginning July 1928 as contained in the report "Extension of Modified Flows Through 1958 - Columbia River Basin" and dated June 29, 1961, by the Water Management Subcommittee of the Columbia Basin Inter-Agency Committee.

IX. (1) Each load used in making the determinations required by Steps II and III of paragraph 7 of Annex B of the Treaty shall have the same shape as the load of the Pacific Northwest area as that area is defined in that paragraph.

(2) The capacity credit of Canadian storage shall not exceed the difference between the firm load carrying capabilities of the projects and installations included in Step II of paragraph 7 of Annex B of the Treaty and the projects and installations included in Step III of paragraph 7 of Annex B of the Treaty.

X. In making all determinations required by Annex B of the Treaty the loads used shall include the power required for pumping water for consumptive use into the Banks Equalizing Reservoir of the Columbia Basin Federal Reclamation Project but mention of this particular load is not intended in any way to exclude from those loads any use of power that would normally be part of such loads.

XI. In the event operation of any of the Canadian storages is commenced at a time which would result in the United States of America receiving flood protection for periods longer than those on which the amounts of flood control payments to Canada set forth in Article VI(1) of the Treaty are based, the United States of America and Canada shall consult as to the adjustments, if any, in the flood control payments that may be equitable in the light of all relevant factors. Any adjustment would be calculated over the longer period or periods on the same basis and in the same manner as the calculation of the amounts set forth in Article VI(1) of the Treaty. The consultations shall begin promptly upon the determination of definite dates for the commencement of operation of the Canadian storages.

XII. Canada and the United States of America are in agreement that the Treaty does not establish any general principle or precedent applicable to waters other than those of the Columbia River Basin and does not detract from the application of the Boundary Waters Treaty, 1909, to other waters.

Washington, 22 January 1964

The Honorable Paul Martin, P.C., Q.C.
Secretary of State for External Affairs, Ottawa

Sir,

I have the honor to refer to your Note dated 22 January 1964, together with the Annex thereto regarding the Treaty between Canada and the United States of America relating to cooperative development of the water resources of the Columbia River Basin signed at Washington on 17 January 1961.

I wish to advise you that the Government of the United States of America agrees that your Note with the Annex thereto, together with this reply, shall constitute an agreement between our two Governments relating to the carrying out of the provisions of the Treaty with effect from the date of the exchange of instruments of ratification of the Treaty.

Accept, Sir, the renewed assurances of my highest consideration.

Secretary of State

January 22, 1964

The Honorable Paul Martin, P.C., Q.C.
Secretary of State for External Affairs, Ottawa

Sir,

I have the honor to refer to the discussions which have been held between representatives of the Government of Canada and the Government of the United States of America regarding a sale of Canada's entitlement to downstream power benefits under the Treaty between Canada and the United States of America relating to cooperative development of the water resources of the Columbia River Basin, signed on January 17, 1961.

On the basis of these discussions my Government understands that the two Governments recognize that it would be in the public interest of both countries if Canada's entitlement to downstream power benefits could be disposed of, as contemplated by Article VIII of the Treaty, in accordance with general conditions and limits similar to those set out in detail in the attachment hereto, and further, that before such a disposition can be concluded and confirmed by the two Governments, additional steps must be taken in each country. Therefore, in furtherance of this aim, it is understood that the two Governments are agreed that:

- (a) the Government of the United States will use its best efforts to arrange for disposition of Canada's entitlement to downstream power benefits within the United States of America in accordance with the general conditions and limits set forth in the attachment, and
- (b) the Government of Canada will use its best efforts to accomplish all those things which are considered necessary and preliminary to ratification of the Treaty as quickly as possible, including any arrangements for implementation and acceptance of the general conditions and limits set forth in the attachment.

I should like to propose that if agreeable to your Government this Note together with the attachment and your reply shall constitute an agreement by our Governments relating to the Treaty.

Accept, Sir, the renewed assurances of my highest consideration.

Secretary of State

ATTACHMENT RELATING TO TERMS OF SALE

A. The disposition shall consist of the downstream power benefits to which Canada is entitled under the Treaty, other than Canada's entitlement to downstream power benefits resulting from the construction or operation of a project described in Article IX of the Treaty, and shall be by way of a contract of sale authorized in accordance with Article VIII of the Treaty between the British Columbia Hydro and Power Authority and a single Purchaser containing provisions mutually satisfactory to the parties to the contract but shall be subject to and be operative in accordance with the following general conditions and limits:

1. (a) The storages described in Article II of the Treaty shall be fully operative for power purposes in accordance with the following schedule:

Storage described in Article II(2)(c) - approximately 1,400,000 acre feet on April 1, 1968;

Storage described in Article II(2)(b) - approximately 7,100,000 acre feet on April 1, 1969;

Storage described in Article II(2)(c) - approximately 7,000,000 acre feet on April 1, 1973.

(b) The period of sale of the entitlement allocated to each of the storages shall terminate and expire thirty years from the date on which that storage is required to be fully operative for power purposes in accordance with the schedule in subparagraph (a) of this paragraph.

(c) In the event any storage is not fully operative in accordance with the schedule in subparagraph (a) of this paragraph or if, during the period of sale, the storage is not operated as required by the hydroelectric operating plans agreed upon in accordance with the Treaty, as modified by any detailed operating plan agreed to in accordance with Article XIV(2)(k) of the Treaty, and the Canadian entitlement is thereby reduced, the British Columbia Hydro and Power Authority shall pay the Purchaser an amount equal to the cost it would have to incur to replace that part of the reduction in the Canadian entitlement which the vendees of the Purchaser could have used other than costs that could have been avoided had every reasonable effort to mitigate losses been made by the Purchaser, the United States entity and the owners of non-federal dams on the Columbia River in the United States of America. Alternatively, the British Columbia Hydro and Power Authority may, at its option, supply power to the Purchaser in an amount which assures that the Purchaser receives the capacity and energy which would have constituted that part of the reduction in the Canadian entitlement that the vendees of the Purchaser could have used if there had been no default, together with appropriate adjustments to reflect transmission costs in the United States of America, delivery to be made when the loss of power would otherwise have occurred.

If the assurance described in paragraph B.5. of this Attachment is given to the Purchaser, the United States entity may succeed to all the rights of the Purchaser and its vendees to receive the entire Canadian entitlement, or that part that could be used by the vendees, and to be compensated by British Columbia Hydro and Power Authority in the event of non-receipt thereof. The United States entity agrees that before it purchases more costly power from any third party for the purpose of supplying the necessary amount of the Canadian entitlement to the Purchaser, it will first cause to be delivered to the Purchaser, or for its account, any available surplus capacity or energy from the United States Federal Columbia River System and compensation to the United States entity because of such deliveries shall be computed by applying the then applicable rate schedules of the Bonneville Power Administration to the deliveries.

In the event of disagreement, determination of compensation in money or power due under this paragraph shall be resolved by arbitration and shall be confined to the actual loss incurred in accordance with the principles in this paragraph.

(d) For the purpose of allocating downstream power benefits among the Treaty storages from April 1, 1998 to April 1, 2003, the percentage of downstream power benefits allocated to each Treaty storage shall be the percentage of the total Treaty storages provided by that storage.

2. For the period of the sale the British Columbia Hydro and Power Authority shall operate and maintain the Treaty storages in accordance with the provisions of the Treaty.
3. (a) The purchase price of the entitlement shall be \$254,000,000, in United States funds of October 1, 1964, subject to adjustment, in the event of an earlier payment of all or part thereof, to the then present worth, at a discount rate of 4-1/2 percent per annum.

as

(b) The purchase price shall be paid to Canada contemporaneously with the exchange of ratifications of the Treaty and shall be applied toward the cost of constructing the Treaty projects through a transfer of the purchase price by Canada to the Government of British Columbia, pursuant to agreements, deemed satisfactory to Canada, to be entered into between Canada and the Government of British Columbia.

4. If during the period of the sale, there is any reduction in Canada's entitlement to downstream power benefits which results from action taken by the Canadian entity pursuant to paragraph 7 of Annex A of the Treaty, the British Columbia Hydro and Power Authority shall, by supplying power to the Purchaser, or otherwise as may be agreed, offset that reduction in a manner so that the Purchaser will be compensated therefor.

5. The Purchaser shall have and may exercise the rights of the British Columbia Hydro and Power Authority relating to the negotiation and conclusion with the United States entity, of proposals relating to the exchanges authorized by Article VIII(2) of the Treaty with respect to any portion of Canada's entitlement to downstream power benefits sold to the Purchaser.

B. The Notes to be exchanged pursuant to Article VIII(1) of the Treaty shall contain, inter alia, provisions incorporating the following requirements:

1. As soon as practicable after start of construction of each Treaty project the Canadian and United States entities shall agree upon a program for filling the storage provided by the project. The filling program shall have the objective of having the storages described in Article II(2)(c) and Article II(2)(b) of the Treaty full by September 1 following the date when the storages become fully operative and the storage provided by the dam mentioned in Article II(2)(a) of the Treaty full to 15 million acre-feet by September 1, 1975. This objective shall be reflected in the hydroelectric operating plans and shall take into account generating requirements at-site and downstream in Canada and the United States of America to meet loads.

2. In the event the United States of America becomes entitled to compensation in respect of a breach of the obligation under Article IV(6) of the Treaty to commence a full operation of a storage, compensation payable to the United States of America under Article XVIII(5)(a) of the Treaty shall be made in an amount equal to 2.70 mills per kilowatt-hour, and 46 cents per kilowatt of dependable capacity for each month or fraction thereof, in United States funds, for and in lieu of the power which would have been forfeited under Article XVIII(5)(a) of the Treaty if Canada's entitlement to downstream power benefits had not been sold in the United States of America. Alternatively, Canada may, at its option, supply capacity and energy to the United States entity in an amount equal to that which would have been forfeited, together with appropriate adjustments to reflect transmission costs in the United States of America, delivery to be made when the loss would otherwise have occurred.

3. A diminution of Canada's entitlement to downstream power benefits sold in the United States of America which is directly attributable to a failure to comply with paragraph A.1(a) or

paragraph A.2 of this Attachment, in the absence of reimbursement therefor by the British Columbia Hydro and Power Authority, constitutes a breach of the Treaty by Canada and Article XVIII(5) of the Treaty and the exculpatory provisions in Article XVIII of the Treaty do not apply to such breach. Compensation or replacement of power as specified in paragraph A.1(c) of this Attachment shall be made by Canada and shall be accepted by the United States of America as complete satisfaction of Canada's liability under this paragraph.

4. For any year in which Canada's entitlement to downstream power benefits is sold in the United States of America, the United States entity may decide the amount of the downstream power benefits for purposes connected with the disposition thereof in the United States of America. This authorization, however, shall not affect the rights or relieve the obligations of the Canadian and United States entities relating to joint activities under the provisions of Article XIV and Annexes A and B of the Treaty; nor shall it apply to determination of compensation provided for in paragraph A.1(c) and paragraph B.2 of this Attachment.

5. If necessary to accomplish the sale of Canada's entitlement to downstream power benefits in accordance with this Attachment, the United States entity shall assure unconditionally the delivery to or for the account of the Purchaser, by appropriate exchange contracts, of an amount of power agreed between the United States entity and the Purchaser to be the equivalent of the entitlement during the period of the sale.

C. Canada shall designate the British Columbia Hydro and Power Authority as the Canadian entity for the purposes of Article XIV(1) of the Treaty.

Ottawa, 22 January 1964

The Honorable Dean Rusk, Secretary of State of
The United States of America, Washington

Sir,

I have the honour to refer to your Note dated 22 January 1964, together with the attachment thereto regarding the Treaty between Canada and the United States of America relating to cooperative development of the water resources of the Columbia River Basin signed at Washington on 17 January 1961.

I wish to advise you that the Government of Canada agrees that your Note with the attachment thereto, together with this reply, shall constitute an agreement between our two Governments relating to the Treaty.

Accept, Sir, the renewed assurances of my highest consideration.

Secretary of State for
External Affairs

**DEPARTMENT OF EXTERNAL AFFAIRS
CANADA**

Ottawa, September 16, 1964

No. 140

His Excellency, W. Walton Butterworth
Ambassador of the United States of America, Ottawa

Excellency,

I have the honour to refer to the Treaty between Canada and the United States of America relating to the cooperative development of the water resources of the Columbia River Basin signed at Washington on 17 January 1961, to the Protocol attached to my Note to the Honourable Dean Rusk, Secretary of State of the United States of America, dated 22 January 1964, and to the instruments of ratification of the Treaty which occurred today.

I also have the honour to refer to the discussions which have been held between representatives of the Government of Canada and the Government of the United States of America in connection with the exchange of Notes, dated 22 January 1964, regarding sale in the United States of America of Canada's entitlement under the Treaty to downstream power benefits.

My Government also understands that your Government has designated the Administrator of the Bonneville Power Administration, Department of the Interior, and the Division Engineer, North Pacific Division, Corps of Engineers, Department of the Army, as the United States Entity for the purposes of Article XIV(1) of the Treaty, and I would inform you that the Government of Canada has designated the British Columbia Hydro and Power Authority, a corporation incorporated in the Province of British Columbia by the British Columbia Hydro and Power Authority Act, 1964, as the Canadian Entity for the purposes of that Article. A copy of the designation is attached hereto.

On the basis of those discussions the Government of Canada proposes that the Canadian Entitlement Purchase Agreement regarding the sale in the United States of America of the Canadian Entitlement under the Treaty to downstream power benefits entered into between the British Columbia Hydro and Power Authority and the Columbia Storage Power Exchange, the single purchaser referred to in the attachment to your Note of January 22, 1964, relating to the terms of the sale, a copy of which agreement is attached hereto, be authorized for the purposes of Article VIII(1) of the Treaty as a disposal of the Canadian Entitlement in the United States of America for the period and in accordance with the other terms and provisions set out in the Canadian Entitlement Purchase Agreement.

My Government also understands that your Government pursuant to paragraph B.5 in the attachment to Mr. Secretary Rusk's Note of January 22, 1964, relating to the terms of the sale, has determined that the United States Entity shall enter into and that it has entered into the Canadian Entitlement Exchange Agreements which agreements assure unconditionally the delivery for the account of the Columbia Storage Power Exchange of an amount of power agreed between the United States Entity and the Columbia Storage Power Exchange to be the equivalent of the Canadian Entitlement being sold under the Canadian Entitlement Purchase Agreement, and that the United States Entity has succeeded to all the rights and obligations of the Columbia Storage Power Exchange under the Canadian Entitlement Purchase Agreement other than the obligation to pay the purchase price, and further that the United States Entity has, pursuant to Article XI of the Treaty, approved the use of the improved stream flow in the United States of America brought about by the Treaty by entering into Canadian Entitlement Allocation Agreements with owners of non-Federal dams on the Columbia River

My Government understands that the two Governments are agreed that the Government of the United States undertakes that:

- (1) So long as the Canadian Entitlement Exchange Agreements remain in force, the United States Entity will perform all the obligations of the Columbia Storage Power Exchange under the Canadian Entitlement Purchase Agreement other than the obligation to pay the purchase price specified in Section 3 of the Canadian Entitlement Purchase Agreement;
- (2) In the event the Canadian Entitlement is reduced as a result of a failure on the part of the Canadian Entity to comply with Section 4 of the Canadian Entitlement Purchase Agreement and if the failure results other than from wilful omission by the Canadian Entity to fulfill its obligations under that agreement, the United States Entity will, without compensation, offset the effect of that failure by adjusting the operation of the portion of the System described by Step I of paragraph 7 of Annex B of the Treaty which is in the United States of America to the extent that the United States Entity can do so without loss of energy or capacity to that portion of the system; and
- (3) If the procedure described in paragraph (2) above does not fully offset the effect of the failure, then to the extent the entities agree thereon, an additional offsetting adjustment in the operation of the portion of the System described in Step I of Annex B of the Treaty which is in the United States of America and which would result in only an energy loss will be made if the Canadian Entity delivers to the United States Entity energy sufficient to make up one half that energy loss.
- (4) In order to make up any reduction in the Canadian Entitlement, which reduction is to be determined in accordance with Section 6 of the Canadian Entitlement Purchase Agreement, the United States Entity will cause to be delivered the least expensive capacity and energy available and, to the extent that it would be the lease expensive available, will deliver, at the then applicable rate schedules of the Bonneville Power Administration, any available surplus capacity and energy from the United States Federal Columbia River System.

The Government of Canada also proposes that:

- (5) Contemporaneously with the exchange of the instruments of ratification CSPE shall have paid to Canada the sum in United States funds of \$253,929,534.25, being the equivalent of the sum of \$254,000,000 in the United States funds as of October 1, 1964 adjusted to September 16, 1964 at a discount rate of 4-1/2 percent per annum on the basis set out in the January 22, 1964 Exchange of Notes between our two Governments relating to the terms of sale, which sum shall be applied towards the cost of constructing the Treaty projects through a transfer of the sum by Canada to the Government of British Columbia pursuant to arrangements entered into between Canada and British Columbia.
- (6) No modification or renewal of the Canadian Entitlement Purchase Agreement shall be effective until approved by the Governments of Canada and the United States of America, evidenced by an exchange of Notes.
- (7) The storages described in Article II of the Treaty shall be considered fully operative when the facilities for such storages are available and outlet facilities are operable for regulating flows in accordance with the flood control and hydroelectric operating plans.
- (8) As soon as practicable, the Canadian and United States Entities shall agree upon a program for filling the storage provided by each of the Treaty projects. The filling program shall have the objective of having the storages described in Article II(2)(a), Article II(2)(b), and Article II(2)(c) of the Treaty filled to the extent that usable storage, in the amounts provided for each storage in Article II of the Treaty is available by September 1 following the date when the

storage becomes fully operative, and of having the storage provided by the dam described in Article II(2)(a) filled to 15 million acre-feet by September 1, 1975. This objective shall be reflected in the hydroelectric operating plans and shall take into account generating requirements at-site and downstream in Canada and the United States of America to meet loads and requirements for flood control.

- (9) In the event the United States of America becomes entitled to compensation from Canada for loss of downstream power benefits, other than Canada's entitlement to downstream power benefits, in respect of a breach of the obligation under Article IV(6) of the Treaty to commence full operation of a storage, compensation payable to the United States of America under Article XVIII(5)(a) of the Treaty shall be made in an amount equal to 2.70 mills per kilowatt-hour of energy, and 46 cents per kilowatt of dependable capacity for each month or fraction thereof, in United States Funds, for and in lieu of the power which would have been forfeited under Article XVIII(5)(a) of the Treaty if Canada's entitlement to downstream power benefits had not been sold in the United States of America. The power which would have been forfeited shall be Canada's entitlement to downstream power benefits attributable to the particular storage had it commenced full operation in accordance with Article IV(6) of the Treaty and shall consist of (1) dependable capacity for the period of forfeiture and (2) that portion of average annual usable energy which would have been available during the period of forfeiture assuming the energy to be available at a uniform rate throughout the year. Alternatively, Canada may, at its option, offset the power for which compensation is to be made by delivering capacity and energy to the United States Entity, such delivery to be made, unless otherwise agreed by the entities, during the period of breach and at a uniform rate. The option for Canada to provide power in place of paying money shall permit Canada to make compensation partly by supplying power and partly by paying money, as may be mutually agreed by the entities.
- (10) The Canadian Entity shall at reasonable intervals provide current reports to the United States Entity of the progress of construction of the Treaty storages. In the event there is a likelihood of delay in meeting the completion dates set out in Section 4 of the Canadian Entitlement Purchase Agreement or a delay which will give rise to a claim under paragraph (9) hereof the Canadian Entity will advise of the probability of power being available to make the compensation required.
- (11) To the extent the Canadian Entity does not make compensation for a reduction in the Canadian Entitlement arising as a result of a failure to comply with Section 4 of the Canadian Entitlement Purchase Agreement, Canada shall make such compensation and such compensation shall be accepted in complete satisfaction of all claims arising out of the failure in respect of the reduction in the Canadian Entitlement for which such compensation was made.
- (12) For any year in which Canada's Entitlement to downstream power benefits is sold to Columbia Storage Power Exchange, the United States Entity may decide the amount of the downstream power benefits for purposes connected with the disposition thereof in the United States of America. This authorization, however, shall neither affect the rights or relieve the obligation of the Canadian and United States Entities relating to joint activities under the provisions of Article XIV and Annexes A and B of the treaty, nor shall it apply to determination of compensation provided for in the Canadian Entitlement Purchase Agreement or pursuant to paragraph (9) hereof or to determination of the power benefits to which Canada is entitled.
- (13) Any power delivered by the Canadian Entity or by Canada in accordance with the Canadian Entitlement Purchase Agreement or this Note shall be delivered at points of interconnection on the Canadian-United States border mutually acceptable to the entities. Appropriate adjustments shall be made to reflect transmission costs and transmission losses in the United States of America.

- (14) Any dispute arising under the Canadian Entitlement Purchase Agreement, including, but without limitation, a dispute whether any event requiring compensation has occurred, the amount of compensation due or the amount of any overdelivery of power is agreed to be a difference under the Treaty to be settled in accordance with the provisions of Article XVI of the Treaty, and the parties to the Canadian Entitlement Purchase Agreement may avail themselves of the jurisdiction hereby conferred.

The Government of Canada therefore proposes that if agreeable to your Government this Note together with your reply thereto constitutes an agreement by our Governments relating to the Treaty with effect from the date of the exchange of instruments of ratification of the Treaty.

Accept, Excellency, the renewed assurances of my highest consideration.

Secretary of State for
External Affairs

Embassy of the United States of America

Ottawa, September 16, 1964

No. 75

The Honorable Paul Martin, P.C., Q.C.
Secretary of State for External Affairs, Ottawa

Sir,

I have the honor to refer to your note No. 140 of September 16, 1964, regarding the disposal of the Canadian entitlement to downstream power benefits in the United States, in accordance with Article VIII(1) of the Treaty between the United States of America and Canada relating to the cooperative development of the water resources of the Columbia River Basin, signed at Washington, January 17, 1961.

I wish to advise you that the Government of the United States of America has designated the Administrator of the Bonneville Power Administration, Department of the Interior, and the Division Engineer, North Pacific Division, Corps of Engineers, Department of the Army, as the United States Entity for the purposes of Article XIV(1) of the Treaty. A copy of the designation is attached to this note.

I wish also to advise that the Government of the United States of America confirms the proposals and understandings set forth in your note, and agrees that your note, together with this reply, shall constitute an agreement between our two Governments relating to the implementation of the provisions of the Treaty with effect from the date of the exchange of instruments of ratification of the Treaty.

Accept, Sir, the renewed assurances of my highest consideration.

W.W. Butterworth

Enclosure:
As stated

**DEPARTMENT OF EXTERNAL AFFAIRS
CANADA**

Ottawa, September 16, 1964

No. 141

His Excellency, W. Walton Butterworth
Ambassador of the United States of America, Ottawa

Excellency,

I have the honour to refer to my Note of January 22, 1964 addressed to the Honourable Dean Rusk, Secretary of State of the United States of America and the Protocol attached thereto regarding a Treaty between Canada and the United States of America relating to cooperative development of the water resources of the Columbia River Basin signed at Washington on 17 January, 1961 and to Mr. Secretary Rusk's reply of the same date. This Exchange of Notes relating to the carrying out of the provisions of the Treaty provides expressly that it shall come into effect from the date of the exchange of instruments of ratification of the Treaty.

The instruments of ratification of the Treaty having been exchanged on this 16th day of September 1964, I should like to propose that our two Governments confirm that the Intergovernmental Agreement set out in the said Exchange of Notes has now come into full force and effect. I should like to propose further that this Note together with your reply shall constitute an agreement between our two Governments with effect from this 16th day of September 1964.

Accept, Excellency, the renewed assurances of my highest consideration.

Secretary of State for
External Affairs

Embassy of the United States of America

Ottawa, September 16, 1964

No. 76

The Honorable Paul Martin, P.C., Q.C.
Secretary of State for External Affairs, Ottawa

Sir,

I have the honor to refer to your Note No. 141 dated September 16, 1964 regarding the Treaty between Canada and the United States of America relating to cooperative development of the water resources of the Columbia River Basin signed at Washington on January 17, 1961. I wish to advise you that the Government of the United States of America confirms that the Exchange of Notes with Annex of January 22, 1964 referred to in your note has now come into full force and effect. The Government of the United States of America further agrees that your note together with this reply shall constitute an agreement between our two Governments relating to the carrying out of the provisions of the Treaty with effect from this 16th day of September 1964.

Accept, Sir, the renewed assurances of my highest consideration.

W. W. Butterworth

JOHN F. KENNEDY

President of the United States of America

TO ALL TO WHOM THESE PRESENTS SHALL COME, GREETING

KNOW YE That, whereas a treaty between the United States of America and Canada relating to cooperative development of the water resources of the Columbia River basin was signed at Washington on January 17, 1961 by their respective Plenipotentiaries, the original of which convention is hereto annexed;

AND WHEREAS the Senate of the United States of America by their resolution of March 16, 1961, two-thirds of the Senators present concurring therein, did advise and consent to the ratification of the said Treaty;

NOW, THEREFORE, be it known that I, John F. Kennedy, President of the United States of America, having seen and considered the said treaty, do hereby, in pursuance of the aforesaid advice and consent of the Senate of the United States of America, ratify and confirm the said Treaty and every article and clause thereof.

IN TESTIMONY WHEREOF, I have caused the Seal of the United States of America to be hereunto affixed.

DONE at the city of Washington
this twenty-third day of March
in the year of our Lord one
thousand nine hundred sixty-one
and of the Independence of the
United States of America the one
hundred eighty-fifth.

John F. Kennedy

By the President

Dean Rusk

Secretary of State

BY THE PRESIDENT OF THE UNITED STATES OF AMERICA**A PROCLAMATION**

WHEREAS the treaty between the United States of America and Canada relating to cooperative development of the water resources of the Columbia River basin was signed at Washington on January 17, 1961 by their respective Plenipotentiaries, the original of which treaty is word for word as follows:

HERE IS INCORPORATED THE SIGNED ORIGINAL OF THE TREATY.

WHEREAS the Senate of the United States of America did by their resolution of March 16, 1961, two-thirds of the Senators present concurring therein, did advise and consent to the ratification of the aforesaid treaty;

WHEREAS it is provided in Article XIX of the aforesaid treaty that the treaty shall come into force on the ratification date and in Article XX of the aforesaid treaty that the instruments of ratification shall be exchanged at Ottawa;

AND WHEREAS the respective instruments of ratification of the aforesaid treaty were duly exchanged at Ottawa on September 16, 1964 by the respective Plenipotentiaries of the United States of America and Canada;

NOW, THEREFORE, be it known that I, Lyndon B. Johnson, President of the United States of America, do hereby proclaim and make public the aforesaid treaty to the end that the said treaty and each and every article and clause thereof may be observed and fulfilled, on and after September 16, 1964, with good faith by the United States of America and by the citizens of the United States of America and all other persons subject to the jurisdiction thereof.

IN TESTIMONY WHEREOF, I have hereunto set my hand and caused the Seal of the United States of America to be affixed.

Done at the International Peace Arch,
Blaine, Washington, this sixteenth day
of September in the year of our Lord
one thousand nine hundred sixty-four
and of the Independence of the United
States of America the one hundred
eighty-ninth.

Lyndon B. Johnson

By the President

Dean Rusk
Secretary of State

EXECUTIVE ORDER NO. 11177

PROVIDING FOR CERTAIN ARRANGEMENTS
UNDER THE COLUMBIA RIVER TREATY

WHEREAS the treaty between the United States of America and Canada relating to cooperative development of the water resources of the Columbia River Basin (signed at Washington, D.C. on January 17, 1961; Executive C, 87th Congress, 1st Session) has come into force; and

WHEREAS Article XIV of such treaty (hereinafter referred to as the Treaty) provides for the designation of certain entities which are empowered and charged with the duty to formulate and carry out the operating arrangements necessary to implement the Treaty, and authorizes the United States of America to designate one or more of such entities; and

WHEREAS Article XV of the Treaty authorizes the United States of America to appoint two members of the Permanent Engineering Board established by that Article;

NOW, THEREFORE, by virtue of the authority vested in me by the Treaty and by the Constitution and statutes, and as President of the United States, it is hereby ordered as follows:

PART I. UNITED STATES ENTITY

SECTION 101. Designation of Entity. The Administrator of the Bonneville Power Administration, Department of the Interior, and the Division Engineer, North Pacific Division, Corps of Engineers, Department of the Army, are hereby designated as an entity under Article XIV of the Treaty, to be known as the United States Entity for the Columbia River Treaty (hereinafter referred to as the Entity). The designated Administrator shall be the Chairman of the Entity.

SECTION 102. Functions of the Entity. The Entity shall have the functions set forth therefor in Article XIV, and in other provisions, of the Treaty.

SECTION 103. Departmental responsibilities. This order shall not affect (1) the respective responsibilities of the Department of the Army and the Department of the Interior for project operation and administration, (2) the respective responsibilities of the Secretary of the Army and the Chief of Engineers for the supervision and direction of the Department of the Army and the Office of the Chief of Engineers, or (3) the responsibility of the Secretary of the Interior for the supervision and direction of the Department of the Interior.

PART II. UNITED STATES SECTION,
PERMANENT ENGINEERING BOARD

SECTION 201. Appointment of members of the Permanent Engineering Board.

(a) The Secretary of the Interior and the Secretary of the Army shall each appoint one person as a United States member of the Permanent Engineering Board established by Article XV of the Treaty.

(b) Each such person shall be selected from among appropriately qualified individuals, who at the time of appointment may be, but need not necessarily be, officers or employees of the United States, and shall serve as a member of the Board during the pleasure of the appointing Secretary.

SECTION 202. Alternate members. In addition to the two members to be appointed under the provisions of Section 201 of this order, there shall be two alternate United States members of the Permanent Engineering Board. The provisions of Section 201 of this order shall apply to the selection, appointment, and service of the alternate members.

SECTION 203. United States Section. The members and alternate members appointed under the foregoing provisions of this Part shall compose the United States Section, Permanent Engineering Board, Columbia River Treaty, hereinafter referred to as the United States Section. The member appointed by the Secretary of the Army under Section 201(a) of this order shall be the Chairman of the United States Section.

SECTION 204. Assistance to the United States Section. With the consent of the respective heads thereof, departments and agencies of the Federal Government may, upon the request of the United States Section and to the extent not inconsistent with law, furnish assistance needed by the Section in connection with the performance of its functions.

PART III. GENERAL

SECTION 301. Reservation. There is hereby reserved the right to modify or terminate any or all of the provisions of this order.

Lyndon B. Johnson

THE WHITE HOUSE
September 16, 1964

DETERMINATION OF UNITED STATES ENTITY RELATING
TO DISPOSITION OF HYDROELECTRIC POWER FROM USE
OF IMPROVED STREAMFLOW

The United States Entity, designated by Executive Order of the President of the United States, dated September 16, 1964, pursuant to Article XIV of the Treaty with Canada Relating to Cooperative Development of the Water Resources of the Columbia River Basin, signed at Washington, D.C. on January 17, 1961 (the "Treaty"), in implementation thereof, and to carry out the disposal in the United States of the power benefits to which Canada is entitled in accordance with the exchange of notes between the United States and Canada of even date herewith, does determine and find:

1. The Administrator, Bonneville Power Administration (the "Administrator"), is authorized and directed to act for and on behalf of the United States Entity in the execution and performance of the Canadian Entitlement Exchange Agreements and the Canadian Entitlement Allocation Agreements referred to in the exchange of notes of even date herewith.

2. The Administrator is authorized to approve, and has approved, pursuant to Article XI of the Treaty, the use for hydroelectric power purposes of the improvement in streamflow brought about by operation of the storage constructed under the Treaty in Canada at hydroelectric projects owned by the nonfederal parties to the Canadian Entitlement Allocation Agreements for the term of such agreements, subject to compliance with the provisions of such agreements by the nonfederal parties thereto.

3. The use of the improvement in streamflow brought about by operation of the storage constructed under the Treaty for hydroelectric power purposes at hydroelectric projects of the United States is approved by the United States Entity pursuant to Article XI of the Treaty upon condition that the increased power benefits therefrom shall be first utilized for the following purposes:

a. To obtain for the United States the benefits which the cooperative development of the Columbia River Basin can provide for the general welfare and economic progress; and

b. To enable the most economical and efficient use of existing and future hydroelectric projects in the Columbia River Basin.

4. In compliance with the foregoing conditions, the Administrator is directed to make such disposition and exchange of the increased power benefits resulting from the Canadian storage as he shall deem necessary or appropriate, subject to the requirements of nonpower uses. The Administrator has previously entered into power sales contracts relating to the sale of power by Northwest utilities to organizations within the State of California to the extent such power is excess to the needs of the Pacific Northwest, which agreements are necessary and appropriate to implement and carry out the disposition in the United States of the power benefits to which Canada is entitled pursuant to the Treaty.

Done this 16th day of September, 1964.

UNITED STATES ENTITY

by: Charles F. Luce

Administrator, Bonneville Power Administration, Department
of the Interior

by: W.W. Lapsley

Division Engineer, North Pacific Division, Corps of
Engineers, Department of the Army

CANADA - B.C. AGREEMENT

8th July, 1963

THIS AGREEMENT made this 8th day of July, 1963 between THE GOVERNMENT OF CANADA, herein referred to as "Canada," and THE GOVERNMENT OF BRITISH COLUMBIA, herein referred to as "British Columbia,"

WHEREAS a Treaty between Canada and the United States of America relating to Cooperative Development of the water resources of the Columbia River Basin has been signed on the 17th day of January 1961; and

WHEREAS it is desirable that an Agreement be made between Canada and British Columbia concerning implementation of the Treaty and disposal of benefits arising thereunder:

NOW THEREFORE THIS AGREEMENT WITNESSETH:

1. In this Agreement

"Treaty" means "The Treaty between Canada and the United States of America relating to cooperative development of the Water Resources of the Columbia River Basin" signed at Washington, District of Columbia, United States of America on the 17th day of January, 1961, together with any protocol or exchange of notes relating thereto.

2. All proprietary rights, title and interests arising under the Treaty and particularly those with respect to

- (a) downstream power benefits accruing to Canada,
- (b) proceeds from the sale of downstream power benefits in the United States of America,
- (c) monies payable and electric power accruing to Canada in return for flood control,
- (d) the stand-by transmission services rendered by transmission grids in the United States of America,
- (e) benefits arising in Canada from any dam constructed pursuant to the Treaty,
- (f) rights of water diversion granted to Canada by Article XIII of the Treaty, and
- (g) monies paid to Canada by the United States of America in settlement of any claim made by Canada under the Treaty which relates in any way to the obligations of British Columbia under this Agreement

belong to British Columbia absolutely for its own use.

3. British Columbia shall at its own expense:

- (a) construct or arrange for the construction of all the dams and operate or arrange for the operation of all the storages as required by Articles II and IV of the Treaty;
- (b) not operate and prevent the operation of any storage in British Columbia in the manner prohibited by Article IV(5) of the Treaty;
- (c) prepare and make available for flooding the land in Canada required for the purposes of any dam constructed by the United States of America under Article XII of the Treaty;
- (d) not make and prevent the making of any diversion of water prohibited by Article XIII of the Treaty;
- (e) carry out or arrange to carry out of any variation in operation of any Kootenay River diversion agreed upon pursuant to Article XIII(6) of the Treaty;

(f) abide by and carry out or arrange for the carrying out of any decisions made pursuant to Article XVI of the Treaty which relate in any way to the obligations of British Columbia under this Agreement;

(g) pay to Canada, upon demand therefor, all costs incurred by Canada in connection with proceedings under Article XVI of the Treaty which relate in any way to the obligations of British Columbia under this Agreement;

(h) carry out or arrange for the carrying out of anything required to be done by Canada under Article XVIII(3) of the Treaty;

(i) carry out and give full force and effect to all conditions, provisions, orders and decisions imposed or made by the Permanent Engineering Board established by the Treaty; and

(j) generally do all those things which constitutionally it is capable of doing to ensure that Canada is not in default under the Treaty and not do and so far as it is constitutionally capable prevent any person from doing anything which Canada has under the Treaty undertaken to refrain from doing.

4. (1) It is acknowledged and agreed that Canada has the right and obligation to do all things which the Treaty requires Canada to do that British Columbia has not undertaken to do by this Agreement.

(2) Notwithstanding subsection (1) of this section Canada shall obtain the concurrence of British Columbia before:

(a) confirming by exchange of Notes any operating plan pursuant to Article IV of the Treaty;

(b) making any election pursuant to Article VI(5) of the Treaty relating to payment for flood control;

(c) agreeing to any variation of entitlement to downstream power benefits pursuant to Article IX of the Treaty;

(d) confirming any electrical coordination arrangement made pursuant to the Treaty;

(e) agreeing to any diversion of water by the United States of America pursuant to Article XIII of the Treaty;

(f) agreeing, as provided for in Article XIII(6) of the Treaty, to any variation in the use of water diverted by British Columbia pursuant to that Article;

(g) charging the entities designated pursuant to Article XIV of the Treaty with any new power or duty; and

(h) terminating the Treaty.

5. Canada shall, if requested by British Columbia, endeavour to obtain the agreement of the United States of America with respect to:

(a) any variation of the operation of any dam constructed under Article XII of the Treaty;

(b) any modification of the area of land in Canada required for the purposes of any dam constructed under Article XII of the Treaty;

(c) any diversion of water not provided for by the Treaty;

(d) any new power or duty which British Columbia wishes to impose upon the entities designated under Article XIV of the Treaty;

(e) any direction which British Columbia with the concurrence of Canada wishes given to the Permanent Engineering Board established by the Treaty; and

(f) any proposal relating to the Treaty which Canada and British Columbia agree is in the public interest.

6. (1) Canada shall designate the British Columbia Hydro and Power Authority as the Canadian entity for the purpose of Article XIV of the Treaty and British Columbia shall ensure that the British Columbia Hydro and Power Authority fulfills the obligations imposed on the Canadian entity by the Treaty.

(2) British Columbia may nominate one of the two persons to be appointed to the Permanent Engineering Board established by the Treaty and Canada shall upon such nomination appoint the nominee to that Board.

7. (1) Canada shall do whatever is reasonably possible to ensure compliance with the Treaty by the United States of America and shall not waive any default or breach by the United States of America without having consulted British Columbia.

(2) Canada shall, at the request of British Columbia, present any claim deemed reasonable by Canada arising under the Treaty which British Columbia wishes made against the United States of America.

(3) Canada shall establish any arbitration tribunal necessary to settle differences under the Treaty and shall, after consultation with British Columbia, defend or prosecute, as the case may be, all differences submitted to such tribunal or to the International Joint Commission under the Treaty.

8. (1) British Columbia shall indemnify and save harmless Canada from and in respect to any liability of Canada to the United States of America arising under the Treaty.

(2) British Columbia shall not be required to indemnify Canada pursuant to subsection (1) of this section in respect of any liability to the United States of America directly attributable to any action or failure to take action by Canada.

(3) Canada shall not discharge any liability in respect of which it is indemnified pursuant to subsection (1) of this section without having consulted with British Columbia.

9. British Columbia shall maintain or arrange for the maintenance of complete accounts and records relating to:

- (a) the discharge of the obligation of British Columbia under this Agreement;
- (b) the receipt and ultimate disposal of all monies derived from the sale in the United States of America of any downstream power benefits arising under the Treaty;
- (c) the receipt and ultimate disposal of all monies and other compensation derived from the provision of flood control under the Treaty; and

shall comply with or arrange for compliance with any reasonable request for disclosure of any such account or record made by Canada or the Permanent Engineering Board established by the Treaty.

10. (1) Canada shall transfer to British Columbia the administration and control of any unimproved lands in Canada belonging to Canada which are required for the construction and operation of the dams and storages which British Columbia is obligated by this Agreement to construct or operate.

(2) For the purposes of subsection (1) of this section the expression "lands" does not include lands forming part of an Indian Reserve.

11. (1) As soon as may be convenient after execution of this Agreement, Canada shall undertake negotiations with the United States of America with a view to entering into a protocol to the Treaty embodying certain matters agreed to by Canada and British Columbia and Canada shall thereafter with due diligence proceed toward ratification of the Treaty.

(2) Any protocol entered into pursuant to subsection (1) of this section shall be attached to this Agreement as Schedule A and shall form part of this Agreement.

12. (1) Canada agrees that the downstream power benefits arising in the United States of America under the Treaty may be sold in the United States of America subject to terms that are acceptable to both Canada and British Columbia and that will ensure that the proceeds of the sale will contribute to savings in the cost of electric power in the Province of British Columbia.

(2) Any agreement concluded under subsection (1) of this section with respect to the sale of downstream power benefits shall be attached to this Agreement as Schedule B and shall form part of the Agreement.

(3) British Columbia will finance the Treaty project by use of the funds derived from the sale of downstream power benefits arising in the United States of America, from the flood control benefits and from other sources as required, so that Canada shall have no obligation for the financing of these Treaty projects.

13. (1) The construction of the dams and operation of the storages required by the Treaty shall be carried out in accordance with all laws in force from time to time whether those of Canada or British Columbia.

(2) British Columbia shall take whatever steps are necessary to amend or repeal any law, permit or regulation and shall not enact any new law or regulation or issue any permit which may operate to frustrate, hamper or interfere with the carrying out of any undertaking in the territory of Canada provided for by the Treaty.

(3) Canada shall do everything possible to expedite the issue of all licenses and permits required under the laws of Parliament by either British Columbia or the British Columbia Hydro and Power Authority in order for them to carry out and perform their obligations under this Agreement, including Schedules A and B.

14. Canadian labour and material shall be used in all construction or operation of the dams and storages constructed or operated pursuant to this Agreement to the full extent to which they are procurable, consistent with proper economy and the expeditious carrying out of the construction and operation and no person shall be discriminated against in the course of the construction and operation by reason of his race, color, religion or political affiliation.

15. (1) Canada and British Columbia will consult as required on technical and other matters of mutual interest with a view to facilitating the implementation of the Treaty, avoiding disputes and carrying out this Agreement.

(2) In particular a Liaison Committee shall be established consisting of senior representatives of Canada and British Columbia.

(3) If differences or questions arise or allegations are made as to loss arising out of any action or failure to take action by either Canada or British Columbia which cannot be resolved through consultation they shall be submitted to the Exchequer Court of Canada for decision and that Court has jurisdiction to determine the rights and liabilities of either party under this Agreement.

(4) British Columbia shall, in respect of itself, procure the enactment of whatever legislation is necessary to implement subsection (3) of this section.

16. (1) British Columbia agrees that generators shall be installed in the dam at Mica Creek as soon as economically feasible.

(2) Subject to the requirements of British Columbia, British Columbia will make available to other provinces of Canada, through a national grid or otherwise, on a first call basis, electric power from the Columbia River and other power developments in the Province of British Columbia at prices not

higher than those obtainable by British Columbia from time to time from the United States of America for any comparable British Columbia energy electric power exported thereto.

17. This Agreement binds Canada and British Columbia from the date of the Agreement and there-after so long as any obligation or right of either the United States of America or Canada exists under the Treaty or any part thereof.

IN WITNESS WHEREOF THE UNDERSIGNED, DULY AUTHORIZED BY THEIR RESPECTIVE GOVERNMENTS HAVE SIGNED AND DELIVERED THIS AGREEMENT.

For the Government of Canada on the 8th day of July, 1963.

L.B. Pearson

Prime Minister

Paul Martin

*Secretary of State
for External Affairs*

For the Government of British Columbia on the 8th day of July, 1963.

W.A.C. Bennett

*Premier and President of the
Executive Council*

Ray G. Williams

*Minister of Lands, Forests
and Water Resources*

CANADA - B.C. AGREEMENT

13th January, 1964

THIS AGREEMENT made this 13th day of January, 1964 between THE GOVERNMENT OF CANADA, herein referred to as "Canada," and THE GOVERNMENT OF BRITISH COLUMBIA, herein referred to as "British Columbia,"

WHEREAS Canada and British Columbia entered into an agreement of the 8th day of July, 1963, herein referred to as the "Main Agreement;"

AND WHEREAS as contemplated by the Main Agreement negotiations with the United States of America have been completed concerning a Protocol to the Treaty and the Terms of Sale of Canada's downstream power benefits, each of which is attached hereto and herein referred to as the "Protocol" and the "Terms of Sale" respectively;

AND WHEREAS the Protocol and Terms of Sale are satisfactory to both Canada and British Columbia;

NOW THEREFORE THIS AGREEMENT FURTHER WITNESSETH:

1. Canada shall as soon as it receives the purchase price referred to in the Terms of Sale or other monies under the Treaty pay the full equivalent thereof, in Canadian dollars, to British Columbia and British Columbia shall assume the remaining obligation of Canada under Section A.3 of the Terms of Sale.

2. Notwithstanding section 3(a) of the Main Agreement British Columbia shall observe the time schedule relating to the Treaty Storages set out in the Terms of Sale.

3. British Columbia shall at all times hereafter keep Canada indemnified against all liability to
- (a) the United States of America,
 - (b) the entity designated by the United States of America for the purposes of Article XIV of the Treaty, or
 - (c) the private Purchaser contemplated by the Terms of Sale,

arising under

- (d) the Protocol,
- (e) the Terms of Sale, or
- (f) any Exchange of Notes hereafter made by Canada pursuant to the Treaty and in accordance with the Main Agreement

and from and in respect to all actions, proceedings, claims, damages, costs, and expenses whatsoever in relation thereto other than any liability, action, proceeding, claim, damages, costs and expenses incurred by Canada which is directly attributable to any action or failure to take action by Canada.

4. (1) Where any payment ordered by the Exchequer Court to be paid by British Columbia to Canada remains unpaid for 60 days Canada may at any time thereafter recover the amount of the payment by deduction from monies owing to British Columbia by Canada on any account.

(2) The rights given in this section are in addition to all other rights and remedies which Canada has.

5. British Columbia shall, at reasonable intervals, provide current reports to Canada on the progress of construction of the Treaty Storages.

6. This agreement is supplemental to the Main Agreement and except as specifically provided in this agreement the Main Agreement remains in full force and effect and operates according to the meaning and intent thereof.

7. This agreement binds Canada and British Columbia from the date hereof and thereafter so long as any obligation or right of either the United States of America or Canada exists under the Treaty, the Protocol or any Notes exchanged thereunder.

IN WITNESS WHEREOF THE UNDERSIGNED, DULY AUTHORIZED BY THEIR RESPECTIVE GOVERNMENTS, HAVE SIGNED AND DELIVERED THIS AGREEMENT.

For the Government of Canada on the 13th day of January, 1964

L.B. Pearson *Prime Minister*

Paul Martin *Secretary of State
for External Affairs*

For the Government of British Columbia on the 12th day of January, 1964.

W.A.C. Bennett *Premier and President of the
Executive Council*

Ray G. Williston *Minister of Lands, Forests
and Water Resources*

**The Government of
The Province of British Columbia**

2234.

I hereby certify that the following is a true copy of a Minute of the Honourable the Executive Council of the Province of British Columbia, approved by His Honour the Lieutenant-Governor on the 7th day of August, A.D. 1964

E.E. Protheroe
Assistant Deputy Provincial Secretary

To His Honour
The Lieutenant-Governor in Council:

The undersigned has the honour to recommend:

THAT the British Columbia Hydro and Power Authority be authorized, empowered and charged, pur-suant to the provisions of the British Columbia Hydro and Power Authority Act, 1964:

1. To enter into the Agreement with Columbia Storage Power Exchange for the sale of a portion of the Canadian Entitlement to downstream power benefits arising under the Treaty between Canada and the United States of America relating to Cooperative Development of the Water Resources of the Columbia River Basin signed at Washington, D.C. on the 17th day of January 1961 and the Protocol attached to the Exchange of Notes dated the 22nd day of January, 1964 (which documents hereinafter called "the Treaty"), a draft of which Agreement is attached hereto;

2. When designated by Canada as the Canadian Entity under the Exchange of Notes between Canada and the United States of America, pursuant to Article XIV(1) of the Treaty, to exercise all the rights and powers granted to the Canadian Entity and to perform all the obligations imposed on the Canadian Entity by the Treaty including the obligation to construct or cause to be constructed the dams referred to in Article II(2) of the Treaty.

DATED this 6th day of August, A.D. 1964.

W.A.C. Bennett
Premier

APPROVED this 6th day of August, A.D. 1964.

W.A.C. Bennett
Presiding Member of the Executive Council

P.C. 1964-1407

Certified to be a true copy of a Minute of a Meeting of the Committee

of the Privy Council, approved by His Excellency the Governor

General on the 4th September, 1964

The Committee of the Privy Council, on the recommendation of the Right Honourable Lester B. Pearson, the Prime Minister, advise that Your Excellency may be pleased to designate the British Columbia Hydro and Power Authority, a corporation incorporated in the Province of British Columbia by the British Columbia Hydro and Power Authority Act 1964, as the Canadian entity for the purpose of Article XIV of a treaty dated January 17, 1961 at Washington, D.C., U.S.A. between Canada and the United States of America relating to co-operative development of the water resources of the Columbia River Basin, such designation to take effect on the date on which the Instruments of Ratification of the Treaty shall be exchanged.

R.G. Robertson
Clerk of the Privy Council

CANADIAN INSTRUMENT OF RATIFICATION

Whereas a Treaty between Canada and the United States of America relating to cooperative development of the water resources of the Columbia River Basin was signed at Washington, D.C. on the 17th day of January 1961 by the duly authorized representatives of Canada and the United States of America, which Treaty is word for word as follows:

(Text of Treaty)

The Government of Canada, having considered the Treaty, hereby confirms and ratifies it and under-takes to carry out the provisions set forth therein.

IN WITNESS WHEREOF this Instrument of Ratification is signed and sealed by the Secretary of State for External Affairs of Canada.

DONE at Ottawa this 16th day of September, 1964.

Paul Martin
Secretary of State for
External Affairs

**COLUMBIA RIVER TREATY
PRINCIPLES AND PROCEDURES
FOR PREPARATION AND USE OF
HYDROELECTRIC OPERATING PLANS**

Prepared by the
Columbia River Treaty Operating Committee

December 1991

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PART I INTRODUCTION

1. AUTHORITY AND PURPOSE

This document has been produced by the Columbia River Treaty Operating Committee with the authorization of the United States and Canadian Entities as a guide for the preparation and use of hydroelectric operating plans for Canadian storage. It replaces the document, "Principles and Procedures for the Preparation and Use of Hydroelectric Operating Plans for Canadian Treaty Storage", dated May 1983, which was agreed to by the Entities on 31 May 1983. This revision includes the following changes resulting from Agreements dated 28 July 1988 and 12 August 1988, and other changes that reflect current operating practices.

- a. Use of updated estimates of irrigation depletions and return flows when calculating the streamflows.
- b. Clarification of the definitions of loads and resources in the hydroregulation studies.
- c. Addition of principles and procedures for potential inclusion of firm energy shifting in the hydroelectric operating plans.
- d. Use of consistent operating procedures throughout the Steps I, II and III studies in the Assured Operating Plan and Determination of Downstream Power Benefits.
- e. Clarification to the procedures for determining thermal displacement energy in the Determination of Downstream Power Benefits.
- f. Use of the Actual Energy Regulation to determine proportional draft in actual operations.

2. SCOPE

The Columbia River Treaty provides that the operating arrangements necessary to implement the Treaty will be formulated and carried out by the Entities designated by the United States and Canada. Article XIV 2. of the Treaty specifies that the powers and duties of the Entities include, among other things:

- "(h) preparation of the hydroelectric operating plans and the flood control operating plans for the Canadian storage together with determination of the downstream power benefits to which Canada is entitled;"
- "(k) preparation and implementation of detailed operating plans that may produce results more advantageous to both countries than those that would arise from operation under the plans referred to in Annexes A and B."

Guidance for flood control planning and operations is provided in the Columbia River Treaty Flood Control Operating Plan submitted by the United States Entity in accordance with Annex A, paragraph 5 of the Treaty. Guidance for the preparation of hydroelectric operating plans and for the calculation of downstream benefits is provided in this document. In addition, the Principles and Procedures, together with the Flood Control Operating Plan, detail the steps necessary to prepare and implement the detailed operating plans. This document will be reviewed periodically and revised as necessary to take advantage of actual operating experience and to deal with any problems resulting from the need to operate towards the optimization of generation in Canada, in the United States, or in both countries.

Each year two operating plans shall be prepared. An Assured Operating Plan will be prepared for the sixth succeeding year which, with previous plans, will assure both Entities of the manner of operation of Canadian storage in advance for the next succeeding five years and will also be the basis for computing downstream power benefits for the corresponding year. Once the downstream power benefits are agreed to they shall not be changed even though the data and operating plan on which it was developed may change. Immediately prior to each operating year, a Detailed Operating Plan will be developed from the Assured Operating Plan for that operating year. The Detailed Operating Plan will reflect the latest load, resource, flood control, and other pertinent data if mutually agreed by the Entities. The Detailed Operating Plan will serve as a guide and provide criteria for actual operation of the Canadian storage during the immediately ensuing operating year. An operating year shall mean the period 1 August through 31 July.

3. REFERENCES

- a. Columbia River Treaty dated 17 January, 1961, and its allied documents, pertaining to the preparation and use of operating plans.
 - (1) Article IV - Operation by Canada; paragraphs 1 and 2.
 - (2) Article V - Entitlement to Downstream Power Benefits; paragraph 1.
 - (3) Article VI - Payment for Flood Control; paragraphs 3, 4 and 5.
 - (4) Article VII - Determination of Downstream Power Benefits; paragraphs 1 and 2.
 - (5) Article XII - Kootenai River Development; paragraphs 5 and 6.
 - (6) Article XIV - Arrangements for Implementation; paragraph 2.
 - (7) Annex A - Principles of Operation.
 - (8) Annex B - Determination of Downstream Power Benefits.

- (9) Terms of Sale - Attachment to Exchange of Notes dated 22 January, 1964; Section B.1.
 - (10) Protocol - Annex to Exchange of Notes dated 22 January, 1964; paragraph V, VII, VIII, IX and X.
 - (11) Canadian Entitlement Purchase Agreement - Sections 6 and 7.
- b. Columbia River Treaty Flood Control Operating Plan dated October 1972, as amended.

4. DEFINITIONS

Terms defined in Article I of the Columbia River Treaty dated 17 January, 1961, have the same meanings in this document except "storage" which refers to water content rather than space.

The "load of the Pacific Northwest Area" described in Annex B, paragraph 7, and referred to in Protocol paragraph IX, is equal to the amount of electric power used to serve firm load in the Pacific Northwest Area as that area is defined in Annex B. Firm load in the Pacific Northwest Area is the load for which resources have been or must be acquired to serve that load. The firm energy load carrying capability of a system is the maximum generation, shaped the same as the firm energy load of that system, that the system can produce during its critical period.

"Month" shall mean a calendar month except in April and August when it shall mean each of the following periods:

- 1 April to 15 April
- 16 April to 30 April
- 1 August to 15 August
- 16 August to 31 August

Other terms have the meanings given in the Glossary of Electric Power Terms, Appendix XV, Columbia-North Pacific Region Comprehensive Framework Study, Pacific Northwest River Basins Commission dated October 1970.

5. TREATY ORGANIZATION

Implementation of the Columbia River Treaty is carried out by the United States and Canadian Entities, which were appointed by the two Governments for this purpose. The Canadian Entity is the British Columbia Hydro and Power Authority. The United States Entity is composed of the Administrator of the Bonneville Power Administration and the Division Engineer of the North Pacific Division, Corps of Engineers. The Administrator is designated as Chairman of the United States Entity.

The United States Entity has appointed a Secretary and two Coordinators, one from the Corps of Engineers and one from the Bonneville Power Administration, to coordinate the activities of the Entity. The Canadian Section has established the position of Manager, Canadian Entity Services to manage the activities of its Entity.

The Entities have, in turn, established two committees: the Columbia River Treaty Operating Committee and the Columbia River Treaty Hydrometeorological Committee. Each committee has a United States Section and a Canadian Section. The United States Sections of these committees have equal representation by the Corps of Engineers and the Bonneville Power Administration. The chairmanship of the United States Section of the Operating Committee rotates between the Corps of Engineers and the Bonneville Power Administration. From 1 March through 31 August a representative of the Corps of Engineers is chairman. From 1 September through the end of February, a representative of the Bonneville Power Administration is chairman. Chart 1 outlines the Treaty organization.

The Operating Committee membership is limited to four members from each country. The Committee is responsible for making the system regulation studies, preparing the operating plans, insuring that the plans are carried out, and performing other duties as required by the Entities.

Each Entity shall give evidence of appointment of representatives by written notice to the other Entity, and by similar notice either Entity may at any time change its representatives.

6. THE POWER AND RESERVOIR SYSTEM

The operation of the Canadian storage at Duncan, Arrow, and Mica reservoirs is designed to increase power generation downstream in the United States and downstream in Canada, as soon as the latter can be effected. In the plans, storage at the three Canadian projects is considered an element in the Columbia Basin power system, within which individual storage operation may be varied by the Canadian Entity.

In the United States the system consists of all the hydroelectric projects on the main stem of the Columbia River, including large-capacity multipurpose storage reservoirs and run-of-the-river projects with storage capacity sufficient for weekly load factoring only. In addition, the system includes numerous reservoirs of both types on tributary streams of the Columbia River and coastal streams in the States of Washington, Oregon, Montana and Idaho. The combined power output is supplied to the regional electrical transmission network.

In Canada, the system included in the hydroelectric operating plans consists of Duncan, Keenleyside, Mica, power generation downstream of those sites, and any other power generation coordinated therewith.

Libby project, which is located in the United States, and whose reservoir extends into Canada is assumed to be a normal United States tributary reservoir although the Treaty provides that its regulation may be planned to improve the inflows to those projects immediately downstream of Kootenay Lake, provided that there is no disadvantage to the United States.

CHART 1

COLUMBIA RIVER TREATY ORGANIZATION

The seasonal pattern of operation of storage projects depends on their location in the basin. Reservoirs on the main stem of the Columbia River, and those tributary streams whose headwaters are in the interior ranges, attain their maximum pool elevations in July or August from streamflow runoff caused primarily by snowmelt. Streamflows gradually fall after the summer snowmelt is complete. These reservoirs are lowered by withdrawals required to augment winter streamflows to sustain the region's winter electric power demand, which is at a maximum during this period. Additional storage withdrawals may be made for the purpose of controlling floods, should the potential runoff be great enough. Regulation of these reservoirs during the spring season is for power or flood control, or both purposes coincidentally.

Coastal reservoirs in the United States are subject to high winter season inflows, hence they are normally drafted a significant amount in advance to provide enough reservoir space to minimize the possibility of spilling winter freshets and to prevent flood damage.

Most coastal reservoirs, operate to predetermined elevations for power and flood control except during the time that such floods are being controlled. Normally, coastal reservoirs fill by late May or June, and water thus stored is retained until drafts are required in late summer or early fall.

The entire hydroelectric system is integrated with the thermal generating facilities required to serve the load in the region.

The seasonal operation of storage reservoirs is guided by project rule curves, variable and assured refill curves, upper rule curves, flood control refill curves, and other operating criteria which are developed from system-wide power and flood control studies as well as operating experience. These operating guidelines are incorporated into the Assured Operating Plans and Detailed Operating Plans, and their development is described in detail in Parts II, III and IV of this document. These operating guidelines are also used for guiding storage use during the course of actual operations.

**PART II - GENERAL OPERATING GUIDELINES & RULES USED
IN SYSTEM REGULATION STUDIES**

7. PURPOSE OF GUIDELINES AND OPERATING RULES

Seasonal operation of storage reservoirs in both the United States and Canada is governed by operating criteria generally known as "rule curves." Such curves delineate a schedule of reservoir drafts which, together with other criteria, assure the system of meeting electric power loads efficiently and of utilizing storage and natural flow in such a manner as to produce the optimum amount of usable energy under any pattern of streamflow. They also provide guidance to assure adequate flood control on the Columbia River and its tributaries and insure refill of the system reservoirs with a high degree of probability.

Special operating criteria and operating rules supplement rule curves and also guide the use of system storage. Some examples are: Mica project target outflows, system draft below operating rule curves to meet load, and physical project operating constraints.

These parameters are derived from system wide power regulation studies and previous operating experience, as well as hydrologic analyses of flood control problems in the basin. Both are usually developed in part by simulation techniques using mathematical models.

The rule curves, special operating criteria, and operating rules so developed by the mathematical simulations are intended for use in guiding the actual system operation. They prescribe a coordinated use of storage so that optimum power generation in the combined systems will be achieved in accordance with the provisions of Annex A, paragraphs 7 and 8 of the Treaty, whichever apply.

8. OPERATING GUIDELINES

a. Critical Rule Curves

A Critical Rule Curve provides a monthly guide to reservoir storage drafts and fills so as to provide optimum energy to meet system firm loads (see Chart 2). The end-of-month storage contents attained by the storage reservoirs in the Critical Period Regulation Study will form the Critical Rule Curve for each project (refer to Subsection 13e(1)). In multiple-year critical periods there will be a Critical Rule Curve for each corresponding year of the critical period. The first curve will be highest in indicated system storage energy on 31 July, the second being next highest, etc. For 30-year studies and actual operations the second curve will be limited to no higher than the first, the third no higher than the second, and the fourth no higher than the third for each project for each month.

CHART 2

Illustration of Critical Rule Curves for a Reservoir
in a Multi-Year Critical Period

b. Refill Curves

A Refill Curve is a guide to operation of a reservoir which allows the production of the greatest amount of usable energy consistent with an agreed probability of refill. A reservoir shall not be drafted below its Refill Curve to serve any secondary energy loads, unless required by established operating procedures at the project. Unless otherwise agreed, Refill Curves, as described in Subsection (1) and (2), below, will be prepared for use as operating guides in the 30-Year System Regulation Studies made for the Assured Operating Plan and Detailed Operating Plan. In actual system operations, Refill Curves are usually based on actual forecasts and are supplemented by the Flood Control Refill Curve, from 1 April through 31 July of each year, as defined in the Implementation of the Detailed Operating Plan, Section 24.

The end of the refill period for computation of the Refill Curves for each Canadian reservoir shall be that which provides generation in accordance with Annex A, paragraph 7 and 8 of the Treaty, whichever applies.

- (1) Assured Refill Curves: The Assured Refill Curve indicates the end-of-month storage content required to assure refill of the reservoir based on 1931 historical volume of inflow during the refill period. The year 1931 represents the second lowest historical January through July volume inflow for the Columbia River for the period 1928 to 1958 measured near The Dalles, Oregon. In computing water available for refill of the reservoir, the following shall be deducted to obtain the net inflow volume: the power discharge requirement, as described in paragraph (2)(d) below; consumptive requirements for water at-site and upstream; and water required for refill of upstream reservoirs, which is the difference between full and the higher of the first-year Critical Rule Curve and the Assured Refill Curve at each of the upstream reservoirs.

If necessary, the Assured Refill Curve shall be adjusted to prevent the Variable Refill Curves from failing the refill test described in paragraph (2)(c), below.

- (2) Variable Refill Curves: The Variable Refill Curve indicates the end-of-month storage content required during the refill period to refill each cyclic reservoir consistent with at-site volume inflow forecasts and consistent with upstream reservoir refill requirements.

In the system regulation studies, the Variable Refill Curve shall be developed as shown in Table 1 and detailed below:

- (a) Forecast volumes of inflow used in the 30-Year System Regulation Studies shall be the historical inflow volume experienced during each of the 30 years included in the studies. Each forecast volume shall be reduced by a

TABLE 1

Sample of Computation of Variable Refill Curves (VRC) Duncan

forecast error such that there is a 95 percent probability that the reduced forecast volume will be equaled or exceeded. The inflow volume shall be determined for each of the periods from the first day of January, February, March, etc., to the end of the refill period using appropriate adjustments for forecast error. In computing water available for refill of the reservoir, the following shall be deducted to obtain the net inflow volume: Power Discharge Requirement, as described in paragraph (2)(d); consumptive requirements for water at-site and upstream; and water required for refill of upstream reservoirs, which is the difference between full and the Operating Rule Curve for each of the upstream reservoirs.

- (b) Using the net volumes of inflow determined in (a) above, Variable Refill Curves shall be determined for each of the periods of (a) above, giving the month-end storage content required to assure refilling the reservoir (see Table 1).
- (c) The Variable Refill Curves determined in (b) above shall be tested by making 30-year Refill Studies wherein the cyclic reservoirs are drafted each year on the Operating Rule Curve, or below the Operating Rule Curve if required, as defined in Subsection 9b.

The storage content of each reservoir at the start of each of the 30 years of historical record shall be its normal full pool content in the Assured Operating Plan studies and the Actual Energy Regulation storage contents, as defined in Subsection 24c, for the Detailed Operating Plan studies. If, in more than 5 percent of the years in the historical period the storage energy in the reservoirs fails to fill to 98 percent of the total system storage energy in the years in which secondary energy was produced in the January through July period, the net volumes available for refill determined in (a) above shall be reduced and the Variable Refill Curves shall be re-computed until the system meets this test.

These become the Variable Refill Curves that will be used in the studies and shall serve to guide the computation of Variable Refill Curves based on forecast volume inflow in actual system operation as described in Subsection 24b(2). Failure of any reservoir to refill when secondary energy is produced by the system, during January through July, when all major projects are limited by maximum storage or minimum outflows during periods with secondary generation, shall not constitute a violation.

- (d) In executing the test of (c), the net volumes available for refill shall be reduced, if required, by increasing the Power Discharge Requirement. The increase will be to an extent necessary that each project will have its pro-rata

share of storage draft decreased to allow a greater portion of its natural inflow to be utilized for generation purposes during the refill period. The Power Discharge Requirement for each project shall be a function of project outflow allocation during the refill period, and the January through July natural volume runoff at The Dalles, Oregon (inversely proportional). The Power Discharge Requirement shall be not less than the project minimum discharge requirement.

- c. Limiting Rule Curves: The Limiting Rule Curves shall consist of month-end storage contents which must be maintained to guarantee the system meeting its firm load carrying capability during the period 1 January through 31 March in the event that the Variable Refill Curves permit storage to be emptied and sufficient natural flow is not available to carry the load prior to the start of the freshet. Such rule curves shall limit the Variable Refill Curve to be no lower than the Limiting Rule Curve. The Limiting Rule Curve shall not be higher than the Upper Rule Curve at each project. The Limiting Rule Curve shall be developed from 1936-37 water conditions.
- d. Upper Rule Curves: The Upper Rule Curves shall consist of the following.
 - (1) During the Flood Control Evacuation Period the Upper Rule Curve shall be derived from Flood Control Storage Reservation Diagrams which provide the required storage space. Required drawdown for headwater projects are based on at-site inflow forecasts. Drawdown for major lakes controlled by dams is designed to achieve the maximum natural storage effect of the lakes during the refill period. Grand Coulee and Keenleyside project Storage Reservation Diagrams reflect the unregulated runoff forecasts for the Columbia River at The Dalles, Oregon, for the period April through August.
 - (2) During the refill period the Upper Rule Curve shall be the storage content necessary to control the flood runoff to non-damaging levels if possible, and to regulate larger floods that cannot be controlled to non-damaging levels to the lowest possible level with the available storage space. This regulation is accomplished by establishing a flood control objective at The Dalles and adjusting outflows from Keenleyside, Grand Coulee, and John Day projects to meet the controlled flow. The initial objective, the "Initial Controlled Flow for the Columbia River at The Dalles", is determined as described in the "Columbia River Treaty Flood Control Operating Plan", dated October 1972. Adjustments to the controlled flow objective can be made, if necessary, as the refill period proceeds. During this period the headwater project outflows are normally reduced to their minimums unless greater flows are required to meet power demands. Higher outflows may also be maintained if they are determined not to be detrimental to flood control, or are required to control storage space during exceedingly large floods.

- (3) During both the evacuation and refill periods, the Upper Rule Curve may be modified by project construction or other contingency requirements.
 - (4) In the studies, Upper Rule Curves define the maximum allowable storage content of each reservoir. Such data is determined from independent flood control regulations for the historical period 1928 to 1958, in accordance with the concepts of the Flood Control Operating Plan.
- e. Operating Rule Curves: The Operating Rule Curve for each reservoir for use in the 30-year System Regulation Studies is a synthesis of all of the preceding operating guidelines. It shall be developed from the Critical Rule Curve, Assured Refill Curve, Variable Refill Curve, and the Upper Rule Curve as follows: During the period 1 August through 31 December, the Operating Rule Curve shall be defined by the first Critical Rule Curve or the Assured Refill Curve, whichever is higher. During the period 1 January through 31 July the Operating Rule Curve shall be defined by the higher of the first Critical Rule Curve or the Assured Refill Curve, unless the Variable Refill Curve is below the higher of the two above curves, then it shall be defined by the Variable Refill Curve. In no case shall the Operating Rule Curve be higher than the Upper Rule Curve; it shall not be lower than the Limiting Rule Curve developed for such year (see Charts 3 and 4) during the period 1 January through 31 March. The Operating Rule Curve for the whole of Canadian storage is the summation, by months, of the usable storage corresponding to the Operating Rule Curve indicated for each individual project.
- f. Special Mica Operating Criteria
- (1) In accordance with paragraph VII (3) of the Protocol, Canadian storage is operated to provide optimum generation in Canada and the United States. To accomplish this, the Mica project is operated to criteria developed annually in the Hydroelectric Operating Plans and Detailed Operating Plans. The operating criteria for Mica project typically consist of target end-of-month storage content, target outflows and modifications as a function of Arrow reservoir storage content, maximum outflows and minimum outflows.

The Mica operating criteria are designed to accomplish the following:

- (a) Increase the firm energy, secondary energy, and/or dependable capacity of the Mica and Canadian downstream projects.
- (b) Improve the monthly distribution of energy production on the Canadian system.

Chart 3

Illustration of Operating Rule Curve for a Reservoir

Chart 4

**Illustration of Steps in Development of Operating Rule Curve
for 30-Year System Regulation Studies**

- (c) Maintain sufficient outflow to allow peaking at all times;
and
- (d) Provide for reservoir drawdown, including drawdown into non-Treaty storage, at times required by the Canadian system.

A sample set of Mica operating criteria is shown in Table 2.

- (2) Mica operating criteria may require non-Treaty storage releases from Mica reservoir. When possible these releases will be held in Arrow reservoir and transferred back to Mica reservoir. This operation may cause additional losses to the United States if the Mica minimum release requirements prevent water from being transferred back to Mica prior to the time Arrow fills or reaches the Upper Rule Curve. Allowance for this possible loss is included as a reduction in Canadian Entitlement.

9. OPERATING RULES

Operating Rules, as outlined below, shall be developed and applied jointly by the Canadian and United States Entities to describe the operation of the system, including the Canadian storages, for optimum generation in accordance with Annex A, paragraph 7 or 8 of the Treaty, whichever applies (Optimum generation is defined by a series of system regulation studies and downstream benefit determinations, see Subsection 13c). These Operating Rules shall be observed in conducting the System Regulation Studies in Part III and Part IV and in actual operation.

Notwithstanding these Operating Rules, exchanges of capacity and energy may be substituted for releases from Canadian storage, if mutually agreed by the Entities as to quantities, timing and method, and energy acquired by United States Systems from sources outside the Pacific Northwest Coordinated System may be used in lieu of energy otherwise produced by proportionate draft of such system reservoirs.

a. Operating Constraints

Constraints to be considered include:

- (1) Maximum rate of storage draft and refill.
- (2) Maximum and minimum flows.
- (3) Maximum and minimum reservoir elevations.
- (4) Flood control criteria.
- (5) At site nonpower requirements.

TABLE 2

Sample of Mica Operating Criteria

(6) Maximum powerhouse capacity at storage reservoirs.

b. Operation Above the Operating Rule Curve

The whole of the Canadian storage shall be drafted to its Operating Rule Curve as required to produce optimum generation.

c. Proportional Draft Below the Operating Rule Curve

- (1) The whole of the Canadian storage shall be drafted below its Operating Rule Curve as required to produce optimum generation to the extent that a System Regulation Study determines that proportional draft below the Operating Rule Curves/Energy Content Curves is required to produce the hydro firm energy load carrying capability of the United States system as determined by the applicable Critical Period Regulation Study. Energy Content Curves for United States reservoirs are equivalent to the Operating Rule Curves.
- (2) When the conditions of paragraph c(1) above are met, the whole of the Canadian storage and all reservoirs in the United States system shall be drafted proportionately between their respective Operating Rule Curves or Energy Content Curves and their first Critical Rule Curves. If it is necessary to draft additional storage after system reservoirs reach their first Critical Rule Curves the proportionate draft shall be made between their first and second Critical Rule Curves, their second and third Critical Rule Curves, etc. When it is necessary to operate the whole of the Canadian storage and the United States reservoirs below their lowest Critical Rule Curves, they shall be operated proportionately between their lowest Critical Rule Curves and their normal minimum contents. If the storage content for any reservoir is equal to or lower than the Critical Rule Curve to which the system is being proportionately drafted, such reservoir shall not participate in proportionate draft until the system proportionate draft exceeds such Operating Rule Curve or Energy Content Curve for such reservoir. It shall then participate in the additional system draft.
- (3) In the studies, proportionality between rule curves shall be computed in terms of storage.
- (4) In actual operations, proportionate draft between Critical Rule Curves for the whole of Canadian storage and United States reservoirs shall be computed in terms of elevation and shall be determined as set out in Subsection 24c.

**PART III - ASSURED OPERATING PLAN AND
DOWNSTREAM BENEFIT COMPUTATION**

10. OBJECTIVES AND USE OF ASSURED OPERATING PLANS

An Assured Operating Plan shall be prepared each year for the sixth succeeding year of operation. This requirement will provide that an Assured Operating Plan will always be available for five complete operating years. An operating year, as used herein, shall mean the period 1 August through 31 July. The plan will establish the generation potential of both systems, prescribe operating criteria and procedures to insure that the potential will be realized, and will serve as a basis for the Detailed Operating Plan. It is intended that the Assured Operating Plan will also provide the Entities with essential information for effective operational planning of their respective power systems which are dependent on or coordinated with the operation of Canadian storage.

The Assured Operating Plan shall reflect the requirements included in the Treaty, its annexes, and related documents. The studies necessary to develop the plan shall be undertaken by the Entities jointly.

11. OBJECTIVES AND USE OF THE DOWNSTREAM BENEFIT COMPUTATIONS

Downstream Benefit Computations shall be prepared annually in accordance with Annex A, paragraph 7 and Annex B of the Treaty, paragraphs VIII, IX and X of the Protocol; and as detailed in Section 18. They shall be prepared in conjunction with the Assured Operating Plan, as outlined in Section 13, and shall define the downstream power benefits in the United States from Canadian storage five years in advance for each year in which the Treaty is in force. As indicated in Section 13 below, they shall also serve to define the limit to which Canadian storage may be reregulated to Canadian advantage so as to develop optimum power generation in Canada and the United States.

12. DATA REQUIREMENTS

Prior to March of each year the Entities shall exchange information and data for the systems in the two countries not previously exchanged and which are necessary for development of the Assured Operating Plan. The information and data to be exchanged shall include: schedules for initial operation of power generating and storage facilities, peak and energy load data, adjustments to project modified flows for the 30 historical years beginning with 1 August 1928, reservoir capacity, conversion factors and peaking capacities throughout the operating range, constraints, minimum flow limitations, limitations including flood control criteria, maintenance or construction schedules, and any other data necessary to establish the required operating plans.

13. GENERAL PROCEDURES FOR DEVELOPING THE ASSURED OPERATING PLAN AND DOWNSTREAM POWER BENEFIT STUDIES

- a. Introduction - Because the Assured Operating Plan and the Downstream Benefit Power Computation are mutually dependent, their development

is accomplished concurrently. Each step of the procedure, as outlined below, evolved from experience for ease and efficiency of deriving the operating plan. It assumes that generating facilities exist at Mica Dam and downstream thereof, and that the plans must be designed "to achieve optimum power generation at site in Canada and downstream in Canada and the United States of America, including consideration of any agreed electrical coordination between the two countries". (Reference: Annex A, paragraph 7 of the Treaty.)

- b. Step I, II, III Systems - In determining, for each year, the increase in dependable hydroelectric capacity and the increase in average annual hydroelectric energy, 30-year system regulation studies shall be made as follows.

Step I: These studies will establish the plant installation of the United States system required to serve the "load of the Pacific Northwest Area", in accordance with Section 18. These studies are also used to determine whether the proposed operating rules are optimum in both countries, in accordance with Subsection 14c.

Step II: These studies will determine the critical period energy capability and the average annual usable hydro energy capability of the system using the same thermal installation as the Step I studies; the United States base system, with the same hydro plant installation as in Step I; and the Canadian storage.

Step III: These studies will determine the critical period energy capability and the average annual usable hydro energy capability of the system using the same thermal installation as in the Step I studies and the United States base system, with the same hydro plant installation as in Step I.

- c. Optimum Power Generation - In accordance with Annex A, paragraph 7 of the Treaty and paragraph VII (3) of the Protocol to the Treaty, optimum power generation in both Canada and the United States is achieved in the Assured Operating Plan through analysis of the following modes of Canadian storage operation.
- (1) Canadian storage in the Annex B, Step I system is initially operated for optimum generation in the United States which maximizes the firm energy capability in the United States system. Three quantities are then computed for both the Canadian and United States systems:
 - (a) firm energy capability;
 - (b) dependable peak capability; and
 - (c) average annual usable secondary energy capability.
 - (2) The Canadian storage operation in (1) is then modified to achieve a weighted sum for Canada and the United States of the three quantities listed in (1) that is greater than the weighted sum achieved under operation for optimum generation in the United States alone.

- (3) When an operation in (2) is achieved such that the weighted firm energy, dependable peak, and average annual usable secondary energy capabilities are maximized, the mode of Canadian storage operation is entered into a Downstream Benefit Computation (Annex B of the Treaty, Step II and Step III systems) to determine:
 - (a) the resulting downstream benefits; and
 - (b) whether the loss of downstream benefits to the United States are within the allowable limits.

If the loss in downstream benefits exceeds the allowable limits described in Subsection 15c, the modified operation of Canadian storage in (2) above must be revised so that the downstream benefits are within the limits. In order to select the optimum system operation from the studies in (1) and (2) above, the sum of the gains or losses in firm energy, dependable peak and average annual secondary energy capability that is usable in each system must be defined by the respective Entities. A relative value of each of the three quantities shall be assigned for the purpose of establishing a common measure of the gains or losses.

- d. Operating Procedures and Constraints - The U.S. Base System Projects and all other main stem Columbia River hydro projects shall be operated for optimum power and flood control operation within established project operating procedures as required by the Treaty and Protocol (See Section 9).

The same project operating procedures and constraints shall be used in all Assured Operating Plan and Determination of Downstream Power Benefit studies, apart from changes required to account for different critical period lengths and different projects included in the studies.

Other changes and clarifications to project operating procedures include the following:

- (1) The secondary energy market limit used in the Assured Operating Plan Step I 30-year system regulation study to guide storage operation above the operating rule curves shall be determined in a manner similar to established Pacific Northwest Coordination Agreement procedures, including those adjustments required by firm energy shifting. The secondary energy market limit used in the Step I study shall also be used in the Step II and Step III studies, except for differences required by firm energy shifting.
- (2) The operation of Kootenay Lake in the Step I, II and III studies shall be consistent and follow the International Joint Commission (IJC) rule curves and constraints, except that the lake shall be drafted to the full amount of usable storage declared in Annex B at the end of the critical period in order to provide an optimum power operation.

- (3) The established minimum flow requirements at Dworshak dam shall be used in the Assured Operating Plan Step I system regulation study.
 - (4) The Brownlee reservoir operation in the Assured Operating Plan Step I study shall be the current forecast of project operation used by the Idaho Power Company in the Pacific Northwest Coordination Agreement critical period planning and refill studies, except that the project shall be drafted empty at the end of the critical period in order to provide an optimum power operation for the Step I system. In the Step II and Step III studies Brownlee shall be operated as in Step I, except to the extent that the operation must be modified to allow refill prior to the start of the critical period and draft of total storage during the critical period of each study.
 - (5) Priest Lake shall be included in the Step II and III studies as a natural lake. It shall be regulated so as to model the effects of natural lake regulation on the inflows to downstream projects.
 - (6) The usable storage operating in the Step I study shall be the current best estimate of usable project storage. The usable storage operated in the Step II and Step III studies for U.S. Base System projects shall be the amounts listed in Annex B, except that Priest Lake may be included to the extent mentioned above.
- e. Hydroregulation Studies - In order to assess the quantities defined in Subsection 13c(1), a number of system regulation studies are required. These studies are described in the following sections.
- (1) Critical Period System Regulation Studies: The Critical Period Regulation Study shall be adopted to form a basis for the Critical Rule Curves, which are developed from a hindsight evaluation of the critical period. The Critical Period Study is normally incorporated into a 30-year study which operates the system identically during the water years applicable to the Critical Period; the Rule Curves developed also guide storage use in other periods when they govern the Operating Rule Curve. The critical period itself is the most adverse flow sequence of the historical period of streamflows and the one which produces the least amount of firm energy load-carrying capability for the system. The critical period can be of varying length depending on the number of storage reservoirs in the system, the schedule of incoming resources, and the shape of the system load.

This system regulation study shall be prepared in accordance with established utility practice. The regulation shall assume:

- (a) Each reservoir shall be at its normal top elevation or filled to the extent feasible at the beginning of the critical period, and shall be drafted to its normal bottom elevation or to the extent feasible by the end of the critical period.
 - (b) The system shall be regulated with the intent to maximize critical period energy, consistent with the de-maximization limits provided for in the downstream benefit computations.
 - (c) When other authorized reservoir uses limit release of storage water in the critical period, such regulation shall be based on the maximum storage use consistent with the limitations.
 - (d) The output at any project shall not exceed an 85 percent plant factor in any period, unless a higher plant factor is necessary to make all storage water usable during the critical period.
 - (e) In multiple-year critical periods, no reservoir shall be drafted by any 1 April below the elevations determined by its Assured Refill Curve, unless all reservoirs have been drafted to such elevations and additional draft is required to meet the firm load of the system.
- (2) 30-Year System Regulation Studies: 30-Year System Regulation Studies shall be made for each operating year using the appropriate Operating Rule Curve and Operating Rules described in Part II. It is intended that the Operating Rule Curve and associated operating criteria, including the Critical Rule Curves, be designed to regulate the system for the entire 30 years sequentially, without the benefit of historical hindsight. Failure of the system to operate in accordance with the refill principle set forth in Subsection 8b(2)(c) shall require that the Operating Rules or the Operating Rule Curve, including its component parts, be modified to eliminate such failures.
- f. Unregulated Streamflows - The unregulated streamflows used in the Assured Operating Plan and Determination of Downstream Power Benefits studies shall be based on the 30 years of streamflows, August 1928 to July 1958, contained in the Extension of Modified Flows report named in Protocol paragraph VIII, with updates for current best estimates of irrigation depletions and return flows, and corrections for errors and omitted projects.

The unregulated streamflows used in the Step I study shall be used in the Step II and Step III studies, except for adjustments needed to reflect different upstream storage projects, e.g. Libby, and Canadian Treaty Projects.

g. Step I Firm Load - The load to be served by the Step I system of Annex B, paragraph 7, shall be:

- (1) The load of the Pacific Northwest Area; including the power required for pumping water into Banks Lake from Grand Coulee reservoir; and
- (2) All flows of firm power out of the Pacific Northwest Area, except plant sales which are those flows of power from a generating facility located in the Pacific Northwest Area sold to serve loads outside the Pacific Northwest Area;

Reduced by:

- (3) The load served by all flows of firm power into the Pacific Northwest Area, except power from Thermal Installations referred to in Annex B, paragraph 7;
- (4) The load served by those hydro and non-thermal generating resources that are located in the Pacific Northwest Area and that are not included in the Step I system; and
- (5) Any conservation added to balance loads and resources pursuant to paragraph i below.

h. Surplus Firm Energy - Step I system firm energy capability in excess of the Step I system firm load shall be used to serve loads outside the Pacific Northwest Area. This surplus firm energy capability may be shaped seasonally similar to the load that it is expected to serve.

i. Added Resources - Any initial Step I system firm energy capability less than the Step I system load shall be balanced by adding feasible resources and/or conservation consistent with current Pacific Northwest Area resource acquisition plans.

j. Step I Resources - The resources included in the Step I system shall include:

- (1) The U.S. Base System hydro projects;
- (2) All other storage projects upstream of Bonneville Dam, and U.S. hydroelectric projects upstream of Bonneville Dam; and
- (3) The Thermal Installations that will be used to meet the Step I system loads.

The Step II and Step III system resources shall be the U.S. Base System hydro projects and the Thermal Installations included in the Step I system.

k. Thermal Installations - Thermal Installations, referred to in Annex B, paragraph 7, shall include the current best estimate for thermal power that will be used to meet the Step I system load, regardless of the location of the thermal power plants which generate the thermal power.

- l. Exchanges of Firm Power - Contractual exchanges of firm power with other regions which neither increase nor decrease the net flow of power between the Pacific Northwest Area and other regions shall be treated as follows:
- (1) Flows of power into the Pacific Northwest Area shall not be included as part of the Thermal Installations as described in Annex B, paragraph 7; and
 - (2) Flows of power out of the Pacific Northwest Area shall not be included as part of the thermal power used outside the Pacific Northwest Area, pursuant to Subsection 18b.
- m. Loads for Step II and Step III Studies - The load shape used in the Step II and Step III studies shall have the same monthly firm energy load shape as the firm energy loads in the Pacific Northwest Area. The residual load in the Step II and Step III studies which must be met by the hydro system shall include the effect of the varying monthly generation from the Thermal Installations.

The loads for Step II and Step III studies shall be taken as equal to the energy capabilities of the systems and shall be determined as follows:

- (1) Estimate the average hydro energy capabilities for the critical periods of the Step II and Step III systems;
- (2) Add the thermal energy capability to each of the capabilities of (1) above to obtain a total average critical period energy capability for the Step II and Step III systems;
- (3) Multiply the totals obtained in (2) above by the ratio

$$\frac{\text{area average annual firm energy load}}{\text{area average critical period firm load}}$$
 to obtain the average annual firm energy loads for the Step II and Step III systems;
- (4) Prorate the average annual firm energy loads determined in (3) in the ratio

$$\frac{\text{Step I monthly area firm energy load}}{\text{Step I annual area firm energy load}}$$
 to obtain a monthly firm energy load for Step II and Step III systems; and
- (5) Subtract the monthly thermal energy capability to determine the monthly firm hydro energy loads of Step II and Step III systems.

The average annual hydro energy loads for Step II and Step III systems also become the firm energy considered usable according to Annex B, paragraph 3(a) of the Treaty.

14. DEVELOPMENT OF THE ASSURED OPERATING PLAN

- a. A total of seven studies are required to complete the Assured Operating Plan and downstream power benefit studies. The basic assumptions for these studies and their basic purpose is shown in Table 3. This table assumes that the Assured Operating Plan is being developed in accordance with Annex A, paragraph 7 of the Treaty. In the event that the plan is to be developed for optimum generation in either country, a similar schedule of studies to be performed shall be developed to insure compliance with the provisions of Annex A, paragraph 8 of the Treaty.

b. YR -11 Study

This is a detailed system regulation of the total United States power system less minor resources with the Canadian storage operated to provide optimum power generation in the United States. Optimum power generation is achieved by maximizing the firm energy capability of the United States system in a manner consistent with the Pacific Northwest Coordination Agreement.

Both the United States and Canadian systems' firm energy, secondary energy and dependable capacity are then summed per Subsection 13c.

c. YR-41 Study

The study objective is to modify the operation of Canadian storage in the YR-11 Study to achieve optimum generation in both countries as indicated in Subsection 13c. The Mica project is operated to fixed rules similar to those outlined in Subsection 8f. Arrow storage operation is modified when possible to compensate for the changes in flows at the international boundary caused by the change in Mica operation. Because Arrow storage may not fully mitigate these changes there may be a net loss in the United States system relative to the United States optimum YR-11 Study.

U.S. and Canadian Operating Rule Curves and Critical Rule Curves used in the YR-41 and YR-42 Studies shall be changed from those used in YR-11 and YR-12 Studies only to the extent that U.S. reservoirs are required to balance Canadian Storage re-operation.

Generally, losses to the United States system result from the following conditions:

- (1) Water is trapped in Mica, and Arrow is empty or at maximum discharge capability, resulting in a decrease of water being released from Canadian storage in a given period compared to that indicated in the United States optimum study. The deficit must then be compensated by United States reservoirs.
- (2) Additional water is released from Mica in a given period, Arrow storage is full or governed by flood control requirements and, therefore, unable to hold the additional water. Water is thus released at a time not required in the United States.

TABLE 3

SUMMARY OF ASSURED OPERATING PLAN SYSTEM REGULATION STUDIES

Study Designation --- (1) -----	Annex B Step No. -----	System ----- (2) -----	Study Purpose -----
YR-11	I	Canada= 15.5 maf U.S.= All Columbia Hydro Projects Step I Load Step I Thermal	Establishes operation of real system operated for optimum power in U.S.; determines Step I load and thermal; compared to YR-41 Study to insure total generation capabilities increase due to optimization in both countries
YR-12	II	Canada= 15.5 maf U.S.= Base System Step I Load Shape Step I Thermal	Computation of Downstream Power Benefits (DPB) for optimum operation in U.S. Compared to YR-42 Study to determine payment required by Canadian Entitlement Purchase Agreement (CEPA)
YR-13	III	Canada= None U.S.= Base System Step I Load Shape Step I Thermal	Base case for all DPB computations. Uses no Canadian storage and operates U.S. Base system for optimum power operation in U.S.
YR-22	II	Canada= 15.0 maf U.S.= Base System Step I Load Shape Step I Thermal	Used for computation of allowable annual reduction in DPB's. Uses 0.5 maf less Canadian storage operated for optimum power operation in U.S.
YR-32	II	Canada= 12.5 maf U.S.= Base System Step I Load Shape Step I Thermal	Used for computation of maximum total permitted reduction in DPB's. Uses 3 maf less Canadian storage operated for optimum power operation in U.S.
YR-41	I	Canada= 15.5 maf U.S.= All Columbia Hydro Projects Step I Load Step I Thermal	Final adopted operation for Assured Operating Plan from optimum power operation for power in both countries. Must increase total generation capabilities in both countries compared to YR-11 Study
YR-42	II	Canada= 15.5 maf U.S.= Base System Step I Load Shape Step I Thermal	Final computation of DPB; establishes payment required by CEPA for reduction in DSB due to optimum power operation in both countries when compared to YR-12 Study

- Notes:
1. YR denotes study year, e.g. 95-11 is the YR-11 Study for operating year 1 August 1994 to 31 July 1995.
 2. U.S. Base System is defined in Annex B, Base System Table.

- (3) Minimum release requirements at Mica project prevent Kinbasket Lake from refilling when all other projects in the basin refill. This may result in increased spill at downstream projects in the United States, reduction in usable surplus or reduction in firm energy capability for the next operating year.

These expected real losses to the United States system must be at least equaled by increases in the Canadian system in order for the modified Canadian system operation to be allowable. When this condition and the condition described in Subsection 15c below are satisfied, the YR-41 Study shall form the basis for the Assured Operating Plan.

15. DEVELOPMENT OF THE DOWNSTREAM POWER BENEFIT STUDIES

- a. Five downstream power benefit studies are required coincidentally with the Step I studies prepared for the Assured Operating Plan. The downstream power benefit studies contain the United States base system as defined in Annex B, Base System Table, and where applicable, Canadian storage.
- b. The YR-13 Study (Step III) includes the United States base system only, with generation optimized for the United States (see Table 3). The YR-12, YR-22, YR-32, and YR-42 (Step II) Studies include Canadian storage in the first-added position to the base system. Generation is optimized for the United States in the YR-12, YR-22, and YR-32 Studies, and in both countries in the YR-42 Study. The differences in capacity and energy derived from the Step II and Step III studies provide the computed downstream benefits for the year and are used to compute the limits to which Canadian storage may be reregulated to achieve optimum generation in both countries. These studies are based on the same regulation criteria used in the applicable Step I study. Special operating rules for Mica project which are developed for the Assured Operating Plan are recognized in the YR-42 Study and are identical to those used in the YR-41 Study. The differences in capacity and energy derived from the YR-42 and YR-13 Studies provide the computed downstream power benefits for the year.
- c. From the studies listed above, the minimum permitted downstream power benefits shall be the higher of the two following conditions.
 - (1) The downstream power benefits associated with 12.5 million acre-feet (maf) of Canadian storage in any year, which is derived from the YR-32 and YR-13 Studies for the year under study; or
 - (2) The downstream power benefits associated with the preceding year's benefits reduced by the effect of withdrawing 0.5 maf of Canadian storage in addition to natural reductions caused by irrigation depletions and system growth.

Condition 1 defines the benefits of 12.5 maf of Canadian storage operated for optimum generation in the United States compared to the United States base system operating alone. Condition 1 has not controlled the minimum permitted benefits through 1996, hence the YR-32 Study has not been performed each year.

Condition 2 is defined by the following.

$$\begin{aligned} \text{DSB}_{\text{minimum}} &= X + (Y_C - Y) - (Y_C - Z) \\ &= X - Y + Z \\ &= X - (Y - Z) \end{aligned}$$

where:

X is the previous year's downstream power benefits which is derived from the YR-42 Study operated for optimum generation in both countries and the YR-13 Study; and

Y is derived from the previous year's YR-12 and YR-13 Studies, both operated for optimum generation in the United States; and

Y_C is derived from the current year's YR-12 and YR-13 Studies, both operated for optimum generation in the United States; and

Z is derived from the current year's YR-22 Study (15 maf) and the YR-13 Study, both operated for optimum generation in the United States.

The computation above recognizes that in addition to the allowable decrease equivalent to the withholding of 0.5 maf of Canadian storage, there is a normal decrease (or increase) from year-to-year due to irrigation depletions and resource changes in the United States base system. Such increase/decrease is the difference between the benefits derived from the previous year's YR-12 and YR-13 Studies, and the current year's YR-12 and YR-13 Studies ($Y_C - Y$).

The differences in capacity and energy derived from the YR-42 and YR-13 Studies shall provide the computed downstream power benefits for the year. The resulting benefits shall not be less than the greater of the two minimum permitted benefits calculated above. If this condition and the condition described in Subsection 14c are met, then the YR-41 Study shall be the basis for the Assured Operating Plan for the year under study.

- d. The compensation due to Columbia Storage Power Exchange with respect to reduction of the Canadian Entitlement, in accordance with Section 7 of the Canadian Entitlement Purchase Agreement, is half the differences between the computed downstream power benefits derived from the YR-12 and YR-13 Studies, i.e. Y_C , and the computed downstream power benefits derived from the YR-42 and YR-13 Studies.

16. FIRM ENERGY SHIFTING

Shifting of firm energy between years of the critical period may be included in the Assured Operating Plan and Determination of Downstream Power Benefits studies in the following manner.

- a. When the U.S. Entity determines that shifting will produce optimum power in the U.S., the Entities shall conduct additional studies that determine the changes to the Assured Operating Plan and Determination of Downstream Power Benefits that would occur if shifted firm energy had not been included.

The purpose of these studies is:

- (1) to provide a non-shifted firm energy operating plan that the U.S. Entity may elect to implement in the Detailed Operating Plan, and
 - (2) to define the incremental change in the downstream power benefits due to the inclusion of shifted firm energy.
- b. If the U.S. Entity does not determine that shifting may produce optimum power in the U.S. at the time of preparation of the Assured Operating Plan, the Entities may prepare additional studies that determine the changes to the Assured Operating Plan and Determination of Downstream Power Benefits that would occur if shifted energy had been included. The purpose of these studies is:
 - (1) to provide a shifted firm energy operating plan that the Entities may elect to implement in the Detailed Operating Plan, and
 - (2) to define the incremental change in downstream benefits due to the inclusion of shifted firm energy.
 - c. If shifted firm energy is included in either the Assured Operating Plan or the Detailed Operating Plan, the downstream power benefits to which Canada is entitled shall be those which include the effect of shifting. If firm energy shifting is included in the Assured Operating Plan or Detailed Operating Plan during the period in which any portion of the Canadian Entitlement has been sold pursuant to the Canadian Entitlement Purchase Agreement, the U.S. Entity shall deliver to the Canadian Entity an amount of power equal to any increase in the purchased portion of the Canadian Entitlement due to the inclusion of firm energy shifting.
 - d. Assured Operating Plan and Determination of Downstream Power Benefits studies that include shifted energy shall be similar to other Assured Operating Plan and Determination of Downstream Power Benefits studies. The Step I study firm energy load carrying capability may be increased in the first year of the critical period by shifting energy capability uniformly from latter years of the critical period, if:

- (1) the rate of return energy in the latter years of the critical period can be served by a critical period surplus firm energy, or a backup thermal resource, or a firm load reduction, and
- (2) the amount of energy shifting does not cause the Canadian reservoirs to draft more than the following amounts at the end of the first year of the Step I critical period (31 July 1929).

<u>Project</u>	<u>Draft</u>
Mica	700 ksf
Arrow	300 ksf
Duncan	143 ksf

- e. The shifted firm energy shall be used either to meet Pacific Northwest Area firm loads or to increase the initial firm surplus. During the 30-year system regulation studies the surplus firm energy shall be shifted into water years that begin on August 1st with the reservoir system energy content at or above a point half-way between full and the first critical rule curve for 31 July. Shifted firm energy shall be returned at uniform monthly rates in all water years that begin with the reservoir system energy content below that point.
- f. Any firm energy shifted in the Step I study shall also be shifted in the Step II study by using the same rate of return energy in both studies. The rate of return of shifted firm energy in the Step I study shall determine the amount of shifting used in the first year of the critical period of the Step II study. The increased firm load in the first year of the Step II critical period study shall be shaped similar to the Pacific Northwest Area load. The Step III study does not have shifted energy because the critical period is less than one year in length.

The Step II 30-year system regulation study shall raise and lower the firm load using the same criteria as the Step I study. If a backup thermal resource is included to meet loads in latter years of the Step I critical period when shifted energy is returned, it shall be included in the determination of displaceable thermal resources for the Step II study.

17. CONTENT OF THE ASSURED OPERATING PLAN

The following items used in or developed from the 30-Year System Regulation Study adopted in Sections 13 and 14, for each of the operating years, shall form the Assured Operating Plan for the Canadian storages for the particular operating year concerned. It shall be compiled by the Entities by 1 September of each year and shall contain the following.

- a. The Critical Rule Curves in terms of end-of-month storage content for each Treaty project and for the whole of the Canadian storage. The Critical Rule Curves shall be composed of the tabulated storage contents for the water years which are included in the Critical Period System Regulation Study for the particular operating year.

- b. Assured Refill Curves and Variable Refill Curves in terms of end-of-month storage content for each Canadian Treaty storage project for the period 1928 to 1958. These project curves are used in development of curves for the whole of Canadian Storage
- c. Upper Rule Curves for Duncan, Keenleyside and Mica projects, in terms of end-of-month storage content for the period 1928 to 1958.
- d. The Operating Rule Curve, in terms of end-of-month storage content for the whole of Canadian storage for the period 1928 to 1958.
- e. The procedures for development of Variable Refill Curves.
- f. Operating Rules, including special Mica Project Operating Criteria, such as maximum/minimum outflows, target end-of-month storage contents, and target flows as a function of Arrow reservoir storage contents.
- g. Text, as required to supplement the tables in 17a through 17d above, including amplifying comments regarding operating rules, constraints, loads, resources, construction requirements, or other pertinent data unique to the operating year.

An implementation section consistent with Article XIV2(k) of the Treaty shall also be included.

18. METHOD OF DETERMINING DOWNSTREAM POWER BENEFITS

The determination of the downstream power benefits and Canadian Entitlement shall be based on the following procedures.

- a. The priority of use of energy in the Step II and Step III studies shall be in the order as listed in Annex B, paragraph 3 of the Treaty.
- b. The thermal displacement market used in the computation of "average annual usable energy" is the displaceable portion of generation from the Step I Thermal Installations that are used to meet the Pacific Northwest Area firm load. The amount of thermal displacement market is defined by the following equation:

$$TD(m) = TI(m) - MG(m) - SS$$

Where:

TD(m) = The monthly thermal displacement market (only valid for positive numbers), and

TI(m) = The monthly generation from the Thermal Installations in the Step I, Step II and Step III systems, and

- MG(m) = The monthly sum of the minimum amount of generation required from each Thermal Installation, as declared by the project operating agency or required by the minimum purchase provisions of a contract for a thermal resource, and
- SS = The annual average amount of System Sales, prorated by month to give a uniform rate of delivery throughout the year.

System sales are those flows of firm power out of the Pacific Northwest Area, excluding:

- (1) flows of power from exchanges of firm power pursuant to Subsection 131,
 - (2) plant sales,
 - (3) flow through transfers of power from outside the Pacific Northwest Area to outside the Pacific Northwest Area, and
 - (4) delivery of the Canadian Entitlement out of the Pacific Northwest Area.
- c. The Canadian Entitlement to downstream power benefits for any operating year, in accordance with paragraph 1 of Article V of the Treaty, shall be one-half of the dependable hydroelectric capacity benefit and one-half the average annual usable hydroelectric energy determined, in accordance with (1) and (2) below.
- (1) Dependable Hydroelectric Capacity Benefit: The capacity benefit from Canadian storage shall be the difference between the average rates of generation during the critical periods of the Step II and Step III hydro systems divided by the average of the monthly load factors during the critical period of the Pacific Northwest area, as determined from the Step I study.
 - (2) Average Annual Usable Hydroelectric Energy Benefits: The energy benefit from Canadian storage shall be the difference in the average annual usable energy of the Step II and Step III systems computed for the system of each step as the sum of:
 - (a) The firm hydro energy, plus
 - (b) The energy which can be used in the thermal displacement market, plus
 - (c) Forty (40) percent of the energy remaining.

- d. The operating year, 1 August through 31 July, is the period for which downstream power benefits will be determined. During the period of the Canadian Entitlement Purchase Agreement, the Canadian Entitlement to downstream power benefits shall begin on 1 April prior to the 1 August commencement of the operating year for which the determination has been made and shall end on the following 31 March.

19. CONTENT OF THE DOWNSTREAM POWER BENEFIT DOCUMENT

The Downstream Power Benefit Document shall include the following information (refer to Tables 4, 5, and 6, and Chart 5).

- a. The Canadian Entitlement, which is one-half the total computed downstream power benefits for the Assured Operating Plan studies adopted.
- b. One-half the minimum permitted downstream power benefits, as indicated by Subsection 15c.
- c. Effect on the Canadian Entitlement Purchase Agreement which is the difference between paragraph 19a above, and one-half the downstream power benefits which would have been computed if the Assured Operating Plan had been designed to achieve optimum generation downstream in the United States alone.
- d. Tables and charts as follows:
 - (1) Computation of Canadian Entitlement;
 - (2) Summary of Power Regulations;
 - (3) Determination of Loads for Steps I, II, and III;
 - (4) Determination of Displaceable Thermal Market; and
 - (5) Secondary Energy Duration Curves for Steps II and III.

TABLE 4

Computation of the Canadian Entitlement

TABLE 5

Summary of Power Regulations for the Computations of
Canadian Entitlement to Downstream Power Benefits

TABLE 6

Determination of Load Shape for Step II and Step III
Canadian Entitlement to Downstream Power Benefits

CHART 5

Duration Curve of Secondary Energy for a Reservoir

PART IV - DETAILED OPERATING PLAN

20. GENERAL

Each year a Detailed Operating Plan shall be developed for each of the Canadian storage reservoirs and the whole of the Canadian storage, and for the Libby reservoir. The Detailed Operating Plan shall be developed, as described below, from the Assured Operating Plan previously agreed to for that operating year. Planning for the Detailed Operating Plan shall begin in January for the August through July operating year immediately following, and the plan shall be completed by September 1. In general, all system regulation studies necessary for the formulation of the Detailed Operating Plan shall be done by the U.S. Entity in consultation with the Canadian Entity.

21. REVIEW OF ASSURED OPERATING PLAN

- a. The Canadian and United States Entities shall review the Assured Operating Plan applicable to the immediately ensuing operating year. Changes in system load estimates, energy shifting assumptions, resources, duration of the critical period, flood control criteria, irrigation depletions, nonpower requirements, and any other pertinent data shall be considered in this review using the latest available data in comparison with that used in the original study. If the Entities agree that these changes warrant further investigation, joint studies analyzing the impacts of implementing the changed data with Critical Period Rule Curves from the Assured Operating Plan, the Alternative Operating Plan, or other operating criteria shall be made.
- b. The Entities shall agree prior to 1 February on the need for revised Critical Period Rule Curves and operating criteria for Canadian reservoirs or to use the Critical Period Regulation from the Assured Operating Plan or the Alternative Operating Plan as the basis for the Preliminary Critical Period Regulation Study. If the necessity for revised Critical Period Rule Curves and operating criteria for Canadian reservoirs cannot be agreed upon, the Detailed Operating Plan shall be based on Critical Period System Regulation from the Assured Operating Plan, or if the Assured Operating Plan was prepared in accordance with Subsection 16a, at the option of the U.S. Entity, the Alternative Operating Plan.

22. SYSTEM REGULATION STUDIES

If new Operating Rule Curves or operating rules are to be developed for the Detailed Operating Plan, they shall be developed from a load-growth type regulation study. In this case, the estimated loads and scheduled resources shall be accounted for during the entire length of the Critical Period.

- a. Preliminary Critical Period Regulation: A Preliminary Regulation shall be made using the latest data and the critical period rule curves and operating criteria for Canadian storage defined in Subsection 21b. The Entities may agree to analyze other Critical Period System Regulation Studies including operating criteria from the Assured Operating Plan, Alternative Operating Plan, or other changes to the Canadian operating criteria. In addition, 30-Year System Regulation Studies may be made as desired by the Entities to evaluate all effects of the changes in the operating plan.
- b. Modified Critical Period Regulation: Prior to 1 April, the Entities shall agree on any modifications to the regulation of Canadian storage which may be mutually desirable, or which may be desirable to one Entity and is acceptable to the other Entity.
- c. Final Critical Period System Regulation: Further changes to the Critical Period System Regulation may be made after 1 April, provided that: (1) such changes are made pursuant to existing contracts in the United States; and (2) changes to Canadian reservoirs are made only with both Entities agreement. Using the regulation of Canadian storage, as agreed to or as modified within limits agreed in this paragraph and Subsections 22a and 22b, a Final Critical Period System Regulation shall be made by the United States Entity by 1 July. The Critical Rule Curves and related operating criteria developed from the final study will then provide the operating guides for Canadian storage and Libby until the completion of the term of the Detailed Operating Plan.
- d. Refill Studies: Using the Critical Rule Curves developed in the Final Critical Period Regulation, 30 separate 1-year System Regulation Studies, beginning with August 1928 flows, shall be made by the Entities to insure the adequacy of the operating guidelines and criteria, in accordance with the principles set forth in Subsection 8b. The Operating Rule Curve and its components shall be changed, if necessary, to comply with the principles set forth in Subsection 8b. These studies shall be completed by 1 September.

23. CONTENT OF DETAILED OPERATING PLAN

The Detailed Operating Plan shall consist of the data and criteria listed below. It shall be compiled by the Entities by 1 October.

- a. Distribution of usable Canadian storage space available for power and flood control purposes.
- b. Definition of the Operating Rule Curve.
- c. Guidelines for the anticipated means of implementing the Detailed Operating Plan.
- d. Definition of operating rules and project operating limits.

- e. Critical Rule Curves for each of the Canadian reservoirs and for the whole of the Canadian storage tabulated in terms of end-of-month storage contents. The first Critical Rule Curve data shall be taken from the Final Critical Period Regulation study described in Subsection 22c. In addition, Critical Rule Curves from previous Detailed Operating Plan Final Critical Period Regulation studies that are applicable to the operating year shall be tabulated herein and identified as second, third, etc., on the basis of their time sequence (see Chart 6).
- f. Assured Refill Curves for each of the Canadian reservoirs tabulated in terms of month-end storage contents. These data are to be those finally agreed upon, as described in Subsection 22d.
- g. Procedure for determining the Variable Refill Curves for each of the Canadian reservoirs.
- h. Procedure for determining the Flood Control Refill Curves for each of the Canadian reservoirs, if required.
- i. Storage-elevation tables for Keenleyside, Mica, Duncan and Libby projects.
- j. Any additional supplementary text or tables required to limit or clarify the intended operation of the system which would be unique to the operating year for which the plan is devised.
- k. Special Mica project rules and operating criteria.
- l. Critical Rule Curves, Energy Content Curves and pertinent operating criteria for Libby project.
- m. The amount and procedures for delivery of any power by the U.S. Entity to the Canadian Entity required by Subsection 16c, and for delivery of any power by the Canadian Entity to the U.S. Entity of any power required by Subsection 15d.

24. IMPLEMENTATION

Actual operation of the Canadian storage shall be guided by the Detailed Operating Plan and by any other operating arrangements that may be worked out by the operating or scheduling personnel. These detailed operating arrangements shall be made in accordance with established utility and water management practices. The Entities shall exchange all current operating data necessary for continuing review of system operations.

a. Scheduling Operation of Canadian Storage

Requests by the United States Entity for storage operation shall be directed to the whole of the Canadian storage consistent with the Operating Rule Curve and other operating criteria designed to provide optimum generation in accordance with Annex A, paragraphs 7 or 8 of

CHART 6

Illustration of Selection of Critical Rule Curves for the
Detailed Operating Plan for Reservoir in a Multi-Year Critical Period

the Treaty, whichever applies. Requests shall be made on a regular weekly basis, or as otherwise mutually agreed and shall be in terms of storage water delivered at the Canadian-United States border. In honoring such requests, the Canadian Entity shall operate Canadian storage consistent with optimum storage use. The Operating Rule Curves, or system proportionate draft point, or special operating criteria prepared for the individual Canadian reservoirs shall be used as a measure of any deviation from the optimum operation.

b. Operating Rule Curves

- (1) During the period 1 August through 31 December the Operating Rule Curve for each Canadian reservoir shall be that indicated in Subsection 8e.
- (2) During the period 1 January through 31 March, the Operating Rule Curve shall be that indicated for the period beginning 1 January in Subsection 8e, except that Variable Refill Curves shall be based on the actual 95 percent confidence volume inflow forecasts at-site and the most probable inflow forecast at The Dalles, Oregon, utilizing the same principles indicated in Subsection 8b. The Upper Rule Curve shall be based on the procedures set forth in the Flood Control Operating Plan.
- (3) During the period 1 April through 31 July, the Operating Rule Curve shall be defined as the higher of the first Critical Rule Curve or the Assured Refill Curve unless the Flood Control Refill curve is below the higher of the above two curves. Then it is defined as the Flood Control Refill Curve. In addition, the Operating Rule Curve for this period shall not be higher than the Upper Rule Curve, which is developed from day-by-day computer regulations of the system during the refill period consistent with flood control objectives and the most current forecasts of volume and distribution of flow. The Upper Rule Curve shall not be lower than the Flood Control Refill Curve, except when Treaty storage is operated for On-Call flood control storage.
- (4) In the period 1 January through the end of the drawdown period, the Operating Rule Curve shall not be lower than the Limiting Rule Curve developed for such year.
- (5) Flood Control Refill Curves are computed on a similar basis to the Variable Refill Curves, except that daily inflows into the reservoir are accounted for and deducted from the first of the month 95 percent confidence inflow forecast to determine the residual volume inflow. They represent the lower limit to which the project should normally be operated during the refill period to serve a secondary energy market. The power discharge requirements shall be the same as those computed for Variable Refill Curves. A sample form for making this computation is shown on Table 7.

TABLE 7

Reservoir Flood Control Refill Curve, Sample Computation

- (6) During the course of an operating year, the Operating Rule Curve for the whole of the Canadian storage shall be continuously available as a guide to actual operations. Operation of the individual Canadian reservoirs to fulfill the United States Entity's requests shall be the responsibility of the Canadian Entity. Actual operation shall be guided by the Operating Rule Curve, as follows.

(a) Operation When the Whole of Canadian Storage is Above Operating Rule Curve

The whole of the Canadian storage shall be drafted to its Operating Rule Curve as required to produce optimum power generation subject to the stated operating rules and constraints in the Detailed Operating Plan.

(b) Operation When the Whole of Canadian Storage is On or Below Operating Rule Curve

Draft of the whole of Canadian storage below its Operating Rule Curve shall be in accordance with Subsections 9b, 9c, and 24c.

(c) Operation of the Whole of Canadian Storage Provisionally Below Operating Rule Curve

The Entities have agreed to principles for provisional draft of Canadian storage as an alternative method of implementing firm energy shifting that was included in the Assured Operating Plan or Alternative Operating Plan.

The Entities may agree to detailed procedures for provisional draft of Canadian storage based on the following principles.

- (i) The arrangement shall produce advantages to each country compared to operating to the Assured Operating Plan Operating Rule Curve or to the modified Assured Operating Plan Operating Rule Curve agreed by the Entities in the Detailed Operating Plan.
- (ii) The arrangement shall provide both Entities with the same assurance as provided by the Assured Operating Plan.
- (iii) The arrangement shall specify limits on the provisional drafting of Canadian Treaty Storage.
- (iv) Either Entity can request a provisional draft of Canadian Treaty storage, however, the other Entity would have the option of accepting up to 50 percent of the additional energy generated downstream in the

United States or some other agreed compensation. The liabilities incurred by provisional drafting including the provision of replacement energy or its equivalent, would be shared by the Entities in proportion to the energy actually received by each.

c. System Proportionate Draft Between Critical Rule Curves

The system proportionate draft point shall be calculated at the beginning and end of each month, or weekly if required, by regulating the whole of Canadian storage and major United States reservoirs with a system regulation model to meet the system firm energy load carrying capability in accordance with the following conditions.

- (1) The whole of Canadian storage shall be regulated as one reservoir with special cognizance of Subsection 8f, Special Mica Operating Criteria.
- (2) The Entities shall utilize the system regulation model defined as the Actual Energy Regulation prepared by the Northwest Power Pool Coordinating Group. The Actual Energy Regulation shall recognize all agreed planned operating constraints from the Detailed Operating Plan and shall be based on the seasonal model that was used to develop the Detailed Operating Plan studies defined in Subsection 22d.
- (3) Flows used in the Actual Energy Regulation shall be based on most probable inflow forecasts for each project for the months to be modeled. The operation of the reservoirs shall be constrained by actual operating limitations to reduce spill or other losses.
- (4) The Actual Energy Regulation shall model operation of the system by drafting to the Operating Rule Curve (Energy Content Curve for United States reservoirs) or below that point if required to meet the system firm energy load carrying capability. Proportional draft below the Operating Rule Curve shall be determined according to Section 9 except that proportionality between rule curves (Subsection 9c2) shall be computed in terms of elevation.

Notwithstanding the operating rules as stated above, exchanges of capacity and energy may be substituted for releases from Canadian storage, if mutually agreed by the Entities as to quantities, timing and method, and energy acquired by United States systems from sources outside the Pacific Northwest Coordinated System may be used in lieu of energy otherwise produced by proportionate draft of such systems reservoirs.

d. Operation for Flood Control

The regulation of Canadian storage for system flood control requires that outflows be specified from individual projects on a daily basis during the spring runoff period. Such regulation shall be in effect during the Flood Control Refill Period. The Flood Control Operating Plan defines the Flood Control Refill Period and provides charts which are to be used for guidance of operation during this period. Project release shall be based on these charts, on volumetric runoff forecasts, and on daily computer regulations of streamflow and reservoir regulation to provide effective flood stage reduction of the Columbia River at The Dalles, Oregon, and at tributary control points. Occasionally, flood control regulation of Arrow project will be required during the winter period, as defined in the Flood Control Operating Plan. The regulation for system flood control shall be the responsibility of the North Pacific Division, Corps of Engineers.

e. Computation of Operating Parameters and Exchange of Pertinent Operating Data

From 1 January to the end of the refill period, computations related to the operating parameters of each Canadian reservoir shall be performed as follows:

- (1) By the second working day of each month the Corps of Engineers shall issue a preliminary January through July natural volume runoff forecast for the Columbia River at The Dalles, Oregon. Such forecasts are issued only for the purpose of defining the power discharge requirement in computing Variable Refill Curves and Flood Control Refill Curves.
- (2) By the seventh day of each month, through 7 June, the Canadian Section of the Operating Committee shall issue the volume forecasts for each Canadian reservoir, its computed end-of-month Variable Refill Curve, and corresponding Operating Rule Curve storage content. Variable Refill Curves shall be computed according to Subsection 8b(2).
- (3) By the seventh day of each month, through 7 June, the Corps of Engineers shall issue the volume forecasts, Variable Refill Curve, and Operating Rule Curve end-of-month storage contents for Libby reservoir.
- (4) Computation of Flood Control Refill Curves, Upper Rule Curves, and exchange of pertinent data for flood control purposes shall be accomplished in accordance with Section V and X of the Flood Control Operating Plan.

f. Delivery of Power and Energy

Prior to the Operating Year, the Entities shall agree on procedures for scheduling the delivery of the power required by Subsections 15d and 16c.

**PART V - PROCEDURE FOR CALCULATING HYDROELECTRIC POWER
LOSSES BY CANADA AS A RESULT OF OPERATING ON-CALL STORAGE**

25. CONSIDERATION FOR ON-CALL STORAGE

Consideration for the need for On-Call storage shall be initiated by the United States Section in consultation with the Canadian Section as soon after 1 January as conditions indicate that On-Call may be necessary. Results of these considerations shall be reported to the respective Entities, together with the assessment of the effects of the drawdown on the production of power. A formal call for On-Call storage space may be made by the United States Entity following the above consultation.

26. STUDIES REQUIRED UPON INITIATION OF ON-CALL REQUEST

Upon acceptance of a request for On-Call storage use by the Canadian Entity, the Operating Committee shall make a set of seven-month system studies for the period 1 January to 31 July of the current operating year in the following manner:

- a. The studies shall be based on a selected set of streamflow conditions from the available hydrologic record in which the January through July volume at The Dalles, Oregon, was greater than or equal to the most probable January through July runoff volume forecast at The Dalles, Oregon, for the current operating year. If the forecast indicates a probable flood of unprecedented size, reasonable estimates of the natural flows that could be expected shall be used.
- b. The system studies shall incorporate the rule curves, operating rules, etc., for Canadian storage contained in the current Detailed Operating Plan adjusted for current conditions. The purpose of the studies is to estimate Mica and downstream Canadian projects' monthly outflows revised from those indicated in the Detailed Operating Plan for the remainder of the current operating year if On-Call storage were not requested.
- c. The outflows used in the studies in Subsection 26b, shall not be less than those indicated in the Detailed Operating Plan.
- d. If the On-Call storage request is accepted after 1 January, system studies shall be performed utilizing the most current conditions relating to initial reservoir elevations and outflows; the study period may then be shortened to less than seven months.
- e. The studies above shall be completed in a timely manner so that United States liabilities for capacity and energy may be computed as indicated in Section 27.

27. PROCEDURE FOR ESTIMATING LOSSES

The Canadian Section of the Operating Committee shall perform the following daily calculations from the time that On-Call storage evacuation of Canadian storage is initiated to the end of the current operating year.

- a. The energy and capacity at Mica and downstream projects in Canada shall be calculated based on actual recorded inflows and the monthly outflows computed in Section 26.
- b. The actual daily energy and capacity at Mica and downstream projects in Canada shall be tabulated.

Energy and capacity computations shall take into account the actual availability of generating units throughout the January through July period.

The capacity loss (or gain) in Canada at Mica and at downstream projects shall be computed on a daily basis by subtracting the capacity in Subsection 27b above from that in Subsection 27a above.

The energy loss (or gain) shall be accumulated on a daily basis by adding the daily energy difference obtained by subtracting the energy capability in Subsection 27b above from that in Subsection 27a above.

If the volume runoff forecast at The Dalles changes significantly after initiation of the daily calculations in Subsections 27a and 27b, target and actual monthly outflows may be adjusted accordingly at the request of either Entity. Such adjustment shall consider Mica project at-site volume forecasts as well as Canadian system energy/capacity requirements.

28. DELIVERY OF CAPACITY AND ENERGY TO CANADA

a. Capacity Deliveries

If a capacity loss occurs based on the computations of Section 27 above, then daily capacity deliveries up to the daily loss shall be scheduled by the United States Entity based on the need as stated by the Canadian Entity. If agreed to by both Entities, loss in capacity can be offset by gains in energy if energy is usable in the Canadian system.

b. Energy Deliveries

It will normally not be possible to determine whether a net loss of energy has occurred until the end of the operating year. Nevertheless, energy deliveries shall be scheduled by the Entities, based on the need as stated by the Canadian Entity, to compensate for any reduction in energy in Canada in the interim period.

c. Resources

The United States Entity shall provide sufficient resources to cover actual Canadian energy and capacity losses.

29. LIABILITY OF UNITED STATES ENTITY

The procedure established in Sections 25, 26, 27, and 28 are designed as a practical means of estimating, measuring, and offsetting power losses in Canada which could reasonably be considered as a result of On-Call operation.

However, there remains the remote possibility that some combination of unforeseen circumstances, coupled with an operation of On-Call storage, could prevent the Canadian storage from refilling during the current operating year. In that unlikely event, special procedures based on the particular circumstances may have to be instituted by the Entities to cover any losses not covered by the procedures above.

The period of potential liability of the United States Entity to offset capacity or energy losses in Canada shall begin when On-Call storage evacuation begins, and shall end when each of the Canadian storages reaches its normal Operating Rule Curve computed for the current or succeeding year, unless the Entities otherwise agree.

JHyde:jh:dr 2125 11/14/90 (VS3-RPSC-2857I)

COLUMBIA RIVER TREATY
ENTITY AGREEMENT
on
ASPECTS OF THE
DELIVERY OF THE CANADIAN ENTITLEMENT
for
APRIL 1, 1998 THROUGH SEPTEMBER 15, 2024
BETWEEN THE CANADIAN ENTITY AND THE UNITED STATES ENTITY
DATED MARCH 29, 1999

WHEREAS:

- A. Canada and the United States are parties to the Treaty; and
- B. The Canadian Entity (being, for purposes of this Agreement, British Columbia Hydro and Power Authority) and the United States Entity (collectively, the “Entities”) are designated as the entities under Article XIV of the Treaty for certain purposes under the Treaty; and
- C. Pursuant to Article V(2) of the Treaty, the United States is obligated to deliver to Canada the Canadian Entitlement at a point on the Canada - United States boundary near Oliver, British Columbia or at such other place as the Entities may agree upon; and
- D. Pursuant to Article VIII(1) of the Treaty, portions of the Canadian Entitlement may be disposed of within the United States with the authorization of Canada and the United States evidenced by an exchange of notes; and
- E. By exchange of notes dated September 16, 1964, Canada and the United States authorized the sale of the Canadian Entitlement within the United States of America pursuant to Article VIII of the Treaty; the sale expires in steps occurring March 31, 1998, March 31, 1999, and March 31, 2003; and
- F. By an exchange of notes (the “1999 Exchange of Notes”), Canada and the United States have authorized or will authorize disposals of all or portions of the Canadian Entitlement within the United States pursuant to Article VIII of the Treaty with delivery and other arrangements for such disposals to be made in accordance with the Disposal Agreement.; and
- G. Pursuant to Article XIV(2)(j) of the Treaty, the Entities have the powers and duties to make appropriate arrangements for delivery of the Canadian Entitlement including such matters as load factors for delivery, times and points of delivery, and calculation of transmission loss; and
- H. The Entities wish to enter into this Agreement for the delivery of the Entitlement Delivery Amount at points on the Canada-United States boundary other than a point near

Oliver, British Columbia, and to resolve certain matters pertaining to scheduling and calculation of transmission loss.

NOW THEREFORE in accordance with the Treaty the Entities agree as follows:

1. This Agreement shall be effective on the later of the date of execution or the effective date of the Disposal Agreement and shall continue in full force and effect until 2400 hours on September 15, 2024. All then outstanding obligations shall continue until satisfied. Execution of this Agreement supersedes and terminates the Columbia River Treaty Entity Agreement on aspects of the Delivery of the Canadian Entitlement for April 1, 1998 through September 15, 2024 between the Canadian Entity and the United States Entity, dated November 20, 1996 and the Entity Agreement of the same name, dated March 26, 1998 but never having reached its effective date.

2. For the purpose of this Agreement:

- (a) “Annual U.S. Obligation” for any year shall mean the Transmission Cost that the United States Entity would incur to deliver the relevant amounts of Entitlement Delivery Amount at the Points of Delivery if the amounts of Entitlement Delivery Amount had previously been continuously delivered at the Points of Delivery pursuant to this Agreement; and
- (b) “Bonneville” means the Administrator of the Bonneville Power Administration not acting in its capacity as or on behalf of the United States Entity; and
- (c) “Canadian Entitlement” at any time shall mean the downstream power benefits to which Canada is entitled at that time as described in Article V(1) and Article VII of the Treaty and determined in accordance with the Treaty; and
- (d) “deliver” shall mean make available in the case of electrical capacity or deliver in the case of electrical energy, or both, as the context may require and derivatives of “deliver” shall have corresponding meanings; and
- (e) “Disposal Agreement” shall mean the “Agreement on Disposals of the Canadian Entitlement within the United States for April 1, 1998 through September 15, 2024” between British Columbia (“British Columbia”) and Bonneville Power Administration acting on behalf of the United States Entity; and
- (f) “Entitlement Delivery Amount” at any time shall mean the Canadian Entitlement less the amount described in Article V(2)(a) and Article V(2)(b) of the Treaty; and
- (g) “Points of Delivery” shall mean the Blaine No. 1 Point of Delivery, the Blaine No. 2 Point of Delivery, the Nelway Point of Delivery and the Waneta Point of Delivery, each as described in more particularity in Attachment A; and
- (h) “Transmission Cost” for any period shall mean (i) the cost of transmission service, plus (ii) any cost, excluding transmission losses, which is necessarily incurred to deliver Entitlement Delivery Amount for such period, in each case based on published prices, plus (iii) any costs of redispatch, construction or modification of transmission facilities as determined by the regulatory methodology then applicable to the parties involved; and

- (i) “Treaty” shall mean the “Treaty between Canada and the United States of America relating to cooperative development of the Water Resources of the Columbia River Basin” including its Annexes A and B, signed at Washington, District of Columbia, United States of America on the 17th day of January, 1961, and the Protocol, brought into force by exchange of instruments of ratification and an Exchange of Notes on September 16, 1964.

3. Pursuant to Article V(2) and Article XIV(2)(j) of the Treaty, the Entities agree that the places of delivery of the Entitlement Delivery Amount for the period commencing April 1, 1998 and ending at 2400 hours on September 15, 2024 shall be the Points of Delivery. Subject to paragraphs 8 through 11, the United States Entity shall make available, at no cost to Canada imposed in the United States, the Entitlement Delivery Amount capacity at the Points of Delivery in the following amounts:

- (a) 3/14ths at the Nelway Point of Delivery and the Waneta Point of Delivery; and
- (b) 11/14ths at the Blaine No. 1 Point of Delivery and the Blaine No. 2 Point of Delivery.

Subject to paragraphs 8 through 11, the United States Entity shall deliver at no cost to Canada imposed in the United States, and the Canadian Entity shall accept, the Entitlement Delivery Amount energy at the Points of Delivery as scheduled by the Canadian Entity pursuant to paragraph 5, up to the capacity amounts referred to in subparagraphs (a) and/or (b) of this paragraph 3.

4. Deliveries of the Entitlement Delivery Amount shall not be interrupted or curtailed except for reasons of uncontrollable force or maintenance and then only on the same basis as deliveries of firm power from the Federal Columbia River Power System to Pacific Northwest customers of Bonneville or any successor. To the extent the Entities are unable to effect delivery of that part of the Entitlement Delivery Amount referred to in subparagraph 3.(a) to the Points of Delivery so specified in that subparagraph, the part not able to be so delivered shall be added to the amount to be delivered to the Points of Delivery so specified in subparagraph 3.(b). Notwithstanding the foregoing, the Entities agree that at any time, and from time to time, the portions of the Entitlement Delivery Amount to be delivered to the respective Points of Delivery specified in subparagraphs 3.(a) and 3.(b) may be changed temporarily for operational reasons upon agreement by the Columbia River Treaty Operating Committee representing the Entities.

5. During the period commencing on April 1, 1998 and ending on September 15, 2024 the Canadian Entity shall schedule the Canadian Entitlement pursuant to this Agreement and the scheduling provisions set forth in Attachment B. The Canadian Entity may appoint a suitably qualified "Scheduling Agent" to actually perform the scheduling duties required under this Agreement, subject to the United States Entity's approval, which shall not be unreasonably withheld.

6. During the period commencing on April 1, 1998 and ending on September 15, 2024 the transmission loss referred to in Article V(2)(a) of the Treaty shall be calculated as 3.4% of the Canadian Entitlement energy from which first has been subtracted the amounts described in Article V(2)(b) disposed of within the United States pursuant to the Exchange of Notes between Canada and the United States of America dated September 16, 1964, or pursuant to the 1999 Exchange of Notes authorizing such disposition.

7. During the period of time specified in Section 4.2(c) of the Disposal Agreement, the United States Entity shall not have any obligation to maintain, purchase or reserve transmission for future deliveries to the Points of Delivery as Entitlement Delivery Amount of the portion of the Canadian Entitlement delivered within the United States pursuant to Section 4 of the Disposal Agreement; provided that if the Canadian Entity requests that the United States Entity purchase or reserve transmission for future deliveries of such portion of the Canadian Entitlement as Entitlement Delivery Amount to the Points of Delivery pursuant to this Agreement and agrees to pay all costs associated with such actions, the United States Entity shall purchase or reserve the transmission, requested by the Canadian Entity, if such transmission is available in the market for purchase or reservation.

8. Canadian Entitlement that is being disposed of within the United States as authorized by the 1999 Exchange of Notes shall, upon written notice from the Canadian Entity pursuant to paragraph 11 prior to expiry or suspension of the disposal, be delivered at the Points of Delivery as Entitlement Delivery Amount in accordance with paragraph 3 upon expiry or suspension of the disposal to the extent that:

- (a) firm transmission capacity required to deliver such Entitlement Delivery Amount at the Points of Delivery is available for purchase by the United States Entity, including by way of assignment; and
- (b) the United States Entity's Transmission Cost in any year of delivering such Entitlement Delivery Amount does not exceed the Annual U.S. Obligation for such year.

9. If firm transmission capacity required to deliver a portion of the Entitlement Delivery Amount referred to in paragraph 8 at the Points of Delivery is not available for purchase by the United States Entity, the United States Entity shall so notify the Canadian Entity, and:

- (a) the Canadian Entity may request a lower quality or quantity of delivery than that specified in the Treaty and this Agreement, and if the transmission required to deliver the requested capacity and energy is available for purchase, the United States Entity shall so deliver such Entitlement Delivery Amount at the Points of Delivery; and/or
- (b) the Canadian Entity may notify the United States Entity that it wishes the United States Entity to procure redispach, construction or modification of transmission facilities and, subject to the Canadian Entity agreeing to reimburse the United States Entity for any Transmission Cost that exceeds the Annual U.S. Obligation, the United States Entity shall procure such redispach, construction or modification and so deliver that portion of the Entitlement Delivery Amount at the Points of Delivery.

10. If, for any year, the United States Entity's Transmission Cost of delivering the portion of the Entitlement Delivery Amount referred to in paragraph 8 at the Points of Delivery would exceed the Annual U.S. Obligation for such year and the Canadian Entity agrees to reimburse the United States Entity for all of its Transmission Cost in excess of the Annual U.S. Obligation, then the United States Entity shall purchase such transmission and deliver such Entitlement Delivery Amount at the Points of Delivery.

11. The Canadian Entity shall notify the United States Entity in writing if it wishes all or portions of the Canadian Entitlement being disposed of within the United States to be delivered as

Entitlement Delivery Amount at the Points of Delivery pursuant to paragraph 8 upon expiry or suspension of any disposal. Within a reasonable period of time after receipt of the foregoing notice or notice pursuant to paragraph 9, and before the United States Entity purchases transmission or procures redispach, construction or modification of transmission facilities, the United States Entity shall notify the Canadian Entity of any expected excess costs referred to in either subparagraph 9(b) or paragraph 10 or both. Within a reasonable period of time after the United States Entity's notice, the Canadian Entity shall notify the United States Entity in writing whether the Canadian Entity agrees to reimburse the United States Entity for all excess costs referred to in either subparagraph 9(b) or paragraph 10 or both. If the Canadian Entity agrees to reimburse the United States Entity for such excess costs, the Canadian Entity shall be obligated to do so, whether or not such transmission is used by the Canadian Entity. The Canadian Entity and the United States Entity shall from time to time at the request of the other party provide information necessary to determine these excess costs and the Annual U.S. Obligation. Any portion of the Canadian Entitlement that can not be delivered under paragraph 8 or paragraph 10 due to failure of the Canadian Entity to notify the United States Entity to procure transmission under paragraph 9 or to agree to reimburse the United States Entity under paragraph 11 for excess costs shall be deemed delivered unless British Columbia arranges disposal of such portion of the Canadian Entitlement in the United States pursuant to the Disposal Agreement.

12. Upon termination of the Disposal Agreement pursuant to Section 10 of the Disposal Agreement, Canadian Entitlement being disposed of within the United States shall be delivered at the Points of Delivery as Entitlement Delivery Amount in accordance with paragraph 3. Delivery at the Points of Delivery shall be made pending any dispute about whether the Disposal Agreement has been properly terminated pursuant to Section 10 of the Disposal Agreement. Any such dispute shall be resolved in accordance with the Disposal Agreement.

13. Paragraphs 8 to 11 inclusive shall not apply to:

- (a) Entitlement Delivery Amount required to be delivered at the Points of Delivery as a result of the termination of the Disposal Agreement pursuant to Section 10 of the Disposal Agreement; or
- (b) Entitlement Delivery Amount delivered under this Agreement upon expiry of an exchange or similar arrangement between British Columbia and Bonneville whereby Entitlement Delivery Amount is exchanged for power delivered to points of delivery in the United States.

Such Entitlement Delivery Amount referred to in this paragraph shall be delivered at no cost pursuant to paragraph 3.

14. If British Columbia has provided a written instrument as described in Section 3.2 of the Disposal Agreement, then the United States Entity shall accept the reductions identified in Sections 3.2(b) and 3.2(c) of the Disposal Agreement of the obligation of the person identified in Section 3.2(a) of the Disposal Agreement and as soon as practicable shall sign amendments to contracts with such person or other instruments necessary to provide for such reductions.

15. Disputes under this Agreement shall be resolved in accordance with the Treaty.

16. If any provision of this Agreement is determined to be unenforceable, that provision shall be deemed severed from and shall not affect the enforceability of the remaining provisions.

17. This Agreement shall not be construed to amend or modify the Treaty or the obligations of Canada or of the United States under it.

IN WITNESS WHEREOF the Entities have caused this Agreement to be executed as of the day and year first above written.

**Executed for the Canadian Entity
this 29th day of March, 1999**

**By: /s/ Brian R.D. Smith
Brian R. D. Smith, Chairman**

**Executed for the United States Entity
this 26th day of March, 1999**

**By: /s/ Judith A. Johansen
Judith A. Johansen, Chair**

**By: /s/ Robert H. Griffin
Robert H. Griffin, Member
Brigadier General, U.S. Army Corps of Engineers**

ATTACHMENT A
POINTS OF DELIVERY

1. **BLAINE NO. 1 POINT OF DELIVERY:**

Location: The point at the border between the United States and Canada in the vicinity of Blaine, Washington, where the 500 kV facilities of the U.S. Government and B.C. Hydro are connected on the Custer-Ingledow No. 1 500 kV transmission line;

Voltage: 500 kV;

Metering: at the B.C. Hydro Ingledow Substation, in the 500 kV circuit over which such electric power flows;

Adjustments:

- (1) Demands are totalled with deliveries at the Blaine No. 2 Point of Delivery;
- (2) for losses between the point of metering and the Point of Delivery.

2. **BLAINE NO. 2 POINT OF DELIVERY:**

Location: The point at the border between the United States and Canada in the vicinity of Blaine, Washington, where the 500 kV facilities of the U.S. Government and B.C. Hydro are connected on the Custer-Ingledow No. 2 500 kV transmission line;

Voltage: 500 kV

Metering: At the B.C. Hydro Ingledow Substation, in the 500 kV circuit over which such electric power flows;

Adjustments:

- (1) Demands are totalled with deliveries at the Blaine No. 1 Point of Delivery.
- (2) for losses between the point of metering and the Point of Delivery.

3. **NELWAY POINT OF DELIVERY:**

Location: The point at the border between the United States and Canada near Nelway, British Columbia, where the 230 kV facilities of the U.S. Government and B.C. Hydro are connected on the Boundary-Nelway 230 kV transmission line;

Voltage: 230 kV;

Metering: At the U.S. Government's Boundary Substation, in the 230 kV circuit over which such electric power flows;

Adjustments: For losses between the point of metering and the Point of Delivery.

4. **WANETA POINT OF DELIVERY:**

Location: The point at the border between the United States and Canada in the vicinity of Nelway, British Columbia, where the 230 kV facilities of the U.S. Government and Cominco Ltd. are connected on the Boundary-Waneta 230 kV transmission line;

Voltage: 230 kV;

Metering: At the U.S. Government's Boundary Substation, in the 230 kV circuit over which such electric power flows;

Adjustments: For transmission losses between the point of metering and the Point of Delivery.

ATTACHMENT B
CANADIAN ENTITLEMENT SCHEDULING GUIDELINES

These guidelines implement the following Treaty provisions:

Article VII (3) and (4)

- (3) The downstream power benefits to which Canada is entitled shall be delivered as follows:
 - (a) dependable hydroelectric capacity as scheduled by the Canadian entity, and
 - (b) average annual usable hydroelectric energy in equal amounts each month, or in accordance with a modification agreed upon under paragraph (4)
- (4) Modification of the obligation in paragraph (3)(b) may be agreed upon by the entities

Article XIV (2)(j)

(2) In addition to the powers and duties dealt with specifically elsewhere in the Treaty the powers and duties of the entities include:

- (j) making appropriate arrangements for the delivery to Canada of the downstream power benefits to which Canada is entitled including such matters as load factors for delivery, times and points of delivery, and calculation of transmission loss,

1. Interpretations

"Agreement" in this Attachment B means the "Columbia River Treaty Entity Agreement on Aspects of the Delivery of the Canadian Entitlement for April 1, 1998 through September 15, 2024" between the Canadian Entity and the United States Entity, dated March 29, 1999.

Initially capitalized terms in this Attachment B will have the meaning ascribed to them in the Agreement. If there is any conflict between this Attachment B and the Agreement, the Agreement will prevail.

"Equal amounts each month" will be interpreted as "constant average kilowatts" which means the amount of Canadian Entitlement energy for any given month is the average annual Canadian Entitlement energy pro rated based on the number of days in that month.

All times stated in this Attachment B are Pacific Time.

Use of the word "scheduling" in conjunction with "Canadian Entitlement" shall mean generation scheduling; use of the word "scheduling" with "transmission" shall mean transmission scheduling; and use of "scheduling" on its own shall mean both generation and transmission scheduling.

- 2. The Canadian Entitlement will be scheduled on a daily pre-scheduled basis in accordance with and subject to the terms of this Attachment B. The Canadian Entity will use best efforts to schedule in each month all of the Canadian Entitlement energy for that month unless prevented from doing so by a forced outage or emergency conditions at B.C. transmission or generation facilities.
- 3. Prior to 1000 hours each Friday, or the last working day of the week if Friday is not a working day, the Canadian Entity will provide the U.S. Entity with an estimate (the "Initial Weekly Estimate") of the amount of Canadian Entitlement energy that will be scheduled during the week commencing 2400 hours that day through 2400 hours the following Friday. Prior to 1000 hours each Monday, or the following working day if Monday is not a working day, the Canadian Entity will provide the U.S. Entity with a mid-week estimate (the "Mid-Week Estimate") of the Canadian Entitlement

energy that will be scheduled for the balance of the week commencing 2400 hours that day, added to the actual energy delivered or scheduled up to 2400 hours that day.

Prior to 1000 hours each Friday, or the last working day of the week if Friday is not a working day, the Canadian Entity will notify the U.S. Entity of the amount, if any, of available Entitlement Delivery Amount capacity that the Canadian Entity determines in good faith that it does not require at the Points of Delivery specified in subparagraph 3(a) of the Agreement during the following week, and the U.S. Entity will not, therefore, need to make available such Entitlement Delivery Amount capacity.

4. The Canadian Entity will each working day, on or before 0930 hours, provide the U.S. Entity with schedules specifying the hourly Canadian Entitlement deliveries for the following day. If the following day is not a working day, the Canadian Entity will also provide the U.S. Entity with schedules for the day or days up to and including the next following working day.

For the Entitlement Delivery Amount the schedules may specify hourly deliveries of any amount up to the maximum set by the Entitlement Delivery Amount capacity specified in either or both subparagraph 3(a) and/or subparagraph 3(b) of the Agreement.

5. Unless otherwise agreed by the Entities' operating personnel, schedules provided pursuant to paragraph 4 will not be changed by the Canadian Entity, except as may be necessary or advisable due to outage or emergency conditions on the transmission system of an electric utility or other entity receiving deliveries of Canadian Entitlement.
6. The Entities acknowledge and agree that, except as may be agreed by the Entities' operating personnel:
 - 6.1 total deliveries of Canadian Entitlement in any hour will not exceed the Canadian Entitlement capacity;
 - 6.2 Canadian Entitlement capacity is fully discharged when the U.S. Entity makes such capacity available, whether or not the Canadian Entity schedules hourly deliveries up to this capacity; and
 - 6.3 to the extent that all of the Canadian Entitlement energy in respect of any month is not or cannot be scheduled during that month by the Canadian Entity, then the undelivered energy will be scheduled by the U.S. Entity for return at the Points of Delivery. When the remaining energy to be delivered in any month exceeds the amount of energy that can be scheduled by full use of the capacity available to the Canadian Entity, the U.S. Entity may schedule delivery of excess energy to the Points of Delivery. The U.S. Entity will endeavour to schedule such energy during the month to the extent possible but may, at its option, schedule such energy up to 7 days into the subsequent month. In making such deliveries, the U.S. Entity will take reasonable account of constraints on the transmission and generation systems in B.C. accepting such energy.
7. To the extent that the Mid-Week Estimate differs from the Initial Weekly Estimate for that week and notwithstanding reasonable efforts the U.S. Entity cannot accommodate the expected daily schedules within existing contractual and system operating constraints, and if the difference is more than the equivalent of a change of 1,000 cfs in flow in the Columbia River at the international boundary, the U.S. Entity may request and the Canadian Entity will, at the Canadian Entity's option, either:

- 7.1 provide or accept an amount of energy to accommodate the difference between the Initial Weekly Estimate and the Mid-Week Estimate, or such other amount as may be mutually agreed; or
- 7.2 make a mid-week flow change in lieu of the amount of energy described in subparagraph 7.1 based on the appropriate total downstream water to power conversion factor ("h/k") for the period under consideration.

Should actual deliveries consistently exceed or be exceeded by the Mid-Week Estimate, the U.S. Entity may request flow changes in addition to those above to cover such differences.

- 8. Energy delivered pursuant to subparagraph 7.1 will be scheduled by the delivering Entity, unless adjustments are needed by the receiving Entity in order to accept the energy that day due to system constraints. Energy received will be returned during the following week on like hours, unless otherwise agreed. Each Entity will bear all costs of transmitting such energy in its own country.
- 9. Canadian Entitlement required to be delivered and not delivered due to uncontrollable force will be delivered within 7 days following the outage at times and rates determined by the Canadian Entity but limited by the Canadian Entitlement capacity, unless otherwise agreed.

Canadian Entitlement required to be delivered to points other than the Points of Delivery, and not delivered due to uncontrollable force, may, at the option of the U.S. Entity, be delivered to the Points of Delivery if possible and subject to adjustments needed by the Canadian Entity in order to accept the energy that day due to system constraints.

Canadian Entitlement scheduled to be delivered to points other than the Points of Delivery, which cannot be delivered due to recall of non-firm transmission, or due to failure by British Columbia to schedule transmission which it was responsible for arranging, shall be deemed delivered.

- 10. Losses associated with Canadian Entitlement deliveries will be dealt with as follows:
 - 10.1 for deliveries of the Canadian Entitlement to the Points of Delivery the losses will be deducted at the time of delivery, and the resulting net Canadian Entitlement will be scheduled and delivered to the Points of Delivery;
 - 10.2 for deliveries of the Canadian Entitlement to points other than the Points of Delivery, the full amount scheduled will be delivered with losses being scheduled for return exactly 7 days later during the same hour as that during which the losses were incurred, or as otherwise agreed by the Entities.
- 11. The Columbia River Treaty Operating Committee is empowered to act on behalf of the Entities to modify or amend from time to time this Attachment B. Under emergency conditions the operating personnel of the Entities are authorized to agree to deviate from the terms and conditions of this Attachment B during the period of the emergency as may be necessary or advisable.
- 12. Notice provisions for scheduling to points of delivery in the United States may be covered by the terms and conditions of agreements executed pursuant to the 1999 Exchange of Notes.
- 13. All transmission schedules to points other than the Points of Delivery under this attachment B must meet the requirements of the transmission provider that apply to all transmission customers at the time of the schedule.
- 14. The Canadian and United States Entities agree to use best efforts to alleviate any administrative difficulties created by scheduling under these guidelines.

AGREEMENT ON DISPOSALS
OF THE CANADIAN ENTITLEMENT WITHIN THE UNITED STATES

for

APRIL 1, 1998 THROUGH SEPTEMBER 15, 2024

between

**THE BONNEVILLE POWER ADMINISTRATION,
ACTING ON BEHALF OF THE U.S. ENTITY**

and

**THE PROVINCE OF BRITISH COLUMBIA
("BRITISH COLUMBIA")**

WHEREAS:

A. Canada and the United States of America are parties to the "Treaty between Canada and the United States of America relating to the Cooperative Development of the Water Resources of the Columbia River Basin" including its Annexes A and B, signed at Washington, District of Columbia, United States of America on the 17th day of January, 1961, and the Protocol, brought into force by exchange of instruments of ratification and an exchange of notes on September 16, 1964 (hereinafter the "Treaty"); and

B. Pursuant to Article V(2) of the Treaty, the United States is obligated to deliver to Canada the Canadian Entitlement at a point on the Canada - United States boundary near Oliver, British Columbia, or at such other place as the Canadian Entity and the U.S. Entity may agree upon, and those Entities have entered into the Entity Agreement for that purpose; and

C. Pursuant to Article VIII(1) of the Treaty, portions of the Canadian Entitlement may be disposed of within the United States with the authorization of Canada and the United States evidenced by an exchange of notes; and

D. By exchange of notes dated September 16, 1964, Canada and the United States authorized the sale of the Canadian Entitlement within the United States pursuant to Article VIII of the Treaty; the sale expires in steps occurring March 31, 1998, March 31, 1999, and March 31, 2003; and

E. By an exchange of notes (the “1999 Exchange of Notes”) Canada and the United States are authorizing disposals of all or portions of the Canadian Entitlement within the United States with satisfaction of the United States obligation under the Treaty to be made by deliveries and reduction of the U.S. obligation to deliver the Canadian Entitlement in accordance with this Agreement; and

F. Under the terms of the Canada-British Columbia Agreement dated July 8, 1963, all proprietary rights, title, and interests in the Canadian Entitlement accruing to Canada belong to the Province of British Columbia;

G. By the 1999 Exchange of Notes Canada has, under Article XIV(1) of the Treaty, designated British Columbia as the Canadian entity under the Treaty for the limited purpose of making arrangements for disposals of all or portions of the Canadian Entitlement within the United States.

NOW THEREFORE in accordance with the Treaty and the 1999 Exchange of Notes, Bonneville and British Columbia (the “Parties”) agree as follows:

1. Effective Date and Term . Effective Date and Term. Effective Date and Term. Effective Date and Term

This Agreement shall be effective upon the entry into force of the 1999 Exchange of Notes and shall continue in full force and effect until 2400 hours on September 15, 2024, unless terminated earlier in accordance with its terms. All then outstanding obligations shall continue until satisfied. Agreement shall be effective upon the entry into force of the 1999 Exchange of Notes and shall continue in full force and effect until 2400 hours on September 15, 2024, unless terminated earlier in accordance with its terms. All then outstanding obligations shall continue until satisfied. Agreement shall be effective upon the entry into force of the 1999 Exchange of Notes and shall continue in full force and effect until 2400 hours on September 15, 2024, unless terminated earlier in accordance with its terms. All then outstanding obligations shall continue until satisfied. Agreement shall be effective upon the entry into force of the 1999 Exchange of Notes and shall continue in full force and effect until 2400 hours on September 15, 2024, unless terminated earlier in accordance with its terms. All then outstanding obligations shall continue until satisfied.

2. **Definitions . Definitions. Definitions. Definitions**

2.1. For purposes of this Agreement: 1. For purposes of this Agreement: 1. For purposes of this Agreement: 1. For purposes of this Agreement:

- (a) “Bonneville” shall mean the Administrator of the Bonneville Power Administration acting on behalf of the U.S. Entity in carrying out the electric power obligations of the United States Government under the Treaty; and (a) “Bonneville” shall mean the Administrator of the Bonneville Power Administration acting on behalf of the U.S. Entity in carrying out the electric power obligations of the United States Government under the Treaty; and (a) “Bonneville” shall mean the Administrator of the Bonneville Power Administration acting on behalf of the U.S. Entity in carrying out the electric power obligations of the United States Government under the Treaty; and (a) “Bonneville” shall mean the Administrator of the Bonneville Power Administration acting on behalf of the U.S. Entity in carrying out the electric power obligations of the United States Government under the Treaty; and
- (b) “Canadian Entitlement” shall mean at any time the downstream power benefits to which Canada is entitled at that time as described in Article V(1) and Article VII of the Treaty and determined in accordance with the Treaty; and (b) “Canadian Entitlement” shall mean at any time the downstream power benefits to which Canada is entitled at that time as described in Article V(1) and Article VII of the Treaty and determined in accordance with the Treaty; and (b) “Canadian Entitlement” shall mean at any time the downstream power benefits to which Canada is entitled at that time as described in Article V(1) and Article VII of the Treaty and determined in accordance with the Treaty; and (b) “Canadian Entitlement” shall mean at any time the downstream power benefits to which Canada is entitled at that time as described in Article V(1) and Article VII of the Treaty and determined in accordance with the Treaty; and
- (c) “Canadian Entity” shall mean, except as otherwise specified in Preambular Paragraph G, British Columbia Hydro and Power Authority or any successor designated as Canadian Entity pursuant to the Treaty; and (c) “Canadian Entity” shall mean, except as otherwise specified in Preambular Paragraph G, British Columbia Hydro and Power Authority or any successor designated as Canadian Entity pursuant to the Treaty; and (c) “Canadian Entity” shall mean, except as otherwise specified in Preambular Paragraph G, British Columbia Hydro and Power Authority or any successor designated as Canadian Entity pursuant to the Treaty; and (c) “Canadian Entity” shall mean, except as otherwise specified in Preambular Paragraph G, British Columbia Hydro and Power Authority or any successor designated as Canadian Entity pursuant to the Treaty; and

and Power Authority or any successor designated as Canadian Entity pursuant to the Treaty; and (c) "Canadian Entity" shall mean, except as otherwise specified in Preambular Paragraph G, British Columbia Hydro and Power Authority or any successor designated as Canadian Entity pursuant to the Treaty; and

- (d) "deliver" shall mean make available in the case of electrical capacity or deliver in the case of electrical energy, or both, as the context may require and derivatives of "deliver" shall have corresponding meanings; and (d) "deliver" shall mean make available in the case of electrical capacity or deliver in the case of electrical energy, or both, as the context may require and derivatives of "deliver" shall have corresponding meanings; and (d) "deliver" shall mean make available in the case of electrical capacity or deliver in the case of electrical energy, or both, as the context may require and derivatives of "deliver" shall have corresponding meanings; and (d) "deliver" shall mean make available in the case of electrical capacity or deliver in the case of electrical energy, or both, as the context may require and derivatives of "deliver" shall have corresponding meanings; and
- (e) "disposal" shall include disposal by way of: (i) agreements resulting in the reduction of the U.S. obligation to deliver the Canadian Entitlement; (ii) sale; (iii) exchange; or (iv) otherwise, and "dispose of" shall have a corresponding meaning; and (e) "disposal" shall include disposal by way of: (i) agreements resulting in the reduction of the U.S. obligation to deliver the Canadian Entitlement; (ii) sale; (iii) exchange; or (iv) otherwise, and "dispose of" shall have a corresponding meaning; and (e) "disposal" shall include disposal by way of: (i) agreements resulting in the reduction of the U.S. obligation to deliver the Canadian Entitlement; (ii) sale; (iii) exchange; or (iv) otherwise, and "dispose of" shall have a corresponding meaning; and
- (f) "Entity Agreement" shall mean the "Columbia River Treaty Entity Agreement on Aspects of the Delivery of the Canadian Entitlement for April 1, 1998 through September 15, 2024" dated March 29, 1999; and (f) "Entity Agreement" shall mean the "Columbia River Treaty Entity Agreement on Aspects of the Delivery of the Canadian Entitlement for April 1, 1998 through September 15, 2024" dated March 29, 1999; and (f) "Entity Agreement" shall mean the "Columbia River Treaty Entity Agreement on Aspects of the Delivery of the

Canadian Entitlement for April 1, 1998 through September 15, 2024? dated March 29, 1999; and(f) ?Entity Agreement? shall mean the ?Columbia River Treaty Entity Agreement on Aspects of the Delivery of the Canadian Entitlement for April 1, 1998 through September 15, 2024? dated March 29, 1999; and

- (g) “Operating Year” shall mean a consecutive twelve month period beginning August 1 and ending July 31; and(g) ?Operating Year? shall mean a consecutive twelve month period beginning August 1 and ending July 31; and(g) ?Operating Year? shall mean a consecutive twelve month period beginning August 1 and ending July 31; and3(g) ?Operating Year? shall mean a consecutive twelve month period beginning August 1 and ending July 31; and
- (h) “Points of Entitlement Delivery” shall mean the points of integration at which hydroelectric power shall be made available to the transmission system in the Pacific Northwest for delivery over such system to the Canada - United States border pursuant

to the Treaty, as such points may be changed from time to time pursuant to Section 4; and (h) ?Points of Entitlement Delivery? shall mean the points of integration at which hydroelectric power shall be made available to the transmission system in the Pacific Northwest for delivery over such system to the Canada - United States border pursuant to the Treaty, as such points may be changed from time to time pursuant to Section 4; and(h) ?Points of Entitlement Delivery? shall mean the points of integration at which hydroelectric power shall be made available to the transmission system in the Pacific Northwest for delivery over such system to the Canada - United States border pursuant to the Treaty, as such points may be changed from time to time pursuant to Section 4; and(h) ?Points of Entitlement Delivery? shall mean the points of integration at which hydroelectric power shall be made available to the transmission system in the Pacific Northwest for delivery over such system to the Canada - United States border pursuant to the Treaty, as such points may be changed from time to time pursuant to Section 4; and

- (i) “Transmission Cost” for any period shall mean (i) the cost of transmission service, plus (ii) any cost, excluding transmission losses, which is necessarily incurred to deliver Canadian Entitlement for such period, in each case based on published prices, plus (iii) any costs of redispatch, construction or modification of transmission facilities as determined by the regulatory methodology then applicable to the parties involved; and(i) ?Transmission Cost? for any period shall mean (i) the cost of transmission service, plus (ii) any cost, excluding transmission losses, which is necessarily incurred to deliver Canadian Entitlement for such period, in each case based on published prices, plus (iii) any costs of redispatch, construction or modification of transmission facilities as determined by the regulatory methodology then applicable to the parties involved; and(i) ?Transmission Cost? for any period shall mean (i) the cost of transmission service, plus (ii) any cost, excluding transmission losses, which is necessarily incurred to deliver Canadian Entitlement for such period, in each case based on published prices, plus (iii) any costs of redispatch, construction or modification of transmission facilities as determined by the regulatory methodology then applicable to the parties involved; and
- (i) ?Transmission Cost? for any period shall mean (i) the cost of transmission service, plus (ii) any cost, excluding transmission losses, which is necessarily incurred to deliver Canadian Entitlement for such period, in each case based on published prices, plus (iii) any costs of redispatch, construction or modification of transmission facilities as determined by the regulatory methodology then applicable to the parties involved; and

(j) “U.S. Entity” shall mean the Administrator of the Bonneville Power Administration and the Division Engineer, Northwestern Division, Corps of Engineers, or any successor designated as U.S. Entity pursuant to the Treaty. 3(j)

?U.S. Entity? shall mean the Administrator of the Bonneville Power Administration and the Division Engineer, Northwestern Division, Corps of Engineers, or any successor designated as U.S. Entity pursuant to the Treaty.(j)

?U.S. Entity? shall mean the Administrator of the Bonneville Power Administration and the Division Engineer, Northwestern Division, Corps of Engineers, or any successor designated as U.S. Entity pursuant to the Treaty.(j)

?U.S. Entity? shall mean the Administrator of the Bonneville Power Administration and the Division Engineer, Northwestern Division, Corps of Engineers, or any successor designated as U.S. Entity pursuant to the Treaty.

3. **Reduction of Obligation . Reduction of Obligation.**
Reduction of Obligation. Reduction of Obligation
- 3.1. In accordance with the following provisions of this Section 3, British Columbia may dispose of portions of the Canadian Entitlement from time to time within the United States by agreement with any person having the right, through ownership or contract, to all or a percentage of the output of a hydroelectric generating project on the Columbia River in the United States, if and to the extent that such agreement would result in a reduction of such person's, or any other person's, obligation to generate electric power for delivery to the U.S. Entity..1. In accordance with the following provisions of this Section 3, British Columbia may dispose of portions of the Canadian Entitlement from time to time within the United States by agreement with any person having the right, through ownership or contract, to all or a percentage of the output of a hydroelectric generating project on the Columbia River in the United States, if and to the extent that such agreement would result in a reduction of such person's, or any other person's, obligation to generate electric power for delivery to the U.S. Entity..1. In accordance with the following provisions of this Section 3, British Columbia may dispose of portions of the Canadian Entitlement from time to time within the United States by agreement with any person having the right, through ownership or contract, to all or a percentage of the output of a hydroelectric generating project on the Columbia River in the United States, if and to the extent that such agreement would result in a reduction of such person's, or any other person's, obligation to generate electric power for delivery to the U.S. Entity..1. In accordance with the following provisions of this Section 3, British Columbia may dispose of portions of the Canadian Entitlement from time to time within the United States by agreement with any person having the right, through ownership or contract, to all or a percentage of the output of a hydroelectric generating project on the Columbia River in the United States, if and to the extent that such agreement would result in a reduction of such person's, or any other person's, obligation to generate electric power for delivery to the U.S. Entity..1. In accordance with the following provisions of this Section 3, British Columbia may dispose of portions of the Canadian Entitlement from time to time within the United States by agreement with any person having the right, through ownership or contract, to all or a percentage of the output of a hydroelectric generating project on the Columbia River in the United States, if and to the extent that such agreement would result in a reduction of such person's, or any other person's, obligation to generate electric power for delivery to the U.S. Entity.
- 3.2. If British Columbia proposes to enter into an agreement referred to in Section 3.1, British Columbia shall provide a written instrument to Bonneville that sets forth the following: .2.
 If British Columbia proposes to enter into an agreement referred to in Section 3.1, British Columbia shall provide a written instrument to Bonneville that sets forth the following:.2. If British Columbia proposes to enter into an agreement referred to in Section 3.1, British Columbia shall provide a written instrument to Bonneville that sets forth the following:.2. If British Columbia proposes to enter into an agreement referred to in

Section 3.1, British Columbia shall provide a written instrument to Bonneville that sets forth the following:

- (a) the person whose obligation to the U.S. Entity would be reduced;(a)the person whose obligation to the U.S. Entity would be reduced;(a) the person whose obligation to the U.S. Entity would be reduced;(a) the person whose obligation to the U.S. Entity would be reduced;
- (b) the amount by which the obligation of the person identified in Section 3.2(a) to deliver energy to the U.S. Entity would be reduced for each month during the remaining term of this Agreement, provided, however, British Columbia may revise such monthly amounts of energy for any Operating Year by providing 30 days written notice to Bonneville prior to the start of the Operating Year;

- (b) the amount by which the obligation of the person identified in Section 3.2(a) to deliver energy to the U.S. Entity would be reduced for each month during the remaining term of this Agreement, provided, however, British Columbia may revise such monthly amounts of energy for any Operating Year by providing 30 days written notice to Bonneville prior to the start of the Operating Year;
- (b) the amount by which the obligation of the person identified in Section 3.2(a) to deliver energy to the U.S. Entity would be reduced for each month during the remaining term of this Agreement, provided, however, British Columbia may revise such monthly amounts of energy for any Operating Year by providing 30 days written notice to Bonneville prior to the start of the Operating Year;
- (b) the amount by which the obligation of the person identified in Section 3.2(a) to deliver energy to the U.S. Entity would be reduced for each month during the remaining term of this Agreement, provided, however, British Columbia may revise such monthly amounts of energy for any Operating Year by providing 30 days written notice to Bonneville prior to the start of the Operating Year;
- (c) the amount for each month of the remaining term of this Agreement by which the obligation of the person identified in Section 3.2(a) to deliver capacity to the U.S. Entity would be reduced, which amount shall be determined during any such month, as the reduction of monthly amount of energy specified under Section 3.2(b) divided by the hours in the month and multiplied by the fraction $168/96$, provided, however, such reduction in capacity obligation shall be revised to match changes in the original amounts specified by British Columbia for any Operating Year;
- (c) the amount for each month of the remaining term of this Agreement by which the obligation of the person identified in Section 3.2(a) to deliver capacity to the U.S. Entity would be reduced, which amount shall be determined during any such month, as the reduction of monthly amount of energy specified under Section 3.2(b) divided by the hours in the month and multiplied by the fraction $168/96$, provided, however, such reduction in capacity obligation shall be revised to match changes in the original amounts specified by British Columbia for any Operating Year;
- (c) the amount for each month of the remaining term of this Agreement by which the obligation of the person identified in Section 3.2(a) to deliver capacity to the U.S. Entity would be reduced, which amount shall be determined during any such month, as the reduction of monthly amount of energy specified under Section 3.2(b) divided by the hours in the month and multiplied by the fraction $168/96$, provided, however, such reduction in capacity obligation shall be revised to match changes in the original amounts specified by British Columbia for any Operating Year;
- (c) the amount for each month of the remaining term of this Agreement by which the obligation of the person identified in

Section 3.2(a) to deliver capacity to the U.S. Entity would be reduced, which amount shall be determined during any such month, as the reduction of monthly amount of energy specified under Section 3.2(b) divided by the hours in the month and multiplied by the fraction 168/96, provided, however, such reduction in capacity obligation shall be revised to match changes in the original amounts specified by British Columbia for any Operating Year;

- (d) a legally binding acknowledgement that the obligation of the United States under the Treaty for each future Operating Year to deliver the amount of energy finally specified for each month in Section 3.2(b) is reduced for each such Operating Year and that the Canadian Entitlement capacity for each such month during the remaining term of this Agreement is permanently limited to the Canadian Entitlement capacity calculated under the Treaty less the greater of: (d) a legally binding acknowledgement that the obligation of the United States under the Treaty for each future Operating Year to deliver the amount of energy finally specified for each month in Section 3.2(b) is reduced for each such Operating Year and that the Canadian Entitlement capacity for each such month during the remaining term of this Agreement is permanently limited to the Canadian Entitlement capacity calculated under the Treaty less the greater of: (d) a legally binding acknowledgement that the obligation of the United States under the Treaty for each future Operating Year to deliver the amount of energy finally specified for each month in Section 3.2(b) is reduced for each such Operating Year and that the Canadian Entitlement capacity for each such month during the remaining term of this Agreement is permanently limited to the Canadian Entitlement capacity calculated under the Treaty less the greater of: (d) a legally binding acknowledgement that the obligation of the United States under the Treaty for each future Operating Year to deliver the amount of energy finally specified for each month in Section 3.2(b) is reduced for each such Operating Year and that the Canadian Entitlement capacity for each such month during the remaining term of this Agreement is permanently limited to the Canadian Entitlement capacity calculated under the Treaty less the greater of:
- (i) the maximum capacity amount for a month established by Section 3.2(c) during the current Operating Year; or (i) the maximum capacity amount for a month established by Section 3.2(c) during the current Operating Year; or (i) the maximum capacity amount for a month established by Section 3.2(c) during the current Operating Year; or (i) the maximum

capacity amount for a month established by Section 3.2(c) during the current Operating Year; or

- (ii) the maximum capacity amount for a month established by Section 3.2(c) for any previous Operating Year.
- (ii) the maximum capacity amount for a month established by Section 3.2(c) for any previous Operating Year.
- (ii) the maximum capacity amount for a month established by Section 3.2(c) for any previous Operating Year.
- (ii) the maximum capacity amount for a month established by Section 3.2(c) for any previous Operating Year.

Each acknowledgement provided under Section 3.2(d) above shall confirm satisfaction of energy reductions and limitations on capacity amounts based on all previous instruments issued by British Columbia pursuant to this Section 3.2. acknowledgement provided under Section 3.2(d) above shall confirm satisfaction of energy reductions and limitations on capacity amounts based on all previous instruments issued by British Columbia pursuant to this Section 3.2. acknowledgement provided under Section 3.2(d) above shall confirm satisfaction of energy reductions and limitations on capacity amounts based on all previous instruments issued by British Columbia pursuant to this Section 3.2. acknowledgement provided under Section 3.2(d) above shall confirm satisfaction of energy reductions and limitations on capacity amounts based on all previous instruments issued by British Columbia pursuant to this Section 3.2.

- 3.3. If British Columbia provides a written instrument to Bonneville pursuant to Section 3.2, Bonneville shall accept the reductions identified in Sections 3.2(b) and 3.2(c) of the obligation of the person identified in Section 3.2(a), provided, however, such reductions shall be revised to reflect any revisions provided by British Columbia prior to the start of any Operating Year. As soon as practicable Bonneville shall sign amendments to contracts with such person or other instruments necessary to provide for such reductions. 3. If British Columbia provides a written instrument to Bonneville pursuant to Section 3.2, Bonneville shall accept the reductions identified in Sections 3.2(b) and 3.2(c) of the obligation of the person identified in Section 3.2(a), provided, however, such reductions shall be revised to reflect any revisions provided by British Columbia prior to the start of any Operating Year. As soon as practicable Bonneville shall sign amendments to contracts with such person or other instruments necessary to provide for such reductions..3.If British Columbia provides a written instrument to Bonneville pursuant to Section 3.2, Bonneville shall accept the reductions identified in Sections 3.2(b) and 3.2(c) of the obligation of the person identified in Section 3.2(a), provided, however, such reductions shall be revised to

reflect any revisions provided by British Columbia prior to the start of any Operating Year. As soon as practicable Bonneville shall sign amendments to contracts with such person or other instruments necessary to provide for such reductions..3. If British Columbia provides a written instrument to Bonneville pursuant to Section 3.2, Bonneville shall accept the reductions identified in Sections 3.2(b) and 3.2(c) of the obligation of the person identified in Section 3.2(a), provided, however, such reductions shall be revised to reflect any revisions provided by British Columbia prior to the start of any Operating Year. As soon as practicable Bonneville shall sign amendments to contracts with such person or other instruments necessary to provide for such reductions.

4. **British Columbia Election for United States Delivery** ¹⁸

4.1. As soon as practicable after the effective date of this Agreement, Bonneville shall select,

and notify British Columbia in writing, ²⁰ of the initial Points of Entitlement Delivery. If

Bonneville selects individual Points of Entitlement Delivery and identifies more than 21

one such Point of Entitlement Delivery, ²² Bonneville shall specify the amount of Canadian

Entitlement capacity to be made

23

available at each Point of Entitlement Delivery

and may specify an amount of energy if ²⁴ necessary for Bonneville to obtain transmission

for delivery to the Canada - United

25

States border. The sum of such amounts of

capacity shall at least equal the full amount of the Canadian Entitlement capacity.

Subject to Section 4.3, from time to time ²⁷ Bonneville may change the Points of Entitlement

Delivery and shall promptly notify

28

British Columbia in writing of the new Points of

Entitlement Delivery. The foregoing provisions of this Section 4.1 shall apply to

changed Points of Entitlement Delivery. From time to time, at British Columbia's request,

Bonneville shall provide British

31

Columbia with a forecast of the future

Transmission Cost of delivering

32

Canadian Entitlement from the Points of

Entitlement Delivery to the Canada - 33 United States border if delivery to British

Columbia at Points of Entitlement

34

Delivery had not occurred and the basis for such

costs. Forecasts provided shall not be binding on Bonneville. .1. As soon as

practicable after the effective date of this Agreement, Bonneville shall select, and notify

British Columbia in writing, of the initial Points of Entitlement Delivery. If Bonneville

selects individual Points of Entitlement

Delivery and identifies more than one such Point

of Entitlement Delivery, Bonneville

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shall specify the amount of Canadian Entitlement

capacity to be made available at each

40

Point of Entitlement Delivery and may specify an

amount of energy if necessary for

41

Bonneville to obtain transmission for delivery to

the Canada - United States border. The ⁴² sum of such amounts of capacity shall at least

equal the full amount of the Canadian 43 Entitlement capacity. Subject to Section 4.3,

from time to time Bonneville may

44

change the Points of Entitlement Delivery and

shall promptly notify British Columbia ⁴⁵ in writing of the new Points of Entitlement

Delivery. The foregoing provisions of ⁴⁶ this Section 4.1 shall apply to changed Points of

Entitlement Delivery. From time to time, at British Columbia's request, Bonneville shall provide British Columbia with a forecast of the future Transmission Cost of delivering Canadian Entitlement from the Points of Entitlement Delivery to the Canada - United States border if delivery to British Columbia at Points of Entitlement Delivery had not occurred and the basis for such costs. Forecasts provided shall not be binding on Bonneville..1. As soon as practicable after the effective date of this Agreement, Bonneville shall select, and notify British Columbia in writing, of the initial Points of Entitlement Delivery. If Bonneville selects individual Points of Entitlement Delivery and identifies more than one such Point of Entitlement Delivery, Bonneville shall specify the amount of Canadian Entitlement capacity to be made available at each Point of Entitlement Delivery and may specify an amount of energy if necessary for Bonneville to obtain transmission for delivery to the Canada - United States border. The sum of such amounts of capacity shall at least equal the full amount of the Canadian Entitlement capacity. Subject to Section 4.3, from time to time Bonneville may change the Points of Entitlement Delivery and shall promptly notify British Columbia in writing of the new Points of Entitlement Delivery. The foregoing provisions of this Section 4.1 shall apply to changed Points of Entitlement Delivery. From time to time, at British Columbia's request, Bonneville shall provide British Columbia with a forecast of the future Transmission Cost of delivering Canadian Entitlement from the Points of Entitlement Delivery to the Canada - United States border if delivery to British Columbia at Points of Entitlement Delivery had not occurred and the basis for such costs. Forecasts provided shall not be binding on Bonneville..1. As soon as practicable after the effective date of this Agreement, Bonneville shall select, and notify British Columbia in writing, of the initial Points of Entitlement Delivery. If Bonneville selects individual Points of Entitlement Delivery and identifies more than one such Point of Entitlement Delivery, Bonneville shall specify the amount of Canadian Entitlement capacity to be made available at each Point of Entitlement Delivery and may specify an amount of energy if necessary for Bonneville to obtain transmission for delivery to the Canada - United States border. The sum of such amounts of capacity shall at least equal the full amount of the Canadian Entitlement capacity. Subject to Section 4.3, from time to time Bonneville may change the Points of Entitlement Delivery and shall promptly notify British Columbia in writing of the new Points of Entitlement Delivery. The foregoing provisions of this Section 4.1 shall apply to changed Points of Entitlement Delivery. From time to time, at British Columbia's request, Bonneville shall provide British Columbia with a forecast of the future Transmission Cost of delivering Canadian Entitlement from the Points of Entitlement Delivery to the Canada - United States border if delivery to British Columbia at Points of Entitlement Delivery had not occurred and the basis for such costs. Forecasts provided shall not be binding on Bonneville.

- 4.2. From time to time, British Columbia may elect to take delivery of all or a portion of the Canadian Entitlement for periods of at least six months at one or more Points of Entitlement Delivery and may dispose of such portions of the Canadian Entitlement from time to time within the United States subsequent to such delivery. For each such election, British Columbia shall notify Bonneville in writing by the later of (i) the date that is 65 days prior to the commencement of the period of delivery or (ii) the date that is 5 days prior to the first date on which British Columbia could purchase transmission for the period specified in Section 4.2(c) that is generally available from transmission providers for purchase, without reservation charges or other payment in advance of service. Such notice shall specify:

.2. From time to time, British Columbia may elect to take delivery of all or a portion of the Canadian Entitlement for periods of at least six months at one or more Points of Entitlement Delivery and may dispose of such portions of the Canadian Entitlement from time to time within the United States subsequent to such delivery. For each such election, British Columbia shall notify Bonneville in writing by the later of (i) the date that is 65 days prior to the commencement of the period of delivery or (ii) the date that is 5 days prior to the first date on which British Columbia could purchase transmission for the period specified in Section 4.2(c) that is generally available from transmission providers for purchase, without reservation charges or other payment in advance of service. Such notice shall specify:.2.

From time to time, British Columbia may elect to take delivery of all or a portion of the Canadian Entitlement for periods of at least six months at one or more Points of Entitlement Delivery and may dispose of such portions of the Canadian Entitlement from time to time within the United States subsequent to such delivery. For each such election, British Columbia shall notify Bonneville in writing by the later of (i) the date that is 65 days prior to the commencement of the period of delivery or (ii) the date that is 5 days prior to the first date on which British Columbia could purchase transmission for the period specified in Section 4.2(c) that is generally available from transmission providers for purchase, without reservation charges or other payment in advance of service. Such notice shall specify:.2.

From time to time, British Columbia may elect to take delivery of all or a portion of the Canadian Entitlement for periods of at least six months at one or more Points of Entitlement Delivery and may dispose of such portions of the Canadian Entitlement from time to time within the United States subsequent to such delivery. For each such election, British Columbia shall notify Bonneville in writing by the later of (i) the date that is 65 days prior to the commencement of the period of delivery or (ii) the date that is 5 days prior to the first date on which British Columbia could purchase transmission for the period specified in Section 4.2(c) that is generally available from transmission providers for purchase, without reservation charges or other payment in advance of service. Such notice shall specify:(a)

the Points of Entitlement Delivery at which British Columbia wishes to take delivery; (a) the Points of Entitlement Delivery at which British Columbia wishes to take delivery;(a) the Points of Entitlement Delivery at which British Columbia wishes to take delivery;(a) the Points of Entitlement Delivery at which British Columbia wishes to take delivery;

(b) the amounts of Canadian Entitlement capacity to be made available at each Point of Entitlement Delivery specified in Section 4.2(a), and the maximum amount of energy to be delivered at each Point of Entitlement Delivery if necessary to enable reduction in U.S. Entity Transmission Cost of delivering the Canadian Entitlement

from the Points of Entitlement Delivery to the Canada - United States border;

and(b) the amounts of Canadian Entitlement capacity to be made available at each Point of Entitlement Delivery specified in Section 4.2(a), and the maximum amount of energy to be delivered at each Point of Entitlement Delivery if necessary to enable reduction in U.S. Entity Transmission Cost of delivering the Canadian Entitlement from the Points of Entitlement Delivery to the Canada - United States border; and(b)

the amounts of Canadian Entitlement capacity to be made available at each Point of Entitlement Delivery specified in Section 4.2(a), and the maximum amount of energy to be delivered at each Point of Entitlement Delivery if necessary to enable reduction in U.S. Entity Transmission Cost of delivering the Canadian Entitlement from the Points of Entitlement Delivery to the Canada - United States border; and(b)

the amounts of Canadian Entitlement capacity to be made available at each Point of Entitlement Delivery specified in Section 4.2(a), and the maximum amount of energy to be delivered at each Point of Entitlement Delivery if necessary to enable reduction in U.S. Entity Transmission Cost of delivering the Canadian Entitlement from the Points of Entitlement Delivery to the Canada - United States border; and

(c) the period for which British Columbia wishes to take delivery at the Points of Entitlement Delivery specified in Section 4.2(a). (c) the period for which British Columbia wishes to take delivery at the Points of Entitlement Delivery specified in Section 4.2(a).(c) the period for which British Columbia wishes to take delivery at the Points of Entitlement Delivery specified in Section 4.2(a).(c) the period for which British Columbia wishes to take delivery at the Points of Entitlement Delivery specified in Section 4.2(a).

- 4.3. If British Columbia elects under Section 4.2, Bonneville shall deliver without cost all or a portion of the Canadian Entitlement to the Points of Entitlement Delivery in accordance with such election. Bonneville may change the Points of Entitlement Delivery while British Columbia is taking delivery at the existing points only if (a) such change would not require British Columbia to alter transmission arrangements, or (b) such change is made for the purpose of reducing the U.S. Entity's Transmission Cost. If Bonneville intends to change such Points of Entitlement Delivery while British Columbia is taking delivery at the existing points, Bonneville shall notify British Columbia at least 60 days in advance of such changes, and British Columbia shall alter transmission arrangements to be in accordance with such change. Each time Bonneville changes Points of Entitlement Delivery, British Columbia shall be entitled to elect new Points of Entitlement Delivery under Section 4.2 for the remainder of the period referred to in Section 4.2(c). .3. If British Columbia elects under Section 4.2, Bonneville shall deliver without cost all or a portion of the Canadian Entitlement

to the Points of Entitlement Delivery in accordance with such election. Bonneville may change the Points of Entitlement Delivery while British Columbia is taking delivery at the existing points only if (a) such change would not require British Columbia to alter transmission arrangements, or (b) such change is made for the purpose of reducing the U.S. Entity's Transmission Cost. If Bonneville intends to change such Points of Entitlement Delivery while British Columbia is taking delivery at the existing points, Bonneville shall notify British Columbia at least 60 days in advance of such changes, and British Columbia shall alter transmission arrangements to be in accordance with such change. Each time Bonneville changes Points of Entitlement Delivery, British Columbia shall be entitled to elect new Points of Entitlement Delivery under Section 4.2 for the remainder of the period referred to in Section 4.2(c)..3. If British Columbia elects under Section 4.2, Bonneville shall deliver without cost all or a portion of the Canadian Entitlement to the Points of Entitlement Delivery in accordance with such election. Bonneville may change the Points of Entitlement Delivery while British Columbia is taking delivery at the existing points only if (a) such change would not require British Columbia to alter transmission arrangements, or (b) such change is made for the purpose of reducing the U.S. Entity's Transmission Cost. If Bonneville intends to change such Points of Entitlement Delivery while British Columbia is taking delivery at the existing points, Bonneville shall notify British Columbia at least 60 days in advance of such changes, and British Columbia shall alter transmission arrangements to be in accordance with such change. Each time Bonneville changes Points of Entitlement Delivery, British Columbia shall be entitled to elect new Points of Entitlement Delivery under Section 4.2 for the remainder of the period referred to in Section 4.2(c)..3. If British Columbia elects under Section 4.2, Bonneville shall deliver without cost all or a portion of the Canadian Entitlement to the Points of Entitlement Delivery in accordance with such election. Bonneville may change the Points of Entitlement Delivery while British Columbia is taking delivery at the existing points only if (a) such change would not require British Columbia to alter transmission arrangements, or (b) such change is made for the purpose of reducing the U.S. Entity's Transmission Cost. If Bonneville intends to change such Points of Entitlement Delivery while British Columbia is taking delivery at the existing points, Bonneville shall notify British Columbia at least 60 days in advance of such changes, and British Columbia shall alter transmission arrangements to be in accordance with such change. Each time Bonneville changes Points of Entitlement Delivery, British Columbia shall be entitled to elect new Points of Entitlement Delivery under Section 4.2 for the remainder of the period referred to in Section 4.2(c).

- 4.4. British Columbia shall be responsible for arranging any required transmission from the Points of Entitlement Delivery to any point of delivery, and Bonneville shall have no

obligation to pay the costs for such transmission, or to provide such transmission.
Nothing in this Section 4.4 derogates from the rights of British Columbia to obtain
transmission from Bonneville Power Administration not acting in its capacity as or on behalf
of the U.S. Entity in accordance with

its prevailing practices at the time the transmission is purchased or creates any rights of British Columbia to obtain transmission from Bonneville Power Administration not acting in its capacity as or on behalf of the U.S. Entity other than in accordance with such prevailing practices. 4. British Columbia shall be responsible for arranging any required transmission from the Points of Entitlement Delivery to any point of delivery, and Bonneville shall have no obligation to pay the costs for such transmission, or to provide such transmission. Nothing in this Section 4.4 derogates from the rights of British Columbia to obtain transmission from Bonneville Power Administration not acting in its capacity as or on behalf of the U.S. Entity in accordance with its prevailing practices at the time the transmission is purchased or creates any rights of British Columbia to obtain transmission from Bonneville Power Administration not acting in its capacity as or on behalf of the U.S. Entity other than in accordance with such prevailing practices. 4. British Columbia shall be responsible for arranging any required transmission from the Points of Entitlement Delivery to any point of delivery, and Bonneville shall have no obligation to pay the costs for such transmission, or to provide such transmission. Nothing in this Section 4.4 derogates from the rights of British Columbia to obtain transmission from Bonneville Power Administration not acting in its capacity as or on behalf of the U.S. Entity in accordance with its prevailing practices at the time the transmission is purchased or creates any rights of British Columbia to obtain transmission from Bonneville Power Administration not acting in its capacity as or on behalf of the U.S. Entity other than in accordance with such prevailing practices. 4. British Columbia shall be responsible for arranging any required transmission from the Points of Entitlement Delivery to any point of delivery, and Bonneville shall have no obligation to pay the costs for such transmission, or to provide such transmission. Nothing in this Section 4.4 derogates from the rights of British Columbia to obtain transmission from Bonneville Power Administration not acting in its capacity as or on behalf of the U.S. Entity in accordance with its prevailing practices at the time the transmission is purchased or creates any rights of British Columbia to obtain transmission from Bonneville Power Administration not acting in its capacity as or on behalf of the U.S. Entity other than in accordance with such prevailing practices. 4. British Columbia shall be responsible for arranging any required transmission from the Points of Entitlement Delivery to any point of delivery, and Bonneville shall have no obligation to pay the costs for such transmission, or to provide such transmission. Nothing in this Section 4.4 derogates from the rights of British Columbia to obtain transmission from Bonneville Power Administration not acting in its capacity as or on behalf of the U.S. Entity in accordance with its prevailing practices at the time the transmission is purchased or creates any rights of British Columbia to obtain transmission from Bonneville Power Administration not acting in its capacity as or on behalf of the U.S. Entity other than in accordance with such prevailing practices.

- 4.5. Notwithstanding British Columbia's election and notification under Section 4.2, British Columbia may suspend any or all elections made pursuant to Section 4.2 during the period specified in Section 4.2(c) provided that British Columbia holds Bonneville harmless from all additional costs, if any, that Bonneville may incur as a result of such suspension. Unless otherwise agreed, British Columbia may only exercise the foregoing right to suspend any or all elections one time during the term of this Agreement. 5. Notwithstanding British Columbia's election and notification under Section 4.2, British Columbia may suspend any or

all elections made pursuant to Section 4.2 during the period specified in Section 4.2(c) provided that British Columbia holds Bonneville harmless from all additional costs, if any, that Bonneville may incur as a result of such suspension. Unless otherwise agreed, British Columbia may only exercise the foregoing right to suspend any or all elections one time during the term of this Agreement..5. Notwithstanding British Columbia's election and notification under Section 4.2, British Columbia may suspend any or all elections made pursuant to Section 4.2 during the period specified in Section 4.2(c) provided that British Columbia holds Bonneville harmless from all additional costs, if any, that Bonneville may incur as a result of such suspension. Unless otherwise agreed, British Columbia may only exercise the foregoing right to suspend any or all elections one time during the term of this Agreement..5. Notwithstanding British Columbia's election and notification under Section 4.2, British Columbia may suspend any or all elections made pursuant to Section 4.2 during the period specified in Section 4.2(c) provided that British Columbia holds Bonneville harmless from all additional costs, if any, that Bonneville may incur as a result of such suspension. Unless otherwise agreed, British Columbia may only exercise the foregoing right to suspend any or all elections one time during the term of this Agreement.

5. Mutually Agreeable United States Delivery

- 5.1. In addition to disposals pursuant to Section 3 and disposals subsequent to delivery pursuant to Section 4, British Columbia may dispose of all or portions of the Canadian Entitlement from time to time within the United States, provided that in connection with any such disposal British Columbia either: .1. In addition to disposals pursuant to Section 3 and disposals subsequent to delivery pursuant to Section 4, British Columbia may dispose of all or portions of the Canadian Entitlement from time to time within the United States, provided that in connection with any such disposal British Columbia either:.1. In addition to disposals pursuant to Section 3 and disposals subsequent to delivery pursuant to Section 4, British Columbia may dispose of all or portions of the Canadian Entitlement from time to time within the United States, provided that in connection with any such disposal British Columbia either:.1. In addition to disposals pursuant to Section 3 and disposals subsequent to delivery pursuant to Section 4, British Columbia may dispose of all or portions of the Canadian Entitlement from time to time within the United States, provided that in connection with any such disposal British Columbia either:
- (a) enters into an agreement with Bonneville that is not inconsistent with the Treaty and provides for delivery of the Canadian Entitlement at Points of Entitlement Delivery in accordance with the terms of such agreement. Delivery at Points of Entitlement Delivery in accordance with any such agreement shall satisfy the U.S. Treaty

obligation with respect to such portions delivered; or, (a) enters into an agreement with Bonneville that provides for delivery of the Canadian Entitlement at Points of Entitlement Delivery in accordance with the terms of such agreement. Delivery at Points of Entitlement Delivery in accordance with any such agreement shall satisfy the U.S. Treaty obligation with respect to such portions delivered [provided that such agreements are consistent with the Treaty]; or, (a) enters into an agreement with Bonneville that provides for delivery of the Canadian Entitlement at Points of Entitlement Delivery in accordance with the terms of such agreement. Delivery at Points of Entitlement Delivery in accordance with any such agreement shall satisfy the U.S. Treaty obligation with respect to such portions delivered [provided that such agreements are consistent with the Treaty]; or, (a) enters into an agreement with Bonneville that provides for delivery of the Canadian Entitlement at Points of Entitlement Delivery in accordance with the terms of such agreement. Delivery at Points of Entitlement Delivery in accordance with any such agreement shall satisfy the U.S. Treaty obligation with respect to such portions delivered [provided that such agreements are consistent with the Treaty]; or,

- (b) enters into a commercial agreement with the Bonneville Power Administration not acting in its capacity as or on behalf of the U.S. Entity that provide for a reduction of the U.S. obligation to deliver the Canadian Entitlement. Whenever such an agreement under this subsection (b) is entered into, British Columbia shall provide to Bonneville a written instrument that sets forth a legally binding acknowledgement that the obligation of the United States under the Treaty to deliver Canadian Entitlement is reduced for the period and in the amount agreed to under such commercial agreements. (b) enters into a commercial agreement with the Bonneville Power Administration not acting in its capacity as or on behalf of the U.S. Entity that provide for a reduction of the U.S. obligation to deliver the Canadian Entitlement. Whenever such an agreement under this subsection (b) is entered into, British Columbia shall provide to Bonneville a written instrument that sets forth a legally binding acknowledgement that the obligation of the United States under the Treaty to deliver Canadian Entitlement is reduced for the period and in the amount agreed to under such commercial agreements. (b) enters into a commercial agreement with the Bonneville Power Administration not acting in its capacity as or on behalf of the U.S. Entity that provide for a reduction of the U.S. obligation to deliver the Canadian Entitlement. Whenever such an agreement under this subsection (b) is entered into, British Columbia shall provide to Bonneville a written instrument that sets forth a legally binding acknowledgement that the obligation of

the United States under the Treaty to deliver Canadian Entitlement is reduced for the period and in the amount agreed to under such commercial agreements.(b) enters into a commercial agreement with the Bonneville Power Administration not acting in its capacity as or on behalf of the U.S. Entity that provide for a reduction of the U.S. obligation to deliver the Canadian Entitlement. Whenever such an agreement under this subsection (b) is entered into, British Columbia shall provide to Bonneville a written instrument that sets forth a legally binding acknowledgement that the obligation of the United States under the Treaty to deliver Canadian Entitlement is reduced for the period and in the amount agreed to under such commercial agreements.

- 5.2. In connection with disposals pursuant to Section 5.1, British Columbia may enter into commercial agreements with the Bonneville Power Administration not acting in its capacity as or on behalf of the U.S. Entity or with any other party to provide further delivery and other arrangements for such disposals separately or in combination with agreements reached under Section 5.1. .2. In connection with disposals pursuant to Section 5.1, British Columbia may enter into commercial agreements with the Bonneville Power Administration not acting in its capacity as or on behalf of the U.S. Entity or with any other party to provide further delivery and other arrangements for such disposals separately or in combination with agreements reached under Section 5.1..2. In connection with disposals pursuant to Section 5.1, British Columbia may enter into commercial agreements with the Bonneville Power Administration not acting in its capacity as or on behalf of the U.S. Entity or with any other party to provide further delivery and other arrangements for such disposals separately or in combination with agreements reached under Section 5.1, British Columbia may enter into commercial agreements with the Bonneville Power Administration not acting in its capacity as or on behalf of the U.S. Entity or with any other party to provide further delivery and other arrangements for such disposals separately or in combination with agreements reached under Section 5.1.

6. **Dispute Resolution . Dispute Resolution. Dispute Resolution.**
Dispute Resolution

- 6.1. Bonneville and British Columbia shall make reasonable efforts to settle any dispute that arises under this Agreement (a “Dispute”), including use of a facilitator or mediator as agreed by the Parties. Settlement offers shall not be admissible in any subsequent dispute resolution process. .1. Bonneville and British Columbia shall make reasonable efforts to settle all disputes that arise under this Agreement (a ?Dispute?). In the event any such Dispute is not settled within 45 days after the date such Dispute arises, the Parties shall have 10 days following such 45 day period to agree on the selection of an impartial facilitator to aid them in reaching a mutually acceptable resolution to the Dispute. The facilitator and representatives of the Parties with authority to settle the Dispute shall meet within 15 days after the facilitator has been appointed to attempt to negotiate a resolution of the Dispute. Settlement offers shall not be admissible in any subsequent dispute resolution process..1.

Bonneville and British Columbia shall make reasonable efforts to settle all disputes that arise under this Agreement (a ?Dispute?). In the event any such Dispute is not settled within 45 days after the date such Dispute arises, the Parties shall have 10 days following such 45 day period to agree on the selection of an impartial facilitator to aid them in reaching a mutually acceptable resolution to the Dispute. The facilitator and representatives of the Parties with authority to settle the Dispute shall meet within 15 days after the facilitator has been appointed to attempt to negotiate a resolution of the Dispute. Settlement offers shall not be admissible in any subsequent dispute resolution process..1. Bonneville and British Columbia shall make reasonable efforts to settle all disputes that arise under this Agreement (a ?Dispute?). In the event any such Dispute is not settled within 45 days after the date such Dispute arises, the Parties shall have 10 days following such 45 day period to agree on the selection of an impartial facilitator to aid them in reaching a mutually acceptable resolution to the Dispute. The facilitator and representatives of the Parties with authority to settle the Dispute shall meet within 15 days after the facilitator has been appointed to attempt to negotiate a resolution of the Dispute. Settlement offers shall not be admissible in any subsequent dispute resolution process.

- 6.2. Notwithstanding Section 6.1, either Party may at any time give notice of a Dispute (“Notice of Dispute”) to the other Party, the Government of Canada and the Government of the United States. The Notice of Dispute shall be delivered in writing and by hand as follows

For delivery to the Government of Canada:

Deputy Minister of Foreign Affairs
 Department of Foreign Affairs and International Trade

125 Sussex Drive, Ottawa, Ontario

For delivery to the Government of the United States:

Office of Legal Adviser
Department of State
Washington, D.C.

The Party giving the Notice of Dispute shall inform the other Party and the two Governments of the date the Notice was delivered to both Governments, with the last date of delivery being the effective date of the Notice of Dispute.

6.3 For 45 days following the effective date of the Notice of Dispute, the Government of Canada and the Government of the United States of America may hold consultations concerning the Dispute and consider whether to invoke the procedures of Article XVI of the Treaty for settlement of differences between the Governments. If, within 45 days after receipt of the Notice, neither the Parties nor the Governments have resolved the Dispute and neither Government has informed the other Government in writing that it is invoking the procedures of Article XVI of the Treaty concerning settlement of differences, either British Columbia or Bonneville may proceed to arbitration as follows in accordance with Section 6.4 by delivering to the other a notice to arbitrate (“Notice to Arbitrate”).

6.4 Any arbitration under this Section 6.4 shall commence and proceed in accordance with the Arbitration Rules of the United Nations Commission on International Trade Law (“UNCITRAL Rules”), as they may be in force at the time of the arbitration, subject to the following modifications: .4 Any arbitration under this Section 6.4 shall commence and proceed in accordance with the Arbitration Rules of the United Nations Commission on International Trade Law (?UNCITRAL Rules?), as they may be in force at the time of the arbitration, subject to the following modifications:.4 Any arbitration under this Section 6.4 shall commence and proceed in accordance with the Arbitration Rules of the United Nations Commission on International Trade Law (?UNCITRAL Rules?), as they may be in force at the time of the arbitration, subject to the following modifications:.4

Any arbitration under this Section 6.4 shall commence and proceed in accordance with the Arbitration Rules of the United Nations Commission on International Trade Law (?UNCITRAL Rules?), as they may be in force at the time of the arbitration, subject to the following modifications:

(a) arbitrations shall be by a panel of three arbitrators selected in accordance with this Section 6.4; (a) arbitrations shall be by a panel of three arbitrators selected in accordance with this Section 6.4;(a) arbitrations shall be by a panel of three arbitrators selected

in accordance with this Section 6.4;(a)

arbitrations shall be by a panel of three

arbitrators selected in accordance with this Section 6.4;

- (b) within 15 days of receipt of the Notice to Arbitrate, each Party shall select one arbitrator who is willing and able to act as such, has expertise in the subject of transmission and generation of electrical power, and is not and has not within two years prior to the Notice of Dispute been an employee of or contractor to either of the Parties. Each Party shall notify the other Party on the date of such selection. If a Party fails to notify the other Party of its selection within such 15 day period, the other Party may select the Party's arbitrator and such arbitrator shall be deemed selected by the Party that failed to notify the other Party of its selection;
- (c) the arbitrators selected by the Parties shall select the third arbitrator from the list of arbitrators ("the List") of the Western Region Transmission Association ("WRTA") or its successor organization;
- (d) if the arbitrators selected by the Parties cannot agree upon the third arbitrator within 30 days of receipt of the Notice to Arbitrate, the Parties shall, within 5 days after the expiry of such 30-day period, meet at a time and location in Vancouver, British Columbia or Portland, Oregon, as selected by the Party who sent the Notice to Arbitrate, and take turns striking a name from the List. The first Party to strike a name shall be selected by drawing lots. If either Party fails to meet at the selected time and place or to strike a name from the List within 15 minutes of the last name struck by the other Party, then the other Party may select the third arbitrator from the names or remaining names on the List. The last remaining name shall be designated as the third arbitrator. If the person selected as the third arbitrator in accordance with this subsection is ineligible, unwilling or unable to act as such, then the last name struck shall be designated as the third arbitrator if he or she is eligible, willing and able to act, and so on until a third arbitrator is selected who is eligible, willing and able to act;
- (e) either the Government of the United States of America or the Government of Canada may, at its discretion, strike the third arbitrator selected under Section 6.4 (d) above within 10 days of having been notified of the third arbitrator's identity, in which case either Party shall request the Appointing Authority to select within 30 days, or more rapidly if possible, the third arbitrator, who shall have expertise in the subject of transmission and generation of electrical power and shall not be a citizen or permanent resident of either the United States of America or Canada. The Parties

hereby designate the International Chamber of Commerce as the Appointing Authority;

- (f) in the event that the WRTA arbitrators List ceases to exist, the Parties shall negotiate in good faith to select another arbitrators list (which shall become the “List” referred to in Section 6.4 (c)) from which to select the third arbitrator, failing which selection, within 30 days after the Notice to Arbitrate, the third arbitrator shall be selected in accordance with the UNCITRAL Rules;
- (g) except with the agreement of the Parties or of the arbitrators selected by each Party, a person shall not be eligible to act as the third arbitrator if the person is or has within the last 5 years been employed or retained directly or indirectly by either Party or the government of either the United States or Canada;

- (h) the third arbitrator shall be the Chair of the arbitration panel;
- (i) the decision of a majority of the arbitrators shall be the decision of the arbitration panel;
- (j) the place of the first arbitration under this Agreement shall be the location of the head office (either Portland, Oregon or Vancouver, British Columbia) of the Party that did not initiate the Notice to Arbitrate. The place of subsequent arbitrations shall alternate between Portland, Oregon, and Vancouver, British Columbia. Hearings shall be held in the place of the arbitration;
- (k) the Parties intend that the arbitration shall proceed and conclude within 90 days, or otherwise as expeditiously as reasonably possible, taking into account the circumstances of the case. The Parties direct the arbitrators, subject always to their discretion, to establish times for taking actions during the arbitration that are consistent with this intent.

6.5 Once a Notice to Arbitrate has been delivered, Section 6.4 shall be the exclusive means of resolving the Dispute, subject always to the rights of the Parties to negotiate a settlement. The award of the arbitration panel shall be final and binding.

7. **Assignments . Assignments. Assignments. Assignments**

7.1. From time to time British Columbia may assign its rights and related obligations under this Agreement, other than those set forth in Sections 3 and 4.2 of this Agreement, to one or more third parties, subject to the following conditions: .1. From time to time British Columbia may assign its rights and related obligations under this Agreement, other than those set forth in Sections 3 and 4.2 of this Agreement, to one or more third parties, subject to the following conditions:.1. From time to time British Columbia may assign its rights and related obligations under this Agreement, other than those set forth in Sections 3 and 4.2 of this Agreement, to one or more third parties, subject to the following conditions:.1.

From time to time British Columbia may assign its rights and related obligations under this Agreement, other than those set forth in Sections 3 and 4.2 of this Agreement, to one or more third parties, subject to the following conditions:

- (a) such assignment may pertain to all or a portion of the Canadian Entitlement for all or a part of the term of this Agreement; (a) such assignment may pertain to all or a portion of the Canadian Entitlement for all or a part of the term of this Agreement;(a) such assignment may pertain to all or a portion of the Canadian Entitlement for all or

a part of the term of this Agreement;(a) such assignment may pertain to all or a portion of the Canadian Entitlement for all or a part of the term of this Agreement;

(b) the assignee must: (b) the assignee must:(b) the assignee must:(b) the assignee must:

- (i) be an eligible transmission customer of the transmission provider at the Point of Entitlement Delivery under United States Federal law; or

- (i) be an eligible transmission customer of the transmission provider at the Point of Entitlement Delivery under United States Federal law; or (i) be an eligible transmission customer of the transmission provider at the Point of Entitlement Delivery under United States Federal law; or (i) be an eligible transmission customer of the transmission provider at the Point of Entitlement Delivery under United States Federal law;
- or (ii) have any United States Federal regulatory approvals that are required to purchase power at the Point of Entitlement Delivery; provided, however, that if such assignee does not dispose of the assigned power before it must be scheduled, the assignee must also meet the (ii) have any United States Federal regulatory approvals that are required to purchase power at the Point of Entitlement Delivery; provided, however, that if such assignee does not dispose of the assigned power before it must be scheduled, the assignee must also meet the (ii) have any United States Federal regulatory approvals that are required to purchase power at the Point of Entitlement Delivery; provided, however, that if such assignee does not dispose of the assigned power before it must be scheduled, the assignee must also meet the (ii) have any United States Federal regulatory approvals that are required to purchase power at the Point of Entitlement Delivery; provided, however, that if such assignee does not dispose of the assigned power before it must be scheduled, the assignee must also meet the requirements in (i) above;
- (c) British Columbia shall be the representative for such third party with respect to scheduling the portion of the Canadian Entitlement assigned except that purchasing and scheduling of transmission from the Point of Entitlement Delivery shall be the responsibility of the assignee; (c) British Columbia shall be the representative for such third party with respect to scheduling the portion of the Canadian Entitlement assigned except that purchasing and scheduling of transmission from the Point of Entitlement Delivery shall be the responsibility of the assignee; (c) British Columbia shall be the representative for such third party with respect to scheduling the portion of the Canadian Entitlement assigned except that purchasing and scheduling of transmission from the Point of Entitlement Delivery shall be the responsibility of the assignee; (c) British Columbia shall be the representative for such third party with respect to scheduling the portion of the Canadian Entitlement assigned except that purchasing and scheduling of transmission from the Point of Entitlement Delivery shall be the responsibility of the assignee;
- (d) British Columbia shall provide to Bonneville, by the hour for submitting daily pre-schedules at least three working days prior to the day of first delivery, written notice of the assignment specifying the assignee, the capacity amounts, in megawatts (MW), assigned to the assignee, and the period of the assignment; (d) British

Columbia shall provide to Bonneville, by the hour for submitting daily pre-schedules at least three working days prior to the day of first delivery, written notice of the assignment specifying the assignee, the capacity amounts, in megawatts (MW), assigned to the assignee, and the period of the assignment;(d) British Columbia shall provide to Bonneville, by the hour for submitting daily pre-schedules at least three working days prior to the day of first delivery, written notice of the assignment specifying the assignee, the capacity amounts, in megawatts (MW), assigned to the assignee, and the period of the assignment;(d) British Columbia shall provide to Bonneville, by the hour for submitting daily pre-schedules at least three working days prior to the day of first delivery, written notice of the assignment specifying the assignee, the capacity amounts, in megawatts (MW), assigned to the assignee, and the period of the assignment;

- (e) British Columbia shall submit to Bonneville, at the same time as the Canadian Entity submits daily pre-schedules of Canadian Entitlement pursuant to the Scheduling Guidelines, the hourly amounts of Canadian Entitlement that will be scheduled to an assignee or a purchasing/selling entity on behalf of the assignee under this Agreement; and (e) British Columbia shall submit to Bonneville, at the same time as the Canadian Entity submits daily pre-schedules of Canadian Entitlement pursuant to the Scheduling Guidelines, the hourly amounts of Canadian Entitlement that will be scheduled to an assignee or a purchasing/selling entity on behalf of the assignee under this Agreement; and3(e) British Columbia shall submit to Bonneville, at the same time as the Canadian Entity submits daily pre-schedules of Canadian Entitlement pursuant to the Scheduling Guidelines, the hourly amounts of Canadian Entitlement that will be scheduled to an assignee or a purchasing/selling entity on behalf of the assignee under this Agreement; and(e) British Columbia shall submit to Bonneville, at the same time as the Canadian Entity submits daily pre-schedules of Canadian Entitlement pursuant to the Scheduling Guidelines, the hourly amounts of Canadian Entitlement that will be scheduled to an assignee or a purchasing/selling entity on behalf of the assignee under this Agreement; and
- (f) British Columbia has provided Bonneville six months written notice of its intent to commence making assignments pursuant to this Agreement. (f) British Columbia has provided Bonneville six months written notice of its intent to commence making assignments pursuant to this Agreement.(f) British Columbia has provided Bonneville six months written notice of its intent to commence making assignments pursuant to this Agreement.(f) British

Columbia has provided Bonneville six months written notice of its intent to commence making assignments pursuant to this Agreement.

- 7.2. British Columbia is responsible for delivering to the assignee any energy scheduled to or on behalf of the assignee that, due to an uncontrollable force, is delivered to the Canada - United States border pursuant to scheduling guidelines as agreed to by the Canadian Entity and the U.S. Entity. .2. British Columbia is responsible for delivering to the assignee any energy scheduled to or on behalf of the assignee that, due to an uncontrollable force, is delivered to the Canada - United States border pursuant to scheduling guidelines as agreed to by the Canadian Entity and the U.S. Entity..2. British Columbia is responsible for delivering to the assignee any energy scheduled to or on behalf of the assignee that, due to an uncontrollable force, is delivered to the Canada - United States border pursuant to scheduling guidelines as agreed to by the Canadian Entity and the U.S. Entity..2. British Columbia is responsible for delivering to the assignee any energy scheduled to or on behalf of the assignee that, due to an uncontrollable force, is delivered to the Canada - United States border pursuant to scheduling guidelines as agreed to by the Canadian Entity and the U.S. Entity.
- 7.3. British Columbia is responsible for all billing, notification regarding changes in schedules, and reconciliation of discrepancies in schedules among British Columbia, its assignees and any purchasing/selling entity receiving that power. .3. British Columbia is responsible for all billing, notification regarding changes in schedules, and reconciliation of discrepancies in schedules among British Columbia, its assignees and any purchasing/selling entity receiving that power..3. British Columbia is responsible for all billing, notification regarding changes in schedules, and reconciliation of discrepancies in schedules among British Columbia, its assignees and any purchasing/selling entity receiving that power..3. British Columbia is responsible for all billing, notification regarding changes in schedules, and reconciliation of discrepancies in schedules among British Columbia, its assignees and any purchasing/selling entity receiving that power.
- 7.4. British Columbia's obligations under this Agreement shall only be relieved to the extent that they are satisfied by such third party assignees. .4. British Columbia's obligations under this Agreement shall only be relieved to the extent that they are satisfied by such third party assignees..4. British Columbia's obligations under this Agreement shall only be relieved to the extent that they are satisfied by such third party assignees..4. British Columbia's obligations under this Agreement shall only be relieved to the extent that they are satisfied by such third party assignees.

- 7.5. British Columbia shall pay Bonneville for verifiable administrative, scheduling and billing costs which Bonneville may incur as a result of assignments under this Agreement. Bonneville and British Columbia agree to use best efforts to alleviate any administrative difficulties created by assignments under this Agreement. .5. British Columbia shall pay Bonneville for verifiable administrative, scheduling and billing costs which Bonneville may incur as a result of assignments under this Agreement. Bonneville and British Columbia agree to use best efforts to alleviate any administrative difficulties created by assignments under this Agreement..5. British Columbia shall pay Bonneville for verifiable administrative, scheduling and billing costs which Bonneville may incur as a result of assignments under this Agreement. Bonneville and British Columbia agree to use best efforts to alleviate any administrative difficulties created by assignments under this Agreement..5. British Columbia shall pay Bonneville for verifiable administrative, scheduling and billing costs which Bonneville may incur as a result of assignments under this Agreement. Bonneville and British Columbia agree to use best efforts to alleviate any administrative difficulties created by assignments under this Agreement.
- 7.6. Any rights assigned to a third party pursuant to this Section 7 may not be further assigned to another third party unless such practice is standard practice which Bonneville makes available to other parties..6. Any rights assigned to a third party pursuant to this Section 7 may not be further assigned to another third party unless such practice is standard practice which Bonneville makes available to other parties..6. Any rights assigned to a third party pursuant to this Section 7 may not be further assigned to another third party unless such practice is standard practice which Bonneville makes available to other parties..6. Any rights assigned to a third party pursuant to this Section 7 may not be further assigned to another third party unless such practice is standard practice which Bonneville makes available to other parties.
- 7.7. Notwithstanding Section 7.1, British Columbia may from time to time assign to British Columbia Power Exchange Corporation or any other British Columbia crown corporation all of its rights and obligations under this Agreement. No more than one such assignment may be effective at any one time and such assignment shall convey all of such rights and obligations for the period of such assignment. British Columbia shall provide prompt written notice to Bonneville of such assignment no later than 60 days prior to its effective date including the name, mailing address and phone numbers of such assignee and the term of the assignment. Any assignee pursuant to this Section 7.7 shall have all the rights of British Columbia pursuant to this Agreement, including the right to assign rights and related obligations pursuant to this Section 7, notwithstanding that such assignee is not designated as an entity by Canada pursuant to the Treaty. .7. Notwithstanding Section 7.1, British

Columbia may from time to time assign to British Columbia Power Exchange Corporation or any other British Columbia crown corporation all of its rights and obligations under this Agreement. No more than one such assignment may be effective at any one time and such assignment shall convey all of such rights and obligations for the period of such assignment. British Columbia shall provide prompt written notice to Bonneville of such assignment no later than 60 days prior to its effective date including the name, mailing address and phone numbers of such assignee and the term of the assignment. Any assignee pursuant to this Section 7.7 shall have all the rights of British Columbia pursuant to this Agreement, including the right to assign rights and related obligations pursuant to this Section 7, notwithstanding that such assignee is not designated as an entity by Canada pursuant to the Treaty..7. Notwithstanding Section 7.1, British Columbia may from time to time assign to British Columbia Power Exchange Corporation or any other British Columbia crown corporation all of its rights and obligations under this Agreement. No more than one such assignment may be effective at any one time and such assignment shall convey all of such rights and obligations for the period of such assignment. British Columbia shall provide prompt written notice to Bonneville of such assignment no later than 60 days prior to its effective date including the name, mailing address and phone numbers of such assignee and the term of the assignment. Any assignee pursuant to this Section 7.7 shall have all the rights of British Columbia pursuant to this Agreement, including the right to assign rights and related obligations pursuant to this Section 7, notwithstanding that such assignee is not designated as an entity by Canada pursuant to the Treaty..7. Notwithstanding Section 7.1, British Columbia may from time to time assign to British Columbia Power Exchange Corporation or any other British Columbia crown corporation all of its rights and obligations under this Agreement. No more than one such assignment may be effective at any one time and such assignment shall convey all of such rights and obligations for the period of such assignment. British Columbia shall provide prompt written notice to Bonneville of such assignment no later than 60 days prior to its effective date including the name, mailing address and phone numbers of such assignee and the term of the assignment. Any assignee pursuant to this Section 7.7 shall have all the rights of British Columbia pursuant to this Agreement, including the right to assign rights and related obligations pursuant to this Section 7, notwithstanding that such assignee is not designated as an entity by Canada pursuant to the Treaty.

8. **Scheduling . Scheduling. Scheduling. Scheduling**
- 8.1. Scheduling guidelines as agreed to by the Canadian Entity and U.S. Entity shall apply to all Canadian Entitlement delivered under this Agreement. The Parties agree that the scheduling agent appointed by the Canadian Entity pursuant to the Entity Agreement shall schedule all Canadian Entitlement under this Agreement. .1. Scheduling guidelines as agreed to by the Canadian Entity and U.S. Entity shall apply to all Canadian Entitlement delivered under this Agreement. The Parties agree that the scheduling agent appointed by the Canadian Entity pursuant to the Entity Agreement shall schedule all Canadian Entitlement under this Agreement. .1. Scheduling guidelines as agreed to by the Canadian Entity and U.S. Entity shall apply to all Canadian Entitlement delivered under this Agreement. The Parties agree that the scheduling agent appointed by the Canadian Entity pursuant to the Entity Agreement shall schedule all Canadian Entitlement under this Agreement. .1. Scheduling guidelines as agreed to by the Canadian Entity and U.S. Entity shall apply to all Canadian Entitlement delivered under this Agreement. The Parties agree that the scheduling agent appointed by the Canadian Entity pursuant to the Entity Agreement shall schedule all Canadian Entitlement under this Agreement. .1. Scheduling guidelines as agreed to by the Canadian Entity and U.S. Entity shall apply to all Canadian Entitlement delivered under this Agreement. The Parties agree that the scheduling agent appointed by the Canadian Entity pursuant to the Entity Agreement shall schedule all Canadian Entitlement under this Agreement.
- 8.2. For the period prior to April 1, 2000, British Columbia shall provide Bonneville for each schedule under Section 4 of this Agreement written notice of the receiving control area, all transmission providers that British Columbia intends to use, and the last purchasing/selling entity prior to delivery in the receiving control area. Such notice shall be provided by the hour for submitting daily pre-schedules at least two working days prior to pre-schedule. British Columbia shall limit the number of such schedules to the amount of Canadian Entitlement capacity elected to be delivered at Points of Entitlement Delivery divided by 25 MW..2. For the period prior to April 1, 2000, British Columbia shall provide Bonneville for each schedule under Section 4 of this Agreement written notice of the receiving control area, all transmission providers that British Columbia intends to use, and the last purchasing/selling entity prior to delivery in the receiving control area. Such notice shall be provided by the hour for submitting daily pre-schedules at least two working days prior to pre-schedule. British Columbia shall limit the number of such schedules to the amount of Canadian Entitlement capacity elected to be delivered at Points of Entitlement Delivery divided by 25 MW..2. For the period prior to April 1, 2000, British Columbia shall provide Bonneville for each schedule under Section 4 of this Agreement written notice of the receiving control area, all transmission providers that British Columbia intends to use, and the last purchasing/selling entity prior to delivery in the receiving control area. Such notice shall be provided by the hour for submitting daily pre-schedules at least two working days prior to pre-schedule. British Columbia shall limit the number of such schedules to the amount of

Canadian Entitlement capacity elected to be delivered at Points of Entitlement Delivery divided by 25 MW..2. For the period prior to April 1, 2000, British Columbia shall provide Bonneville for each schedule under Section 4 of this Agreement written notice of the receiving control area, all transmission providers that British Columbia intends to use, and the last purchasing/selling entity prior to delivery in the receiving control area. Such notice shall be provided by the hour for submitting daily pre-schedules at least two working days prior to pre-schedule. British Columbia shall limit the number of such schedules to the amount of Canadian Entitlement capacity elected to be delivered at Points of Entitlement Delivery divided by 25 MW.

9. Miscellaneous Provisions. Miscellaneous Provisions. Miscellaneous Provisions. Miscellaneous Provisions.

- 9.1. All notices required under this Agreement shall be in writing and given by mail, facsimile, or in such other form as the Parties agree. Each party shall designate in writing a person for purpose of receiving notice within 30 days of the effective date. Such designation may be changed by subsequent notice. .1. All notices required under this Agreement shall be in writing and given by mail, facsimile, or in such other form as the Parties agree. Each party shall designate in writing a person for purpose of receiving notice within 30 days of the effective date. Such designation may be changed by subsequent notice..1. All notices required under this Agreement shall be in writing and given by mail, facsimile, or in such other form as the Parties agree. Each party shall designate in writing a person for purpose of receiving notice within 30 days of the effective date. Such designation may be changed by subsequent notice..1. All notices required under this Agreement shall be in writing and given by mail, facsimile, or in such other form as the Parties agree. Each party shall designate in writing a person for purpose of receiving notice within 30 days of the effective date. Such designation may be changed by subsequent notice.
- 9.2. This Agreement shall be governed by and construed in a manner consistent with the Treaty.
 .2. This Agreement shall be governed by and construed in a manner consistent with the Treaty..2. This Agreement shall be governed by and construed in a manner consistent with the Treaty..2. This Agreement shall be governed by and construed in a manner consistent with the Treaty.
- 9.3. The terms and conditions of this Agreement may be amended only by written agreement of the Parties; provided, however, that the Parties may agree to modifications of or deviations from such terms and conditions without written agreement if those modifications or deviations are for a duration of less than two weeks. Notwithstanding the foregoing, Section 9.2 may not be amended by the Parties. .3.The terms and conditions of this Agreement may be amended only by written agreement of the Parties; provided, however, that the Parties

- may agree to modifications of or deviations from such terms and conditions without written agreement if those modifications or deviations are for a duration of less than two weeks. Notwithstanding the foregoing, Section 9.2 may not be amended by the Parties..3. The terms and conditions of this Agreement may be amended only by written agreement of the Parties; provided, however, that the Parties may agree to modifications of or deviations from such terms and conditions without written agreement if those modifications or deviations are for a duration of less than two weeks. Notwithstanding the foregoing, Section 9.2 may not be amended by the Parties..3. The terms and conditions of this Agreement may be amended only by written agreement of the Parties; provided, however, that the Parties may agree to modifications of or deviations from such terms and conditions without written agreement if those modifications or deviations are for a duration of less than two weeks. Notwithstanding the foregoing, Section 9.2 may not be amended by the Parties.
- 9.4. Deliveries at a Point of Entitlement Delivery shall not be interrupted or curtailed except for reasons of uncontrollable force or maintenance and then only on the same basis as deliveries of firm power from the Federal Columbia River Power System to Pacific Northwest customers of Bonneville Power Administration not acting in its capacity as or on behalf of the U.S. Entity or any successor. .4. Deliveries at a Point of Entitlement Delivery shall not be interrupted or curtailed except for reasons of uncontrollable force or maintenance and then only on the same basis as deliveries of firm power from the Federal Columbia River Power System to Pacific Northwest customers of Bonneville Power Administration not acting in its capacity as or on behalf of the U.S. Entity or any successor..4. Deliveries at a Point of Entitlement Delivery shall not be interrupted or curtailed except for reasons of uncontrollable force or maintenance and then only on the same basis as deliveries of firm power from the Federal Columbia River Power System to Pacific Northwest customers of Bonneville Power Administration not acting in its capacity as or on behalf of the U.S. Entity or any successor..4. Deliveries at a Point of Entitlement Delivery shall not be interrupted or curtailed except for reasons of uncontrollable force or maintenance and then only on the same basis as deliveries of firm power from the Federal Columbia River Power System to Pacific Northwest customers of Bonneville Power Administration not acting in its capacity as or on behalf of the U.S. Entity or any successor.
- 9.5. If any provision of this Agreement is determined to be unenforceable, that provision shall be deemed severed from and shall not affect the enforceability of the remaining provisions.
- .5. If any provision of this Agreement is determined to be unenforceable, that provision shall be deemed severed from and shall not affect the enforceability of the remaining provisions..5. If any

provision of this Agreement is determined to be unenforceable, that provision shall be deemed severed from and shall not affect the enforceability of the remaining provisions..5. If any provision of this Agreement is determined to be unenforceable, that provision shall be deemed severed from and shall not affect the enforceability of the remaining provisions.10. **Termination of the Agreement.**

Termination of the Agreement. Termination of the Agreement. Termination of the Agreement

10.1. In addition to any other rights and remedies available to either Party, either Party may terminate this Agreement if: .1. In addition to any other rights and remedies available to either Party, either Party may terminate this Agreement if:.1. In addition to any other rights and remedies available to either Party, either Party may terminate this Agreement if:.1. In addition to any other rights and remedies available to either Party, either Party may terminate this Agreement if:

- (a) Performance of either Party under this Agreement is frustrated; or (a) Performance of either Party under this Agreement is frustrated; or(a) Performance of either Party under this Agreement is frustrated; or(a) Performance of either Party under this Agreement is frustrated; or
- (b) Either Party has breached this Agreement such that substantially the whole benefit from this Agreement is lost to the other Party. (b) Either Party has breached this Agreement such that substantially the whole benefit from this Agreement is lost to the other Party.(b) Either Party has breached this Agreement such that substantially the whole benefit from this Agreement is lost to the other Party.(b) Either Party has breached this Agreement such that substantially the whole benefit from this Agreement is lost to the other Party.

10.2. Frustration under this Agreement shall include, but is not limited to:.2. Frustration under this Agreement shall include, but is not limited to:.2. Frustration under this Agreement shall include, but is not limited to:

- (a) any final action by a court of competent jurisdiction, after all appeals have been finally determined or the time for appealing has expired, which invalidates or makes this Agreement unenforceable on the petition of a third party; (a) any final action by a court of competent jurisdiction, after all appeals have been finally determined or the time for appealing has expired, which invalidates or makes this Agreement unenforceable on the petition of a third party;(a) any final action by a court of competent jurisdiction, after all appeals have been finally determined or the time for appealing has expired, which invalidates or makes this Agreement unenforceable on the petition of a third

party;(a) any final action by a court of competent jurisdiction, after all appeals have been finally determined or the time for appealing has expired, which invalidates or makes this Agreement unenforceable on the petition of a third party;

(b) any action of the Canadian or United States Government which rescinds either Party's or its successor's authority to perform under this Agreement or a failure to provide a party authorized and able to perform under this Agreement. (b) any action of the Canadian or United States Government which rescinds either Party's or its successor's authority to perform under this Agreement or a failure to provide a party authorized and able to perform under this Agreement. (b) any action of the Canadian or United States Government which rescinds either Party's or its successor's authority to perform under this Agreement or a failure to provide a party authorized and able to perform under this Agreement. (b) any action of the Canadian or United States Government which rescinds either Party's or its successor's authority to perform under this Agreement or a failure to provide a party authorized and able to perform under this Agreement. (b) any action of the Canadian or United States Government which rescinds either Party's or its successor's authority to perform under this Agreement or a failure to provide a party authorized and able to perform under this Agreement.

IN WITNESS WHEREOF the Parties have caused this Agreement to be executed.

Executed for the Bonneville Power Administration, Acting on Behalf of the U.S. Entity, this 29th day of March, 1999,

By: /s/ Judith A. Johansen

Judith A. Johansen

Administrator and Chief Executive Officer

The Bonneville Power Administration

Executed for the Province of British Columbia this 29th day of March, 1999,

By: /s/ Michael Farnworth

Honourable Michael Farnworth

Minister of Employment and Investment

The Province of British Columbia

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Key: Begin with **Roman Numerals**: Treaty Sections

Begin with **A**: Annex A to Treaty

Begin with **B**: Annex B to Treaty

Begin with **BCMIN**: British Columbia Executive Council Minute, 7 August 1964

Begin with **CBC**: Canadian-British Columbia Agreement, 8 July 1963

Begin with **Det**: Determination of Disposition of Downstream Power Benefits, BPA & USACE, 16 September 1964

Begin with **EXO**: Executive Order 11177, L.B. Johnson, 16 September 1964

Begin with **N75**: Diplomatic Note 75, US Ambassador W.W. Butterworth to External Minister of Foreign Affairs/Secretary of State Paul Martin, 16 September 1964

Begin with **N140**: Diplomatic Note 140, Paul Martin to US Ambassador W.W. Butterworth, 16 September 1964

Begin with **P**: Protocol to Treaty

Begin with **PCMIN**: Canadian Privy Council Minute, 4 September 1964

Begin with **POP**: Principles and Operating Procedures, 1991

Begin with **Sale**: Attachment Relating to Terms of Sale, Dean Rusk to Paul Martin, 22 January 1964

Begin with **USP**: United States Proclamation of Ratification, September 16, 1964

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