



Department of Energy

Bonneville Power Administration
P.O. Box 3621
Portland, Oregon 97208-3621

POWER SERVICES

In reply refer to: PGP-5

Renata Kurschner
Director, Generation Resource Management
BC Hydro and Power Authority
6911 Southpoint Drive, E15
Burnaby, B.C., Canada V3N 4X8

Dear Ms. Kurschner:

This letter Agreement between our organizations confirms our commitment to the mutually agreeable storage and release of water, and deliveries of energy, during the period 16 October 2010 through 31 December 2011. For accounting purposes, this Agreement is assigned the Bonneville Power Administration contract number 11PB-20670.

2011 Provisional Storage/Draft Agreement (not Treaty) For the Period 16 October 2010 through 31 December 2011

The purpose of this Agreement between the Bonneville Power Administration (BPA) and the British Columbia Hydro and Power Authority (BC Hydro) (collectively "the Parties") is to provide operating flexibility through the shaping of Arrow discharge to obtain mutual power and nonpower benefits. This Agreement provides flexibility in the fall to shape flows for power and nonpower purposes, reduces the likelihood of spill at Mica resulting from unit outages during the spring and summer, allows for a shaping of flows for U.S. fisheries from spring to summer, and enhances summer reservoir levels at Arrow. It is the intent of the Parties that this Agreement will not cause undue operational hardship to either BPA or BC Hydro and the Parties will work together to ensure smooth flow operations to the extent possible in both the U.S. and Canada. All times listed in this Agreement are in Pacific Time (PT).

1. Term

The term of this Agreement is from 2400 hours 15 October 2010 through 2400 hours 31 December 2011. The Parties agree that the principles and procedures contained herein do not set a precedent concerning any current or future dispute over Treaty or Non-Treaty rights and obligations, nor do they set a precedent for power or nonpower purposes, objectives or target objectives and contents.

2. Changes to this Agreement

Changes may be made to the terms and conditions of this Agreement only by mutual consent of the Parties.

3. General Provisions

All water transactions under this Agreement will be accounted for in available space in Mica and/or Arrow. Water transaction volumes and accounting for the upcoming Saturday through Friday period will be agreed in advance and will be finalized on the same schedule as the Weekly Treaty Flow Agreement. Any limitations on water transactions declared by either Party pursuant to this Agreement shall be shared equally between the Parties.

No energy transactions will be associated with BPA water transactions under this Agreement. Energy associated with BC Hydro water transactions will be accounted in accordance with Section 7 of this Agreement. Except as noted in Section 5.a.10) no transactions under this Agreement shall impact accounts under the 1990 Non-Treaty Storage Agreement (1990 NTSA), including account balances and Mica Headloss calculations.

4. Fall Storage and Release

a. Fall Storage

- 1) The storage period shall be 2400 hours 15 October 2010 through 2400 hours 3 December 2010. Water stored under this Agreement shall be stored by mutual agreement of the Parties.
- 2) The Fall Storage volume shall be the difference between the weekly Arrow Treaty discharge as per the Weekly Treaty Flow Agreement and the weekly agreed upon actual Arrow discharge including any 1990 Non-Treaty Storage Agreement (NTSA) activities.
- 3) Each Party shall have rights to 50% of the weekly storage volumes for the purpose of storage and subsequent release under this agreement.

b. Fall Storage Release

- 1) The Fall Storage release period shall be 2400 hours 5 November 2010 through 2400 hours 25 March 2011.
- 2) The maximum release rate will be 24.47 hm³/day (10 ksf/day) each for BPA and BC Hydro, except for the period 6 November 2010 through 26 November 2010, when the total release rate will not exceed Arrow Lakes Hydro turbine capability (expected to be about 1104 m³/s (39 kcfs)).

- 3) BPA may limit releases in November 2010 and December 2010 for U.S. nonpower operating requirements.
- 4) BC Hydro may limit releases in December 2010 and January 2011 for Canadian nonpower operating requirements.

5. Provisional Draft and Return

a. Provisional Draft

- 1) Available Provisional Draft volume will be 1233 hm³ (504 ksf) to be equally shared by BPA and BC Hydro.
- 2) The Provisional Draft period shall be 2400 hours 26 November 2010 through 2400 hours 25 March 2011 and 2400 hours 1 July 2011 through 2400 hours 29 July 2011. Additional release periods will be by mutual agreement.
- 3) The maximum Provisional Draft rate will be 24.47 hm³/day (10 ksf/day) each for BPA and BC Hydro for all periods except 4 through 31 December 2010, which will have a maximum rate of 12.23 hm³/day (5 ksf/day) each. In the event either party elects to exercise concurrent Provisional Draft with Fall Storage release under section 4.b, the combined maximum release rate will be 24.47 hm³/day (10 ksf/day) each for all periods.
- 4) BPA may limit Provisional Draft in November 2010 and December 2010, for U.S. nonpower operating requirements.
- 5) BC Hydro may limit Provisional Draft in December 2010 and January 2011 for Canadian nonpower operating requirements.
- 6) For Provisional Draft in July 2011, the Parties agree to coordinate to make best efforts to avoid adverse effects from Provisional Draft on total dissolved gas levels in the U.S. system in full recognition of, and in deference to, BC Hydro's need for flexibility in July 2011 to release Provisional Draft water.
- 7) The Provisional Draft volume shall be the difference between the weekly Arrow Treaty discharge as per the Weekly Treaty Flow Agreement and the weekly agreed upon actual Arrow discharge including any NTSA activities and Fall Storage release under Section 4.b, if any.
- 8) BPA may elect to forego its share of the Provisional Draft by giving notice to that effect to BC Hydro not later than 2400 hours 26 November 2010. BC Hydro's share of the provisional draft will then increase to include BPA's unused portion and will be treated under the BC Hydro provisions of this agreement.

- 9) BPA Provisional Draft in February 2011 and March 2011 may be concurrently stored as Flow Augmentation under a Nonpower Uses Agreement, if one is in place.
- 10) Either Party may elect to concurrently store water released under this Agreement into remaining space in their 1990 Non-Treaty Storage Agreement account, to the extent space is available.

b. Provisional Draft Return

- 1) The Provisional Draft Return period shall be 2400 hours 2 September 2011 through 2400 hours 25 November 2011. If hydraulic conditions described in Sections 5.b.3) and 5.b.4) prevent full return of Provisional Draft by the end of the Provisional Draft Return period, the Parties will negotiate to extend the Provisional Draft Return period, or develop another mutually-agreeable solution.
- 2) The maximum Provisional Draft Return rate for BPA and BC Hydro will be 19.58 hm³/day (8 ksf/day) each.
- 3) Storage will be limited by an Arrow minimum flow of 424.7 m³/s (15 kcfs).
- 4) BPA may limit Provisional Draft Return in September 2011 through November 2011 for nonpower requirements.

6. Spring/Summer Flow Shaping

a. Spring Storage

- 1) The Spring Storage period shall be 2400 hours 6 May 2011 through 2400 hours 22 July 2011.
- 2) Water stored shall be by mutual agreement of the Parties.
- 3) The available Spring Storage volume shall be the difference between the weekly Arrow Treaty discharge as per the Weekly Treaty Flow Agreement and the weekly agreed upon actual Arrow discharge including any 1990 NTSA activities and Provisional Draft under Sections 5.a and 5.b, if any. Available Spring Storage shall be controlled in equal shares by the Parties.
- 4) All water stored under this Section 6.a will be released in accordance with Section 6.b.

b. Summer Release

- 1) The Summer Release period shall be 2400 hours 2 July 2011 through 2400 hours 2 September 2011.

2) The maximum release rate will be 24.47 hm³/day (10 ksf/day) each.

7. Energy Accounting

- a. Energy associated with all BC Hydro water transactions under this Agreement (Fall Storage and Release, Provisional Draft and Return, and Spring/Summer Flow Shaping) will be tracked in an Energy Value Account, and calculated based upon the daily effective incremental (reduced by spill) U.S. Federal Columbia River mainstem generation discharge factor (h/k). Water transactions that reduce Arrow outflows will be recorded as a negative value and those that increase Arrow outflows as a positive value.
- b. The Energy Value associated with BC Hydro water transactions will be calculated as the product of the energy in MWh determined in accordance with Section 7.a and flat prices calculated from the Dow Jones Mid-Columbia Firm Daily Peak and Off-Peak Indexes for Monday through Saturday and the Sunday/NERC Holiday 24-Hour Firm Index for Sundays and NERC holidays.
- c. For purposes of determining energy value in Section 7.b., prices will be limited to a minimum of \$0.0 for all periods including both Peak and Off-Peak periods when using the Dow Jones Mid-Columbia Firm Daily Peak and Off-Peak Indexes to determine a flat price.
- d. Accounting under Sections 7.a and 7.b will assume a 1-day lag between water transactions and the resulting change in generation on the U.S. Federal Columbia River Mainstem hydrosystem. The energy and value calculations will therefore use both federal h/k and energy prices lagged by one day from the water transaction.
- e. There will be no energy deliveries concurrent with BC Hydro water transactions.

8. Energy Deliveries

- a. Following completion of BC Hydro water transactions under this Agreement, the Energy Value balance in the Energy Account will be verified by both Parties. A positive balance reflects energy owed to BC Hydro, a negative balance indicates energy owed to BPA. It is intended that energy owed be delivered at the maximum rate specified in Section 8.d until the obligation is fulfilled.
- b. Energy deliveries will commence the next Treaty week after the Energy Value balance has been verified by the Parties.
- c. Energy deliveries will be shaped flat for the subsequent Sunday through Saturday and shall be agreed by 1400 hours on Thursday, or the day prior to the preschedule day, if earlier.

- d. The weekly energy schedule will be determined using the estimated MWh owed calculated from the Energy Value Account balance and the expected weekly average price. Schedules will be the lesser of 240 MW flat, or a flat schedule of the estimated remaining MWh owed.
- e. The value of energy delivered will be calculated after-the-fact using the index price in accordance with Sections 7.b and 7.c and the Energy Value account updated accordingly.
- f. In the event of generation capacity limitations on the U.S. Federal Columbia River Power System during periods when the Canadian Columbia River Treaty Entity is exercising concurrent Arrow provisional draft rights under the Libby Coordination Agreement (LCA), LCA provisional draft rights will take precedence and energy deliveries under this Agreement will be shaped in a mutually-agreed fashion so as to maintain the value of the energy delivered under this agreement.
- g. The point of delivery of energy shall be the U.S.-British Columbia border. Each party will be responsible for transmission scheduling and costs on its side of the U.S.-British Columbia border related to energy delivered under this agreement. Energy transactions will be limited to transmission capacity available on a preschedule basis.
- h. In the event of transmission or generation capacity limitation(s) on either Party's system which curtail deliveries of energy under this Agreement, curtailed deliveries shall be rescheduled for delivery within seven days after clearance of the limitations, unless otherwise agreed.

9. Other Conditions

- a. BPA and BC Hydro water transactions under Sections 4.b, 5.a., 5.b, and 6.b of this Agreement shall be limited equally so as not to cause actual or forecast discharges to exceed the daily flow rate change of 424.8 m³/s (15 kcfs) at Arrow or exceed 4672.3 m³/s (165 kcfs) at the water level gauge at Birchbank on the Columbia River. Flow changes that exceed 424.8 m³/s (15 kcfs), will be ramped at the BC Hydro maximum ramp rate requirement of 424.8 m³/s/day (15 kcfs/day). At BPA's discretion, ramping will either commence immediately prior to the start of the Treaty week, or may be delayed to the completion of the Treaty week, preserving the agreed volume of water.
- b. Mica/Arrow flexibility shall not be constrained by this Agreement. At any time during the term of this Agreement, BPA and BC Hydro shall equally share in any forced release due to limited physical storage space at either Mica or Arrow for flood control at either Mica or Arrow, or compromised Mica flexibility which forces such release.
- c. BPA hereby agrees to indemnify and hold BC Hydro harmless from any claims and costs (including reasonable legal fees and disbursements), including any judgments or settlements resulting thereof, that may be asserted against BC Hydro related to the Wells,

Rocky Reach, Rock Island, Wanapum, and Priest Rapids projects (commonly referred to as the Mid-Columbia Projects) arising from the storage and release of water, and deliveries of energy, during the period 16 October 2010 through 25 November 2011 conducted pursuant to this Agreement.

- d. Nothing in this Agreement shall be deemed to establish any right or provide a basis for any action, either legal or equitable, by any person or class of persons against the United States or Canada, their departments, agencies, instrumentalities or entities, or their officers or employees, challenging a government action or a failure to act.

10. Force Majeure

- a. If either Party is prevented or delayed in performing any obligation under this Agreement by any cause the specific or particular occurrence of which it cannot reasonably anticipate and which is beyond its reasonable control, performance by that Party of such obligation shall be excused to the extent that it is so prevented or delayed until such cause has been removed or overcome. To the extent that such causes are beyond the reasonable control of such Party, those causes shall include, without limiting the generality of the foregoing, flood, earthquake, storm, lightning, fire, epidemic, war, riot, civil disturbance, labor disturbance, sabotage, and the act or failure to act by a court, administrative authority or other lawful authority; but such causes shall not include lack of financial means.
- b. A Party excused under this Section from performance of any obligation, or reasonably anticipating that it will be so excused, shall promptly give notice to that effect to the other Party and shall make all reasonable efforts to remove or overcome the cause of the prevention or delay as soon as is practicable.

11. Charges

Unless provided otherwise under this Agreement, no storage fees, charges, tolls or assessments for transactions under this Agreement will be charged by either Party to the other.

If the above terms and conditions are acceptable to BC Hydro, please indicate your approval by signing the three (3) originals of this Agreement and returning two (2) of them to BPA. The remaining original is for your files.

Sincerely,



Stephen R. Oliver
Vice President, Generation Asset Management

ACCEPTED:

BC HYDRO AND POWER AUTHORITY

By



Title

DIRECTOR, GENERATION RESOURCE MANAGEMENT

Date

29 OCT 2010