BILLING FORMULA FOR CUSTOMERS THAT SELL ELECTRICITY TO BC HYDRO PURSUANT TO AN ELECTRICITY PURCHASE AGREEMENT WITH A CONTRACTED GBL

1.0 OVERVIEW AND APPLICABILITY

This tariff supplement sets out the methodology that BC Hydro will apply in developing a billing formula for the Service Agreement between BC Hydro and a Transmission Service Rate (**TSR**) or General Service Rate (**GSR**) customer if BC Hydro and the customer have entered into an Electricity Purchase Agreement (**EPA**) that has a Contracted Generator Baseline (**Contracted GBL**).

Even though the EPA is for the sale of Incremental or New Electricity to BC Hydro, some or all of the self-generated electricity is consumed by the customer's plant load and is not physically transferred to the BC Hydro system. The EPA deems the Incremental or New Electricity produced by the customer in accordance with the EPA to be delivered to BC Hydro, but in most cases the transaction does not reflect the actual physical flows of electricity. The self-generation in fact reduces the customer's electricity requirements from the BC Hydro system. To ensure the customer does not receive a double benefit from the compensation under the EPA and from the reduced physical take of electricity from BC Hydro as measured by the meter at the Point of Delivery, the customer will be deemed to purchase the amount of electricity that they would have purchased in the absence of the deemed delivery of self-generation under the EPA.

If BC Hydro and a customer have entered into a Load Displacement Agreement (**LDA**), the self-generated electricity under the LDA reduces the customer's electricity requirements from the BC Hydro system and is not deemed to be delivered to

BC Hydro. For the LDA customer, electricity purchases are determined just like for a customer that does not have an LDA or EPA, and there is no need for a billing formula.

The billing formula for the EPA customer will form part of and be attached to the Service Agreement, and will be used to determine the quantities of electricity the customer is deemed to purchase from BC Hydro for billing purposes and the quantities of electricity the customer is deemed to deliver to BC Hydro for EPA purposes. The billing formula will apply for the period of time from the date the EPA Self-Generation Facilities achieve commercial operation until the EPA terminates or expires.

The billing formula for the Service Agreement will reflect the unique contractual, self-generation, load, and metering characteristics at the customer's site. Examples of customer specific characteristics, which may impact the billing formula include:

- the number and configuration of generators on a customer site,
- the configuration of the customer's plant load,
- the characteristics and configuration of metering,
- the contractual provisions of the EPA(s), and
- the particular quantities and characteristics of electricity (e.g., kilovolt-amperes (kV.A), kilowatt-hours (kW.h), kilowatts (kW)) that need to be determined for the purpose of billing under the applicable rate schedule(s).

Although some EPA information is included as part of the billing formula, the billing formula will not include all of the calculations and reconciliations which may be required under each EPA in relation to verifying a customer's annual, seasonal or monthly electricity deliveries under such agreement (e.g., authorized plant outages, force majeure and other adjustments in accordance with the EPA).

2.0 DEFINITIONS

The following terms used in this tariff supplement have the following meanings respectively:

"Billing Period" has the meaning given to it in the Service Agreement or rate schedule, as applicable.

"Contracted GBL" means the customer's annual, seasonal, monthly or hourly contractual commitment for self-supply from a Contracted Generating Unit that must be satisfied to obtain financial payments pursuant to the EPA in relation to self-generation output in excess of the Contracted GBL. A Contracted GBL can represent a commitment for self-supply from a single generating unit or multiple generating units.

"Contracted Generating Unit" means a Self-Generation Facility that is used to make self-generation output in accordance with the EPA.

"Electricity Purchase Agreement" or "EPA" means the agreement between BC Hydro and the customer establishing the terms and conditions under which BC Hydro purchases self-generation output produced at the customer's Contracted Generating Unit.

"Generation" means the metered output of Self-Generation Facilities.

"Hourly GBL" means either (i) the hourly Contracted GBL as provided in the EPA if the EPA has an hourly GBL commitment, or (ii) the average hourly GBL as calculated for an EPA with seasonal or monthly Contracted GBL commitments which will based on the seasonal or monthly Contracted GBL of the EPA divided by the number of hours in the season or month, as applicable.

"Incremental or New Electricity" means additional electricity generated at (i) existing idle or underutilized Self-Generation Facilities, (ii) upgrades to existing Self-Generation Facilities, and (iii) a new generator installed at a site with existing Self-Generation Facilities.

"Load Displacement Agreement" or "LDA" means an agreement between BC Hydro and a customer establishing the terms and conditions under which BC Hydro provides the customer with a financial incentive to make self-generation output for self-supply from a Contracted Generating Unit that is deemed to be energy savings attributable to the load displacement project, and that reduces an equivalent portion of the customer's energy purchases.

"Mill Load" means the amount of electricity required to meet the actual mill load and is calculated as Generation less Net POI Energy.

"Net POI Energy" means the energy measured at the Point of Delivery.

"Point of Delivery" has the meaning given to it in the Service Agreement.

"Service Agreement" means the Electricity Supply Agreement or the Electric Service Agreement between BC Hydro and the customer, as applicable.

"Self-Generation Facilities" means electrical power generation facilities that are installed at the same site as the customer's plant, on the customer's side of the Point of Delivery, and are used to supply a portion of the customer's plant load.

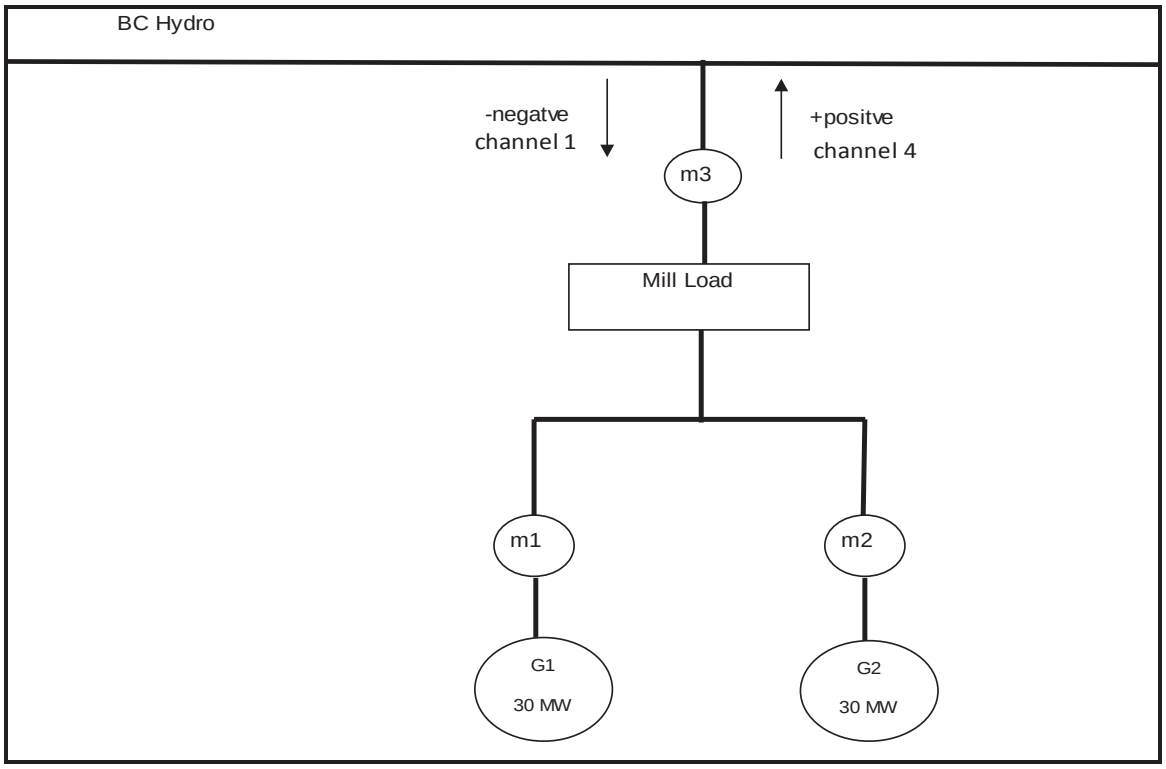
3.0 SAMPLE BILLING FORMULA CALCULATION

The following section provides an illustrative example of a billing formula as between a hypothetical customer, ABC Pulp & Paper Company (**ABC Pulp**), and BC Hydro. For the purpose of this sample billing formula, ABC Pulp is a TSR customer receiving service under an Electricity Supply Agreement (**ESA**) and RS 1823. ABC Pulp is a customer site with two 30 MW generators and one point of interconnection to the BC Hydro system. In addition, ABC Pulp has an EPA with seasonal Contracted GBL commitments.

Illustrative Example for Method of Calculation (Metering Installation at Site):

BC Hydro has provided a bi-directional meter (m3) at the Point of Delivery, as well as two (2) rental meters (m1 and m2) that are installed at the ABC Pulp mill site. These meters can be identified on e.metering with the following numbers and corresponding channels for billing purposes:

12345	POI Meter (m3)	Channel 1
		Channel 4
12346	Generator 1 (m1)	Channel 4
12347	Generator 2 (m2)	Channel 4



For kWh billing (Energy): Data is calculated on an hourly basis for each hour in a Billing Period. Energy purchased by the customer from BC Hydro (kW.h billing) is shown in the **BOLD** column (Line 7) in Table 1 below.

1. Generation = m1 + m2

2. Net POI Energy = m3(channel 4) – m3(channel 1)

3. Mill Load = Generation – Net POI Energy

4. Hourly GBL = Applicable Seasonal GBL (refer to Table 2 below)/Hours in Season

5. Energy delivered to BC Hydro under EPA[1] = greater of:
   (1) Generation – Hourly GBL, and (2) zero

6. Self-generation to meet Mill Load = lesser of:
   (1) Generation, and (2) Hourly GBL

7. Energy purchased from BC Hydro = greater of:
   (1) Mill Load – Self-generation to meet Mill Load, and (2) zero

8. Surplus energy to BC Hydro[2] = greater of:
   (1) Self-generation to meet Mill Load – Mill Load, and (2) zero

For kV.A billing (Demand): For demand billing (kV.A) to ABC Pulp for each Billing Period, BC Hydro will use the same billing formula as is used for the kW.h billing as provided above, except that the unit of measure will be kV.A instead of kW.h. For the purpose of the demand calculation for TSR customers an assumed unity power factor of 100% is used (i.e., kV.A = kW).

The customer hourly demand is also shown in the **BOLD** column in Table 1 (Line 7) below. In determining the highest kV.A demand for a Billing Period, it is assumed that the energy consumption for each consecutive 30-minute interval measured within each hour is the same. The billing demand for billing purposes will be determined in accordance with the applicable rate schedule.

[1] The Line 5 calculation does not affect a customer's energy purchases from BC Hydro and is only used for EPA purposes.

[2] The Line 8 calculation is Surplus Energy to BC Hydro (i.e., physical deliveries to the BC Hydro system). This calculation does not affect a customer's energy purchases from BC Hydro and is only used for EPA purposes.

Table 1 Illustrative Hourly Calculations for ABC Pulp

	Line 3	Line 1	Line 2	Line 4	EPA	Line 5	Line 6	Line 7	Line 8
Hour	Mill Load	Generation (m1+m2)	Net POI Energy (m3)	Hourly GBL	Avg Hourly Firm Energy (FE)	Energy Delivered to BCH under EPA	Self-gen to meet Mill Load	Energy Purchased from BCH	Surplus Energy to BCH
1	40.00	50.00	10.00	26.29	18.46	23.71	26.29	13.71	0.00
2	40.00	50.00	10.00	26.29	18.46	23.71	26.29	13.71	0.00
3	42.00	50.00	8.00	26.29	18.46	23.71	26.29	15.71	0.00
4	47.00	55.00	8.00	26.29	18.46	28.71	26.29	20.71	0.00
5	47.00	55.00	8.00	26.29	18.46	28.71	26.29	20.71	0.00
6	47.00	55.00	8.00	26.29	18.46	28.71	26.29	20.71	0.00
7	47.00	55.00	8.00	26.29	18.46	28.71	26.29	20.71	0.00
8	30.00	40.00	10.00	26.29	18.46	13.71	26.29	3.71	0.00
9	15.00	20.00	5.00	26.29	18.46	0.00	20.00	0.00	5.00
10	30.00	0.00	-30.00	0.00	0.00	0.00	0.00	30.00	0.00
Total	385.00	430.00	45.00	236.59	166.14	199.70	230.30	159.70	5.00

* Blue values are metered amounts (Line 1 and Line 2).

** Columns shaded in grey are only used for EPA purposes.

Contracted GBL commitments are stated in the provisions of the EPA, and Hourly GBL values are generally subject to adjustment as a result of an Authorized Planned Outage (**APO**) or such other adjustments as permitted under the EPA (e.g., force majeure).

Illustrative Hourly GBL Calculation for ABC Pulp:

ABC Pulp's EPA has seasonal Contracted GBL commitments, and therefore an Hourly GBL is calculated for each season by dividing the seasonal Contracted GBL by the hours in the season, as shown in Table 2 below. The Contracted GBL commitments are subject to amendment or adjustment as provided in accordance with the terms of the EPA.

Table 2 Illustrative Hourly GBL Calculation for ABC Pulp

Season	Hours	G1 Seasonal GBL (MWh)	G2 Seasonal GBL (MWh)	Total Seasonal GBL (MWh)	G1 Avg Hourly GBL (MWh/h)	G2 Avg Hourly GBL (MWh/h)	Total Avg Hourly GBL (MWh/h)
Season 1 (February 1 to April 30)	2136	56150	0	56150	26.29	0.00	26.29
Season 2 (May 1 to July 31)	2208	53285	3956	57241	24.13	1.79	25.92
Season 3 (August 1 to October 31)	2208	57984	0	57984	26.26	0.00	26.26
Season 4 November 1 to January 31)	2208	60529	0	60529	27.41	0.00	27.41

The above table reflects a non-leap year. Number of hours in season 1 will be 2160 for a leap year.

4.0 PRO FORMA BILLING FORMULA

[For a TSR customer, choose Option 1; and for a GSR customer, choose Option 2]

[Option 1 for TSR customer]

This document sets out the method which BC Hydro will use to determine the energy (kW.h) that it will deem to have received from the *[insert customer name]* in accordance with the EPA, dated [*insert date of agreement*]. This document also sets out the billing method that BC Hydro will use to determine the quantities of energy (kW.h) and demand (kV.A) *[insert customer name]* purchases from BC Hydro under the Electricity Supply Agreement (**ESA**), dated *[insert date of agreement]*, and BC Hydro's tariff, currently TSR RS *[insert applicable rate schedule, i.e., RS 1823 or RS 1827]*.

Should BC Hydro's RS *[insert applicable rate schedule, i.e., RS 1823 or RS 1827]* be changed or modified during the term of the EPA, this billing formula may be modified (as needed) to reflect these changes and to coordinate with the requirements of the EPA. This billing formula will be attached to the *[insert customer name]* ESA as an addendum

and will remain in effect as long as the EPA between BC Hydro and *[insert customer name]* is in effect.

[Option 2 for GSR customer]

This document sets out the method which BC Hydro will use to determine the energy (kW.h) that it will deem to have received from the *[insert customer name]* in accordance with the EPA, dated *[insert date of agreement]*. This document also sets out the billing method that BC Hydro will use to determine the quantities energy (kW.h) and demand (kW) *[insert customer name]* purchases from BC Hydro under the Electric Service Agreement, dated *[insert date of agreement]*, and BC Hydro's Electric Tariff and GSR RS *[insert applicable rate schedule, i.e., RS 13XX, RS 15XX or RS 16XX]*.

Should BC Hydro's Electric Tariff or RS *[insert applicable rate schedule, i.e., RS 13XX, RS 15XX or RS 16XX]* be changed or modified during the term of the EPA, this billing formula may be modified (as needed) to reflect these changes and to coordinate with the requirements of the EPA. This billing formula will be attached to the *[insert customer name]* Electric Service Agreement as an addendum and will remain in effect as long as the EPA between BC Hydro and *[insert customer name]* is in effect.

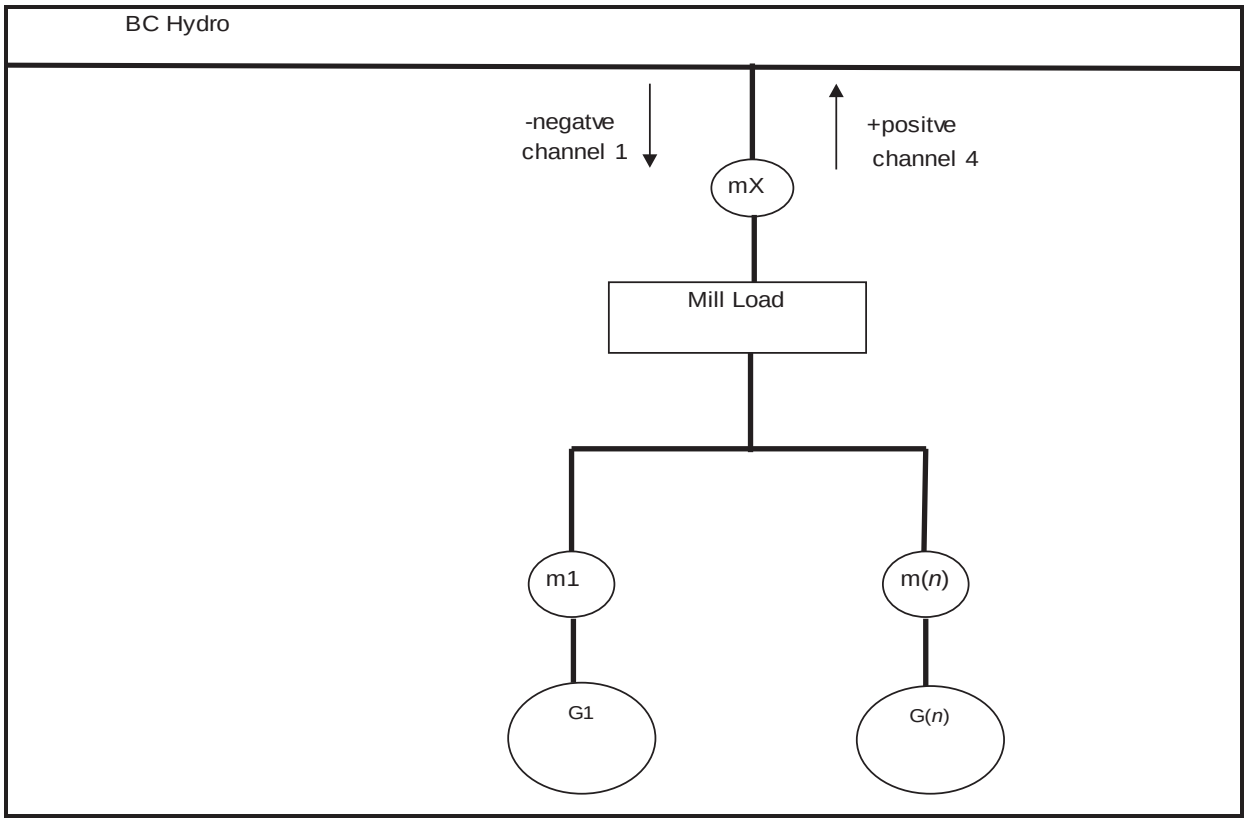
Method of Calculation (Metering Installation at Site)

[Insert general description of the number and type of meters on the customer site and a brief description of where meters are located. The billing formula will be customer specific to reflect the unique contractual, self-generation, load, and metering characteristics at each customer site.]

These meters can be identified on e.metering with the following numbers and corresponding channels for billing purposes:

[For metering description and one-line schematic, modify accordingly to reflect the specifics of the customer site.]

[insert meter number]	POI Meter (mX)	Channel 1
		Channel 4
[insert meter number]	Generator 1 (m1)	Channel 4
[insert meter number]	Generator n (m(*n*))	Channel 4



For kW.h billing (Energy): Data is calculated on an hourly basis for each hour in a Billing Period. Energy purchased by the customer from BC Hydro (kW.h) is shown in the **BOLD** column (Line 7) in Table 1 below.

[For billing formula below, modify accordingly to reflect the specifics of the customer site. Additional line items may be required for more complex metering configurations.]

1. Generation = *[insert sum of n meters for Self Generation Facilities (e.g., m1+m2)]*

2. Net POI Energy mX = mX(channel 4) – mX(channel 1)

3. Mill Load = Generation – Net POI Energy

4. Hourly GBL= *[insert how applicable Hourly GBL is determined]*

5. Energy delivered to BC Hydro under EPA[3] = greater of:
   (1) Generation – Hourly GBL, and (2) zero

6. Self-generation to meet Mill Load = lesser of:
   (1) Generation, and (2) Hourly GBL

7. Energy purchased from BC Hydro = greater of:
   (1) Mill Load – Self-generation to meet Mill Load, and (2) zero

8. Surplus energy to BC Hydro[4] = greater of:
   (1) Self-generation to meet Mill Load – Mill Load, and (2) zero

[3] The Line 5 calculation does not affect a customer's energy purchases from BC Hydro and is only used for EPA purposes.

[4] The Line 8 calculation is Surplus Energy to BC Hydro (i.e., physical deliveries to the BC Hydro system). This calculation does not affect a customer's energy purchases from BC Hydro and is only used for EPA purposes.

For [insert "kV.A" for a TSR customer, and insert "kW" for a GSR customer] billing (Demand):

For demand billing *([insert "kV.A" for a TSR customer and insert "kW" for a GSR customer]*) to *[insert customer name]* for each Billing Period, BC Hydro will use the same billing formula as is used for the kW.h billing as provided above, except that the unit of measure will be *[insert "kV.A" for TSR customers and insert "kW" for GSR customers]* instead of kW.h.

[Insert the following sentence for a TSR customer.]

For the purpose of the demand calculation for the customer an assumed unity power factor of 100% is used (i.e., kV.A = kW).

The customer hourly demand *([insert "kV.A" for a TSR customer and insert "kW" for a GSR customer]*) is also shown in the **BOLD** column in Table 1 (Line 7) below. In determining the highest *[insert "kV.A" for a TSR customer and insert "kW" for a GSR customer]* demand for a Billing Period, it is assumed that the energy consumption for each consecutive *[insert applicable minute interval, which is currently 30]* minute interval measured within each hour is the same. The billing demand for billing purposes will be determined in accordance with the applicable rate schedule.

Illustrative Hourly Calculations (Table 1):

[Insert illustrative hourly calculations to reflect the billing formula for the customer site. The table below may need to be modified to appropriately reflect the billing formula used for the customer site.]

	Line 3	Line 1	Line 2	Line 4	EPA	Line 5	Line 6	Line 7	Line 8
Hour	Mill Load	Generation (sum of *n* meters)	Net POI Energy (mX)	Hourly GBL	Avg Hourly Firm Energy (FE)	Energy Delivered to BCH under EPA	Self-gen to meet Mill Load	Energy Purchased from BCH	Surplus Energy to BCH
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
Total									

* Blue values are metered amounts (Line 1 and Line 2).

** Columns shaded in grey are only used for EPA purposes.

Contracted GBL commitments are stated in the terms of the EPA, and Hourly GBL values are generally subject to adjustment as a result of an Authorized Planned Outage (**APO**) or such other adjustments as permitted under the EPA (e.g., force majeure).

Hourly GBL Calculation (Table 2):

[Insert brief description of the Contracted GBL commitments (seasonal, monthly or hourly) provided in the terms of the EPA.] The Contracted GBL commitments are subject to amendment or adjustment as provided in accordance with the terms of the EPA.

[If the EPA Contracted GBL commitments are monthly or seasonal, insert a table illustrating the calculation of the Hourly GBL for each season or month. For a monthly Contracted GBL profile, the table will include for each month: the number of days in the

month, the monthly Contracted GBL and the calculated average Hourly GBL. For a seasonal Contracted GBL profile, the table will include for each season: the number of hours in the season, the seasonal Contracted GBL and the calculated average Hourly GBL. For a customer site with multiple generating units, the average Hourly GBL will be calculated for each generating unit.]

[For a TSR customer, insert the following in relation to standby power.]

Standby Power: Should *[insert customer name]* elect to purchase standby power (RS 1880) under the ESA it can do so in accordance with the applicable tariff, as follows.

- The EPA provides for an adjustment to the firm energy delivery obligation and the Contracted GBL when a generator in *[insert customer name]*'s facility has an APO or such other generation reduction as permitted under the EPA. This is to recognize the reduced generation output from the Self-Generation Facilities associated with the Contracted Generating Unit(s) that is(are) not operating.
- Despite the relief provided for the Contracted GBL under the EPA, the customer's mill operations may not have changed and additional energy may need to be purchased to meet the Mill Load when there is an APO or such other generation reduction as permitted under the EPA.
- In such a scenario, the Hourly GBL will be adjusted and the customer may purchase standby power, in accordance with the applicable tariff, while at the same time selling energy to BC Hydro under the EPA. For greater certainty, as provided in RS 1880 special condition 4, electricity taken as standby power shall not displace electricity that would normally be generated by the customer for the purpose of re-sale, including EPA sales to BC Hydro.

Offset Energy as a Result of the EPA: Energy produced by *[insert customer name]* for which *[insert customer name]* is not entitled to financial payment from BC Hydro under the EPA, is customer-funded energy which may be used, as permitted by the EPA, to offset an equivalent portion of energy purchases.

Please indicate your acceptance of the method by which BC Hydro will determine the energy and demand for which *[insert customer name]* will be billed under the*[insert "ESA" for a TSR customer and "Electric Service Agreement" for a GSR customer]*.

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY	[INSERT CUSTOMER NAME]
Per:	Per:
Signature:	Signature:
Name	Name
Position	Position