Small Hydro Program Questions & IESO Responses

Purpose of Document

The intent of this document is to make public any questions and IESO responses, in regards to the Small Hydro Program, for the purposes of transparency and to assist the understanding of other potential applicants who may have questions similar to those previously asked.

This document will be updated as new questions are received by the IESO.

Questions & Responses

Question 1

The IESO received questions regarding the manner in which the Small Hydro Program settlement process accounts for market revenues that occur. The IESO is providing this posting as an example to clarify the treatment of market revenue associated to a Facility and how their monthly payment for the output from their facility is derived.

Response

Market Revenue and Contract Revenue – LDC Connected and Financially Settled

The IESO recognizes that for those facilities that are connected and settled directly by the local distribution company (LDC) that their Facility is connected to, may not directly see information that identifies the level of market revenue associated to the output of their facility, as the LDC will make a payment that is always equal to the Contract Price.

For those Facilities that have an existing contract with the IESO there is no change in the settlement process between Exhibit B1 & B2 as it relates to how a Supplier will receive payment from the LDC. Both existing IESO contracts and the SHP contract represent a contract for differences.

The LDC will provide/calculate market revenue for each interval (hourly or 5-minutes), using the market price (currently HOEP) and a facilities energy production. They will also calculate the Contract Energy Payment (as per Exhibit B) using the Contract Price and the market price for the same intervals. The sum of these two calculations will be the net facility revenue (or the monthly payment for the output from their facility). While it is possible that the Contract Energy Payment could be negative in an interval (if the market price is higher than the Contract Price), the net payment could never be negative.

Here is a simplified example, for a single hour:

Contract Price	(CP)	$100 / MWh
HOEP	(MP_i)	$35 / MWh
Contract Capacity	(CC)	2 MW
Delivered Energy	(DE_i)	2.1 MWh

Market Revenue (Paid by the LDC)
        = (2.1 MW x 1hr) x $35 / MWh
        = $73.5

Contract Energy Payment (as per Exhibit B of the SHP Contract, or Exhibit B-2 of the SHP-AR Contract) (Paid by the LDC)
        = $(CP - MP_i)$ x Min $(DE_i, CC$ x 1hr)
        = ($100 / MWH - $35 / MWh) x Min (2.1 MWh, 2 MW x 1hr)
        = $65 / MWh * 2 MWh
        = $130

Net Facility Revenue (monthly payment) (Paid by the LDC)
        = $73.5 + $130
        = $203.5

Market Revenue and Contract Revenue – LDC or Grid Connected and IESO Financially Settled

For those Facilities that have an existing contract with the IESO there is no change in the settlement process between Exhibit B1 & B2 as it relates to how a Supplier will receive payment from the IESO. Both existing IESO contracts and the SHP contract represent a contract for differences.

The IESO will provide/calculate market revenue for each interval (5-minutes), using the market price (currently HOEP) and a facilities energy production. This process is competed via the IESO Market Settlements processes and payments are included on the IESO Settlement Invoice.

The IESO Contract Management process will calculate the Contract Energy Payment (as per Exhibit B) using the Contract Price and the market price for the same intervals. This payment is made as per the contract requirements.

The sum of these two calculations will be the net facility revenue (or the monthly payment for the output from their facility). While it is possible that the Contract Energy Payment could be negative in

an interval (if the market price is higher than the Contract Price), the net payment could never be negative.

Here is a simplified example, for a single hour:

Contract Price   (CP) $100 / MWh
HOEP (MP_i) $35 / MWh
Contract Capacity   (CC)   2 MW
Delivered Energy (DE_i) 2.1 MWh

Market Revenue (Paid by the IESO and included on the Settlement Invoice)
      = (2.1 MW x 1hr) x $35 / MWh
      = $73.5

Contract Energy Payment (as per Exhibit B of the SHP Contract or Exhibit B-2 of the SHP-AR Contract) (Paid by the IESO Contract Management process as per the contract)
      = $(CP - MP_i)$ x Min $(DE_i, CC$ x 1hr)
      = ($100 / MWH - $35 / MWh) x Min (2.1 MWh, 2 MW x 1hr)
      = $65 / MWh * 2 MWh
      = $130

Net Facility Revenue (received in two distinct payment processes) (Paid by the IESO)
      = $73.5 + $130
      = $203.5

Question 2

The IESO received a question regarding the need to provide a Performance Security with the SHP Application.

Response

The Performance Security is only a requirement under the Small Hydro Program Contract and is described within Article 5 of the contract. The Performance Security is not a requirement of the SHP Application.

Question 3

Can the IESO clarify the term "Contract for Differences"?

Response

The SHP Contract is a "Contract for differences". This term is based on the settlement process that determines the contract payment based on the difference between your contract price (for instance $100/MWh) and the revenue made through the market price (HOEP) in each hour. The settlement calculation is such that the contract payment is equal to the contract price minus the rate you received in the market for the energy produced (up to your contracted amount).

Both the market energy revenue and the contract payment usually comes from the same entity (e.g. the LDC). The LDC may combine these payments to appear as one net payment.

Question 4

Can the IESO provide an example of the settlement calculation applied during an hour that is within one of the first 438 hours where HOEP (or the applicable equivalent in the future) is negative?

Response

The following example shows how the settlement mechanism during a zero or negatively priced hour (within the first 438 hours of the year with a zero or negatively priced hour), is applied:

Let us assume that a facility with 8 MW Contract Capacity is receiving a contract price (CP$_y$) of $100/MWh and delivers 5.8 MWs during an hour in which HOEP is -$50/MWh.

The total (net) payment would be the sum of the contract payment and the market payment as follows:

Net hourly payment = [Contract payment] + [market payment]

$$= \left[\sum_{h=438}^{h=1} \left(NPSF \times CP_y - (MP_i) \right) \times Min[DE_i; CC \times i] \right] + [MP_i \times DE_i]$$

$= $ [(25% x $100/MWh − (-$50/MWh)) x 5.8MWh] + [(-$50/MWh) x 5.8MWh]

$= $ [$435] + [-$290]

$= $ $145

Note: Terms are defined in Exhibit B, 1.3(b) of the SHP Contract and Exhibit B-2, 1.4(b) of the SHP-AR Contract. For ease of reference, they are repeated here:

NPSF   is the Negative Price Scaling Factor of 25% to be applied to the first 438 hours within a calendar year where HOEP is at $0.00/MWh or less;

CP_y is the Contract Price for year "y" and is determined as described under Section (a) of this Exhibit B;

MP_i is the applicable market price of either the hourly price or the 5minute interval market clearing price, as applicable, for the metered interval "i";

DE_i is the Delivered Electricity for the metered interval "i";

CC   is the Contract Capacity; and

i   is equal to 1 when the metered interval is one-hour, or is equal to $1/12^{th}$ of an hour (5 mins) when the metered interval is $1/12^{th}$ of an hour, as applicable.

Question 5

Can the IESO provide clarification on how the second part of the Negative Hour Price Payment (NHPP) equation (found in Exhibit B of the SHP Contract and Exhibit B-2 of the SHP-AR Contract) is applied?

Response

The NHPP formula only considers hours where HOEP is less than or equal to zero. The second part of the of the NHPP formula applies after the first 438 hours of negative or zero HOEP have passed. The calculation in the second part of the formula will compensate the supplier for the negative market rate they are exposed to, as well as pay the full contract rate.

Continuing the example above, if the market rate were to be negative (let's say -$50/MWh) for a 439th hour, where the energy production at facility was 5.8MW and CPy was $100, the total payment would be:

Net hourly payment   = [Contract payment] + [market payment]

$$= \left[\sum_{h=n}^{h=439} (CP_y - (MP_i)) \times Min[DE_i; CC \times i] \right] + [MP_i \times DE_i]$$

$$= [(\$100/MWh - (-\$50/MWh)) \times 5.8MWh] + [(-\$50/MWh) \times 5.8MWh]$$

$$= [\$150/MWh \times 5.8MWh] + [-290]$$

$$= \$870 - \$290$$

$$= \$580$$

Note: Terms are defined in Exhibit B, 1.3(b) of the SHP Contract and Exhibit B-2, 1.4(b) of the SHP-AR Contract. For ease of reference, the terms are listed in the previous question (4), above.

Question 6

Can the IESO confirm that in a year or even a settlement period where the market rates go negative, that the Supplier will only be exposed to the NHPP for the first 438 hours of the year and if it so happens that all 438 hours happen in one month – then there would be no further exposure for the year or in the next month to the NHPP?

Response

The Supplier is only exposed to the NPSF of 25% for the first 438 hours of the settlement year, regardless of when they happen in that year. After the first 438 hours of negative pricing, the NHPP formula will still apply in instances when the market rate is less than or equal to zero, but the second part of the formula will apply to keep the Supplier at the whole CPy.

Question 7

In hours when the market price is higher than the contract price, will the supplier get the benefit of the market rate being higher than the contract price?

Response

No, the Supplier does not get the benefit of the higher market rate.

For example, in a scenario where the market price is $130/MWh in a given hour, and where CPy is $100/MWh and the delivered energy is 2 MW in that hour for a facility with 8 MW Contract Capacity.

The Contract Energy Payment (which is a monthly payment made up of the sum of hourly payments) would be based on Exhibit B, 1.3 (c) of the SHP Contract and Exhibit B-2, 1.4 (c) and would be as follows:

$$CEP_m = \left[\sum_{i=n}^{i=1} (CP_y - (MP_i)) \times Min[DE_i; CC \times i] \right]$$

$$= [(\$100/MWh - (\$130/MWh)) \times 2\ MW]$$

$$= -\$60 \text{ for the hour}$$

Where:

CEP_m is the Contract Energy Payment for the settlement month "m" for those hours in which HOEP for any given hour is greater than $0.00/MWh.

The total payment in the hour would be:

Net hourly payment = [Contract payment] + [market payment]

$$= \left[\sum_{i=n}^{i=1}(CP_y - (MP_i)) \times Min[DE_i; CC \times i]\right] + [MP_i \times DE_i]$$

= [($100/MWh - $130/MWh) x 2 MW] + [$130/MWh x 2MW]

= -$60 + $260

= $200

Question 8

What are the ceiling and floor rates for the Supplier in the SHP/SHP-AR Contract?

Response

The concepts of floor and ceiling do not apply to the SHP contract.

Question 9

Can you provide a description of the relationship between the GRC adjustment and the contract price (CPy)?

Response

If the net GRC rate is increased, through increases to the property tax, water rental tax or assumed revenue, the impact will be to increase the CPy. Conversely, if the GRC rate is reduced from the base year value then the CPy will be reduced.