

## APPENDIX 8

### VANCOUVER ISLAND - CALL FOR TENDERS

#### EPA PRICING STRUCTURE

(Revised: 13 January 2004)

Certain words and phrases used in this appendix are defined in Schedule 1 and 2 of this appendix

#### Determination Of Capacity For Payment And Dispatch

##### Commercial Operation Date ("COD")

To determine whether COD has occurred, a performance test or a series of performance tests will be conducted on or prior to Guaranteed COD (May 1, 2007). During the test, the Seller must demonstrate that the Seller's Plant can generate at a rate of not less than 95% of the Bid Capacity for a continuous period of 72 hours. The result of the test will be designated as the Nominal Capacity at COD ("NC<sub>COD</sub>"). If the result is less than 95% of the Bid Capacity but over 80% of Bid Capacity, Provisional COD ("PCOD") can be declared at the option of the Seller. If the Seller chooses to declare Provisional COD, a Letter of Credit (LC) for the amount of:

$$\text{Capacity Shortfall Security} \times ((95\% \times \text{Bid Capacity}) - \text{NC}_{\text{PCOD}})$$

will be required from the Seller. Seller may request performance tests before November 1, 2007 to demonstrate and set NC<sub>PCOD</sub> to a higher level and declare COD. The highest demonstrated capacity prior to November 1, 2007 (limited to 105% of Bid Capacity) can be designated as the NC<sub>COD</sub> for the remaining term of the EPA. If the Seller can not reset NC<sub>PCOD</sub> to at least 95% of the Bid Capacity during the period between Provisional COD and COD, the LC will be drawn for an amount that is equal to:

$$\text{Capacity Shortfall Security} \times ((95\% \times \text{Bid Capacity}) - \text{NC}_{\text{COD}})$$

If NC<sub>COD</sub> is established above 95% of Bid Capacity, the LC will be returned to the Seller.

##### Capacity Degradation

Nominal Capacity ("NC") will decline over time at an annual rate expressed in MW equal to the Capacity Degradation Factor  $\times$  NC<sub>COD</sub> / number of years in the Term of the EPA after COD. The Seller is obligated to make capacity available within plus/minus 5% of the NC calculated for any given period.

##### Performance Tests

After the declaration of COD or Provisional COD, regular performance tests on a quarterly basis will be conducted to determine the levels of Demonstrated Capacity ("DC") which is the basis for payment, dispatch planning and availability reporting for that quarter.

If DC is less than 95% of NC for two consecutive quarterly performance tests, a one time non-refundable LD will be payable and NC will be derated to the higher of the two quarterly performance tests. Seller will be obligated to pay LDs for any shortfall that is equal to:

LD Factor x ((95% x NC prior to derate) – derated NC)

LD Factor is the \$/MW amount commences at \$80,000/MW (\$120,000/MW for gas-fired tolling plants) and declines at 5 year intervals over the Term of the EPA.

If NC is derated, the Seller has the right to cure the deficiency via the quarterly performance tests within the 6 month period following the second performance test. Based on the results of the performance tests, NC may be reset at the new level but not exceeding the NC before the immediately preceding derate.

Capacity Weather Adjustments

The NC curve which is a function of the Bid Capacity and Capacity Degradation Factor represents a capacity profile based on average ambient conditions (“AAC”). In order to account for the deviations in capacity due to different weather conditions, capacity will be adjusted for different temperature and humidity levels using the Capacity Conversion Table submitted by the Seller.

The following is a Capacity Conversion Table for illustration purposes:

Temperature (in degree Celsius)

Humidity	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40
100%	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13
90%	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13
80%	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13
70%	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13
60%	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	E11	E12	E13
50%	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13
40%	G1	G2	G3	G4	G5	G6	G7	G8	G9	G10	G11	G12	G13
30%	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11	H12	H13
20%	I1	I2	I3	I4	I5	I6	I7	I8	I9	I10	I11	I12	I13
10%	J1	J2	J3	J4	J5	J6	J7	J8	J9	J10	J11	J12	J13

Each Capacity Conversion Factor represents the deemed difference (expressed as %) between capacity under a particular weather condition and capacity under average ambient condition supplied by the Seller.

10°C temperature and 50% humidity in this example is the average ambient condition; therefore the Capacity Conversion Factor (10°C, 50%) or F7 has a value of 0%. The Table will be applied in the following manner:

AAC Equivalent Capacity = Capacity based on Actual Weather x (1+ Capacity Conversion Factor)

- If the weather condition during any performance test is not at AAC, the result of the performance test will be converted to an AAC Equivalent Capacity using the applicable Capacity Conversion Factor. The AAC Equivalent Capacity will then be designated as the NC for performance test(s) before COD and Demonstrated Capacity for performance tests after COD.

For example, if a performance test after COD is conducted at 0°C and 50% humidity and generates 100 MW, the AAC Equivalent Capacity = 100 MW x (1+F5) and will be designated as the Demonstrated Capacity for the quarter. If F5 is +10%, the AAC Equivalent Capacity would be 110 MW.

- For dispatch planning (i.e. determining the level of Scheduled Energy) purposes on an hourly basis, Adjusted Demonstrated Capacity (“ADC”) based on the actual weather conditions will be used.

For example, if Demonstrated Capacity (based on AAC) is 100 MW and weather condition for the hour in question is 15°C and 40% humidity, the Scheduled Energy for that hour would be  $ADC = 100 \text{ MW} / (1 + G8)$  multiply by one hour. If G8 is -1%, the ADC equivalent capacity would be 101 MW.

Conversion Factors will be interpolated or extrapolated (first by temperature, followed by humidity) for weather conditions that are not at grid values.

## **Tariff**

### **Pre-COD Tariff**

No price is payable for capacity and energy delivered prior to COD with the exception of the energy delivered during the 72 hour COD test which is payable at \$25/MWh.

### **Post-COD Tariff**

On a monthly basis after COD, the Seller will be paid for capacity that is made available, and energy delivered, based on the following tariff structure:

CC Payment = CC x DC x Availability Adjustment

OMC Payment = OMC x DC x OMC Escalation Factor x Availability Adjustment

EC Payment = EC x Delivered Energy x EC Escalation Factor

Where:

CC = Capital Charge;

OMC = Operation & Maintenance Charge;

EC = Energy Charge;

Availability Adjustment =  $\text{Min} \{ 1, \text{Max} [0, 2 \times (\text{FOA} + A_{\text{monthly}}) - 100\%] \} \times (1 - H_{\text{FM-Seller}}/H)$

See Schedule 3 for graphical representation of the formula;

FOA = Forced Outage Allowance = 3% ;

$A_{\text{monthly}}$  = calculated monthly Availability Factor as defined in Schedule 2;

H = total hours in the month; and

$H_{\text{FM-Seller}}$  = number of Force Majeure hours invoked by the Seller in the month.

### **Dispatch Payment**

After COD, the Seller will receive on a monthly basis, Start-Up Payments (“SUP”) based on number of cold, warm and hot starts, as dispatched by BC Hydro, subject to Maximum Start per Year (“MSY”) limitations. The payment is calculated based on the following formula:

$SUP = (N_H \times SUC_H) + (N_W \times SUC_W) + (N_C \times SUC_C)$  where

$N_H$  = number of hot starts

$N_W$  = number of warm starts

$N_C$  = number of cold starts

### Escalation

OMC, EC, and SUC will be subject to escalation using applicable escalation factors between January 1, 2004 and the Guaranteed COD. There will also be annual escalation using applicable escalation factors starting at the first anniversary of COD. OMC, EC and SUC can be subject to different escalation factors as tendered. Escalation factors can be either a fixed, positive number or a percentage (between 0% to 100%) of Consumer Price Index. CC is not subject to escalation.

### Heat Rate Bonus And Penalty

This section applies to gas-fired projects that elect to bid under a tolling arrangement.

For baseload plants, Guaranteed Heat Rate at COD (“ $GHR_{COD-Baseload}$ ”) will increase over time at an annual rate (expressed in GJ/GWh) of

$$GHR_{COD-Baseload} \times (\text{Heat Rate Degradation Factor}) / (\text{number of years in the Term}).$$

A Heat Rate Bonus/Penalty will be calculated on a monthly basis and added to a Tracking Account. The Tracking Account will be settled and paid on the earlier of i) each anniversary of COD and ii) when the balance, either positive or negative, exceeds \$ 3 million.

A Heat Rate Penalty will be calculated based on the following formula:

$$\Sigma(GHR - HR_{actual}) \times (GAS_{commodity} + GAS_{toll}) \times \text{energy delivered}$$

A Heat Rate Bonus will be calculated based on the following formula:

$$\Sigma(GHR - HR_{actual}) \times GAS_{commodity} \times \text{energy delivered}$$

Where in the case of both of the foregoing formulae:

GHR is adjusted to reflect actual weather conditions on an hourly basis. Heat rates will be adjusted for weather using the following formula:

AAC Equivalent Heat Rate = Heat Rate based on Actual Weather x (1+ Heat Rate Conversion Factor);

$HR_{actual}$  is the actual hourly heat rate. If the Tracking Account has a positive balance on settlement date, BC Hydro will pay the Seller a Heat Rate Bonus and if the Tracking Account has a negative balance on settlement date, the Seller will pay BC Hydro a Heat Rate Penalty.

$GAS_{commodity}$  = monthly index price expressed in CDN \$/GJ for the Huntingdon spot market delivery ; and

$GAS_{toll}$  = the average of the published non-firm gas transportation tolls for the month, expressed in CDN \$/GJ, of the Gas Transporter(s) with whom BCH may contract from time to time for the purpose of transporting gas from Huntingdon, BC to the point immediately downstream of the outlet flange of the gas meter installed where the Gas Transporter's system connects with the plant's facilities.

Periods when the plant is operating on gas which does not meet the specifications in the EPA or at reduced rate due to i) Force Majeure, ii) at the request of BC Hydro (at levels other than Minimum Turn Down), iii) during ramp up periods and iv) during other pre-determined periods will be excluded for the purpose of the Heat Rate Bonus/Penalty calculation.

The following is an illustrative example:

- GHR @ AAC for the hour 7500 GJ/GWh
- AAC 10°C, 50% humidity
- Actual heat rate for the hour 7800 GJ/GWh
- Actual weather conditions: -5°C and 10% humidity level
- $GAS_{commodity}$  \$ 5/GJ
- $GAS_{toll}$  \$1/GJ
- Energy delivered for the hour 0.100 GWh
- The value of J4 in the table below -5%
- Heat Rate Conversion Table included below

Heat Rate based on Actual Weather =  $7500 \text{ GJ/GWh} / (1 + -5\%) = 7894 \text{ GJ/GWh}$ .

Since 7800 is less than 7894, the bonus calculation is utilized.

The amount of  $(7894 - 7800) \text{ GJ/GWh} \times \$5/\text{GJ} \times 0.100 \text{ GWh} = \$ 47.37$  will be added to the Tracking Account.

Temperature (in degree Celsius)

Humidity	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40
100%	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13
90%	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13
80%	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13
70%	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13
60%	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	E11	E12	E13
50%	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13
40%	G1	G2	G3	G4	G5	G6	G7	G8	G9	G10	G11	G12	G13
30%	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11	H12	H13
20%	I1	I2	I3	I4	I5	I6	I7	I8	I9	I10	I11	I12	I13
10%	J1	J2	J3	J4	J5	J6	J7	J8	J9	J10	J11	J12	J13

For gas-fired tolling plants that are dispatchable, a separate guaranteed heat rate will be used for periods when the plant is operating at MTD (Minimum Turn Down) for the purpose of calculating Heat Rate Bonus/Penalty.  $GHR_{COD-MTD}$  is subject to the same degradation and temperature adjustments as  $GHR_{COD-BaseLoad}$ .

### Heat Rate Bonus/Penalty – Start-Up

The Seller will also be subject to start-up fuel bonus/penalty if the actual fuel consumed during start ups are less/higher than contracted fuel amount.

Contracted Fuel During Start-up (“CFDS”) =  $(N_H \times SUF_H) + (N_W \times SUF_W) + (N_C \times SUF_C)$

Start-up Fuel Penalty =  $(CFDS - \text{Actual fuel used}) \times (GAS_{\text{commodity}} + GAS_{\text{toll}})$  and will be added to the Tracking Account and settled in the manner discussed above.

Start-up Fuel Bonus =  $(CFDS - \text{Actual fuel used}) \times GAS_{\text{commodity}}$  and will be subtracted from the Tracking Account and settled in the manner discussed above.

## Schedule 1 – Pricing Terminology

### For all plants:

Capital Charge (CC)	\$/MW/mo
Operation & Maintenance Charge (OMC)	\$/MW/mo
Energy Charge (EC)	\$/MWh
Bid Capacity (BC)	MW
Capacity Degradation Factor	% over the Term
Term (T)	Years
Planned Maintenance Allowance Hours	
➤ Major Maintenance Years	Hours/Year
➤ Non-Major Maintenance Years	Hours/Year

### In addition, for gas-fired tolling plants:

Guaranteed Heat Rate at COD ( $GHR_{COD-Baseload}$ )	GJ/GWh HHV
Heat Rate Degradation Factor	% over the Term

### In addition, for fully dispatchable plants:

Guaranteed Heat Rate at COD ( $GHR_{COD-MTD}$ )	GJ/GWh HHV
Ramp Up Time – Hot ( $RUT_H$ )	minutes
Ramp Up Time – Warm ( $RUT_W$ )	minutes
Ramp Up Time – Cold ( $RUT_C$ )	minutes
Start Up Cost – Hot ( $SUC_H$ )	\$
Start Up Fuel – Hot ( $SUF_H$ )	GJ
Start Up Cost – Warm ( $SUC_W$ )	\$
Start Up Fuel – Warm ( $SUF_W$ )	GJ
Start Up Cost – Cold ( $SUC_C$ )	\$
Start Up Fuel – Cold ( $SUF_C$ )	GJ
Maximum Cold Starts per Year ( $MSY_C$ )	
Maximum Warm Starts per Year ( $MSY_W$ )	
Maximum Hot Starts per Year ( $MSY_H$ )	
Minimum Turn Down (MTD)	%

## Schedule 2 – Monthly Availability Calculation

$$A_{\text{monthly}} = \frac{DE + (EAF \times \sum AC_j)}{\sum C_i + DC \times (H - N - H_{FM})}$$

$A_{\text{monthly}} = 1$  if the denominator of the equation is 0

DC = Demonstrated Capacity from the most recent performance test based on AAC.

DE = delivered energy for the month as metered, less any energy delivered in excess of 105% of the dispatch order for each hour and less energy delivered during RUP. For non-dispatchable plants, DE = delivered energy for the month as metered, not exceeding 105% of the reported available energy.

$C_i$  = Scheduled Energy (capacity that is dispatched x 1 hour) for hour “i” during which the plant is ON.

$AC_j$  = Seller’s reported available capacity for the hour “j” based on AAC.  $AC_j$  shall include the portion of the plant capacity that is available during Forced Outages.  $AC_j$  is equal to DC during scheduled planned maintenance but is equal to 0 for maintenance outside pre-approved planned maintenance.  $AC_j = 0$  during Force Majeure hours whether invoked by the Seller or BC Hydro.

H = total number of hours in the month

N = total number of hours for which the plant is ON.

$H_{FM}$  = force majeure hours in the month whether invoked by the Seller or BC Hydro.

ON = when the plant is generating, excluding RUT as tendered.

RUP = the elapsed time from receipt of a dispatch order from BCH to the point when the dispatched capacity is being delivered consistently for dispatchable plants. For non-dispatchable plants, RUP = 0

EAF = Empirical Adjustment Factor =  $DE / \sum C_i$

Schedule 3 – Graphical Representation – “Min {1, Max [0, 2 x (FOA+ A<sub>monthly</sub>)-100%]}”

