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June 19, 2020

Ms. Marija Tresoglavic  
Acting Commission Secretary and Manager  
Regulatory Support  
British Columbia Utilities Commission  
Suite 410, 900 Howe Street  
Vancouver, BC V6Z 2N3

Dear Ms. Tresoglavic:

**RE: Project No. 1599053  
British Columbia Utilities Commission (BCUC or Commission)  
British Columbia Hydro and Power Authority (BC Hydro)  
Transmission Service Market Reference-Priced Rates Application –  
Incremental Energy Rate Pilot  
Responses to BCUC and Interveners Information Request No. 3**

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BC Hydro writes in compliance with BCUC Order No. G-136-20 to provide its responses to Round 3 information requests as follows:

Exhibit B-11	Responses to BCUC IRs (Public Version)
Exhibit B-11-1	Responses to BCUC IRs (Confidential Version)
Exhibit B-12	Responses to Interveners IRs

BC Hydro is filing one IR response confidentially with the BCUC. BC Hydro confirms that an explanation for the request for confidential treatment is provided in the public version of the IR response. BC Hydro seeks this confidential treatment pursuant to section 42 of the *Administrative Tribunals Act* and Part 4 of the Commission's Rules of Practice and Procedure.

June 19, 2020  
Ms. Marija Tresoglavic  
Acting Commission Secretary and Manager  
Regulatory Support  
British Columbia Utilities Commission  
Transmission Service Market Reference-Priced Rates Application – Incremental  
Energy Rate Pilot  
Responses to BCUC and Interveners Information Request No. 3

For further information, please contact Anthea Jubb at 604-623-3545 or by email at [bchydroregulatorygroup@bchydro.com](mailto:bchydroregulatorygroup@bchydro.com).

Yours sincerely,



Fred James  
Chief Regulatory Officer

rz/ma

Enclosure

<b>BCOAPO et al.</b> Information Request No. <b>3.51.1</b> Dated: <b>May 22, 2020</b> British Columbia Hydro & Power Authority Response issued: <b>June 19, 2020</b>	Page 1 of 1
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**51.0 Reference: Exhibit B-1, page 66  
Exhibit B-4, BCUC 1.27.1**

The Application states (page 66):

“RS 1823 and RS 1828 Customers must notify BC Hydro by March 1 of each year that they wish to take electricity under RS 1893 for the forthcoming Billing Year.”

3.51.1 Please confirm that for customers deemed eligible for RS 1893 any incremental use (above the RS1893 baselines) for purposes of instantaneous pick-up of load due to loss of self-generation will be treated as RS1893 sales unless the customer elects to use RS1880.

**RESPONSE:**

**Confirmed. Refer to Special Condition 5 of RS 1893.**

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**52.0 Reference: Exhibit B-4, BCUC 1.9.4 and 1.23.8  
 Exhibit B-5, BCSEA 1.8.1**

The response to BCUC 1.9.4 states:

“BC Hydro would import to serve non-firm load. BC Hydro does plan to meet non-firm load requirement in an operational view, but we do not add it to our load forecast in a planning view and would not build new resources to meet it.”

The response to BCSEA 1.8.1 states:

“A revenue forecast for the Freshet Energy Rate and

Incremental Energy Rate was not part of BC Hydro’s Fiscal 2020 to Fiscal 2021 Revenue Requirements Application, although actuals for May 2019 were included in the Evidentiary Update to the Fiscal 2020 to Fiscal 2021 Revenue Requirements”.

- 3.52.1 Please explain what planning “to meet non-firm load requirement in an operational view” entails in term of the types commitments or financial obligations BC Hydro would enter into in order to meet this load. For example, will anticipated IER sales be taken into consideration when BC Hydro is determining whether or not to enter into agreements with Powerex, per the Powerex 2019 Letter Agreement, to secure physical wholesale electricity on a forward basis?

**RESPONSE:**

**In an operational time frame, BC Hydro does not differentiate between RS 1893 loads and other loads. In the monthly Energy Studies we plan our operations to the load forecast issued by the Load Forecast group in Integrated Planning, which does not include non-firm load served under RS 1893 thus, the RS 1893 load would not be taken into consideration for transactions like those under the Powerex 2019 Letter Agreement. In shorter timeframes, BC Hydro has other load forecasting tools that extrapolate from current load and weather what the load will be in the next hour and the next few days. Since the RS 1893 load is part of the total load, it would be ‘picked up’ and hence planned for in these shorter timeframes.**

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Incremental Energy Rate was not part of BC Hydro’s Fiscal 2020 to Fiscal 2021 Revenue Requirements Application, although actuals for May 2019 were included in the Evidentiary Update to the Fiscal 2020 to Fiscal 2021 Revenue Requirements”.

3.52.2 Was the anticipated load from the Freshet Energy Rate and/or the Incremental Energy Rate included in the determination of the Cost of Energy in BC Hydro’s Fiscal 2020 to Fiscal 2021 Revenue Requirements Application?

**RESPONSE:**

**As both RS 1892 (Freshet Energy) and RS 1893 (Incremental Energy) are for non-firm service, they were not included in the cost of energy determination for BC Hydro’s Fiscal 2020 to Fiscal 2021 Revenue Requirements Application. BC Hydro does not include non-firm load in this cost of energy determination.**

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Incremental Energy Rate was not part of BC Hydro’s Fiscal 2020 to Fiscal 2021 Revenue Requirements Application, although actuals for May 2019 were included in the Evidentiary Update to the Fiscal 2020 to Fiscal 2021 Revenue Requirements”.

3.52.2 Was the anticipated load from the Freshet Energy Rate and/or the Incremental Energy Rate included in the determination of the Cost of Energy in BC Hydro’s Fiscal 2020 to Fiscal 2021 Revenue Requirements Application?

3.52.2.1 If not, please reconcile this treatment with the response to BCUC 1.9.4 which states “BC Hydro does plan to meet non-firm load requirement in an operational view”.

**RESPONSE:**

**BC Hydro clarifies that the phrase “in an operational view” in BC Hydro’s response to BCUC IR 1.9.4 does not have the same meaning as the “operating view” or “operational view” in the context of the RRA. In the response to BCUC IR 1.9.4, the phrase is intended to refer to the time horizon of short-term operational planning. In the context of the RRA, the phrase has been used to refer to the forecast operation of one to three years out.**

**As described in section 4.1 of BC Hydro’s Fiscal 2020 to Fiscal 2021 Revenue Requirements Application (RRA), the cost of energy in the RRA is a forecast cost of energy, which is used in determining BC Hydro’s total revenue requirement. This cost of energy determination uses BC Hydro’s Load Forecast as an input. BC Hydro’s Load Forecast does not include non-firm load, as we are not obliged to adjust our capital plan to add new resources for this load.**

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As further noted in section 4.5.1 of the RRA, BC Hydro customers ultimately only pay the actual cost of energy through the use of regulatory accounts. To the extent that service to non-firm load impacts BC Hydro's actual cost of energy, that impact will be reflected as a variance in deferral account balances. The Non-Heritage Deferral Account captures the variances between planned and actual domestic customer load, referred to as the Domestic Revenue Variance. The balances in these regulatory accounts are amortized into rates in subsequent years in a manner approved by the BCUC.

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The response to BCSEA 1.8.1 states:

“A revenue forecast for the Freshet Energy Rate and

Incremental Energy Rate was not part of BC Hydro’s Fiscal 2020 to Fiscal 2021 Revenue Requirements Application, although actuals for May 2019 were included in the Evidentiary Update to the Fiscal 2020 to Fiscal 2021 Revenue Requirements”.

3.52.3 Will the anticipated load from the now approved Freshet Energy Rate and/or the Incremental Energy Rate (assuming the pilot is approved) be included in the determination of the Revenue and Cost of Energy forecasts in future in BC Hydro Revenue Requirements Applications?

**RESPONSE:**

**Please refer to BC Hydro’s response to BCOAPO IR 3.52.2.1, where BC Hydro describes our approach to the treatment of non-firm load for the purpose of the cost of energy determination used in our revenue requirements application.**

**While BC Hydro’s methodology for our revenue requirement applications is periodically refreshed, at this time, we do not anticipate including non-firm load in our load forecast as we are not obliged to adjust our capital plan to add resources to serve this load. To the extent that non-firm load remains excluded from our load forecast, it will also be excluded from the forecast cost of energy used for our revenue requirements application.**



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**53.0 Reference: Exhibit B-4, BCUC 1.3.1 and 1.3.2**

3.53.1 Will the expected pilot implementations cost for the IER vary depending upon either the number of customers participating or the total IER sales (MWh)? If so, how?

**RESPONSE:**

**BC Hydro's estimated implementation costs for each year of the RS 1893 Pilot are provided in the response to BCUC IR 1.3.2.**

**These estimated costs will vary depending on:**

- **the number of participant customers and the associated resources required to determine RS 1893 baselines, including any required adjustments, and to administer customer participation, billing, and reporting; and**
- **the extent and nature of any BCUC ordered proceedings or filings.**

**BC Hydro does not expect these estimated costs to vary depending on total RS 1893 energy sales.**

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**53.0 Reference: Exhibit B-4, BCUC 1.3.1 and 1.3.2**

3.53.2 Please explain the basis for the \$105,000 for IER billing costs for Year 1.

**RESPONSE:**

**BC Hydro recently completed the Lodestar and Enhanced Billing System Replacement Project (Project), during which billing for all Transmission Service customers was migrated into SAP. The \$105,000 IER billing cost for Year 1 is the estimated incremental cost to add RS 1893 invoicing to the Project scope.**

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**53.0 Reference: Exhibit B-4, BCUC 1.3.1 and 1.3.2**

3.53.3 Please explain why the IER billing costs in years 2 and 3 are materially lower than those experienced for the Freshet Rate pilot.

**RESPONSE**

**Once RS 1893 invoicing functionality has been incorporated into the automated billing system module, monthly invoicing will be automated. There is an estimated one-time set up cost of \$105,000 in Year 1.**

**The annual cost of \$5,000 for each subsequent year represents BC Hydro's estimate for manual billing changes such as adding or removing RS 1893 customers, entering new or adjusted RS 1893 baseline information, correcting invoices and preparing reports.**

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**53.0 Reference: Exhibit B-4, BCUC 1.3.1 and 1.3.2**

3.53.4 Please explain why the IER customer and stakeholder engagement costs for years 2 and 3 are materially less than those for years 2 and 3 of the Freshet Rate pilot.

**RESPONSE:**

**Customer and stakeholder engagement costs for years 2 and 3 of the Freshet Rate Pilot total \$35,000, whereas estimated customer and stakeholder engagement costs for years 2 and 3 of the IER Pilot total \$20,000. The difference is \$15,000.**

**BC Hydro's customer and stakeholder engagement efforts during the Freshet Rate Pilot included multiple rounds of consultation related to both a permanent Freshet Rate and the prospective design of the Incremental Energy Rate. In addition, a third-party consulting firm was retained to help prepare the Engagement Summary Reports for the October 2018 and November 2019 Rate Design Workshops. These reports are provided at Appendix G of the Application.**

**For years 2 and 3 of the IER Pilot, BC Hydro anticipates conducting only a single round of consultation and intends to prepare the engagement summary reports using internal resources.**

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**54.0 Reference: Exhibit B-4, BCUC 1.16.1  
Exhibit B-1, pages 80-81**

The response to BCUC 1.16.1 states:

The impact of the IER Pilot was based on the 46 weather sequences used in the Energy Studies, and 40 of these weather sequences showed a positive ratepayer impact.”

3.54.1 Apart from the “weather sequence” and implementation costs, are there any of there any other factors that could affect the calculation of rate payer impact during the pilot period?

**RESPONSE:**

**Other factors that could affect the calculation of ratepayer impacts for RS 1893 are:**

- **Customer participation levels;**
- **Implementation costs;**
- **Customer load shifting; and**
- **Energy Charge adder applicable to the Billing Period.**

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The response to BCUC 1.16.1 states:

The impact of the IER Pilot was based on the 46 weather sequences used in the Energy Studies, and 40 of these weather sequences showed a positive ratepayer impact.”

3.54.1 Apart from the “weather sequence” and implementation costs, are there any of there any other factors that could affect the calculation of rate payer impact during the pilot period?

3.54.1.1 If yes, please explain why they are and for each outline:  
i) what assumptions were made in the financial modelling;  
ii) the range of uncertainty associated with the assumptions and iii) the likely effect on rate payer impact if an alternative outcome arises.

**RESPONSE:**

**As described in BC Hydro’s response to BCOAPO IR 3.54.1, the factors that may impact ratepayer economics are actual customer participation, load shifting, implementation costs, and differences between BC Hydro’s marginal value of energy and the revenues received from service under RS 1893 (Mid-C price plus Energy Charge Adder).**

**Please refer to section 5.5 of the Application for discussion and analysis of the impact on ratepayer economics of a range of potential scenarios related to customer participation and differences between BC Hydro’s marginal value of energy and the revenues received from service under RS 1893, including Energy Charge Adder scenarios. BC Hydro did not consider a range of uncertainty related to these assumptions beyond that which is already discussed in the Application.**

**BC Hydro did not model a range of outcomes for customer participation. The model used a fixed estimate of 33 MW per Hour of incremental load as a proxy for RS 1893 customer participation and a daily strike-price of \$55/MWh for each of HLH and LLH. These fixed values were based on confidential discussions with specific customers regarding their incremental load capability and certain operating factors such as economic decision-making. BC Hydro considers these assumptions to reflect a reasonable estimate of customer participation in aggregate and did not consider a range of uncertainty for them.**

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Directionally, if the fixed load estimate was higher and/or the strike-price was higher, ratepayer benefits would increase, and vice versa.

BC Hydro did not model a range of outcomes for implementation costs, and did not consider a range of uncertainty, as these are largely fixed costs and are expected to be small. Directionally, any increase in implementation costs reduces ratepayer benefits and vice versa.

BC Hydro did not model a range of outcomes for load shifting and did not consider a range of uncertainty as any such impacts are customer-specific and require the consideration of multiple dependencies and assumptions which are complex and dynamic. Instead, BC Hydro used a conservative estimate of aggregate customer participation as described above. Directionally, the verified impact of a load shift will either: (i) reduce BC Hydro's expected net revenue if the RS 1893 charge is priced lower than the prevailing RS 1823 charge; or (ii) increase BC Hydro's expected net revenue if the RS 1893 charge is priced higher than the prevailing RS 1823 charge. Please also refer to BC Hydro's response to BCOAPO IR 3.74.1.

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**54.0 Reference: Exhibit B-4, BCUC 1.16.1  
Exhibit B-1, pages 80-81**

The response to BCUC 1.16.1 states:

The impact of the IER Pilot was based on the 46 weather sequences used in the Energy Studies, and 40 of these weather sequences showed a positive ratepayer impact.”

3.54.1 Apart from the “weather sequence” and implementation costs, are there any of there any other factors that could affect the calculation of rate payer impact during the pilot period?

3.54.1.2 As part of the response, please discuss how/whether the assumption regarding the exchange rate impacts the determination of whether rate payer impacts are positive or negative.

**RESPONSE:**

**BC Hydro considers the exchange rate assumption to have minimal effect on ratepayer impact. This is because: (i) any difference in exchange rate applies only to the \$US5.32/MWh Bonneville Power Authority transmission charge<sup>1</sup> plus 1.9 per cent losses for Resource Conditions 1 and 2; and (ii) the exchange rate impact is potentially muted by offsetting impacts to revenues and costs for Resource Condition 3. Directionally, BC Hydro would expect a weaker Canadian dollar to have a minimal net-positive effect on ratepayer impact.**

**For Resource Condition 1, the ratepayer benefit is the sum of the \$CDN adder and the \$CDN equivalent of the \$US transmission charge plus 1.9 per cent losses deemed avoided. As such, a weaker Canadian dollar increases the ratepayer benefit and vice versa.**

**For Resource Condition 2, the ratepayer loss is the difference between the \$CDN adder and the \$CDN equivalent of the \$US transmission charge plus 1.9 per cent losses deemed incurred. As such, a weaker Canadian dollar increases the ratepayer loss and vice versa. If the Mid-C market price is negative, such that the RS 1893 price floor of \$0/MWh applies, a weaker Canadian dollar will increase the ratepayer benefit and vice versa.**

<sup>1</sup> This charge was shown as US\$5.16/MWh in the Application based on then current Bonneville Power Authority Transmission Rates. The rate has since increased to \$US5.32/MWh



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For Resource Condition 3, the rate payer impact depends on the difference between: (A) the \$CDN equivalent of the \$US Mid-C market price plus the \$CDN adder; and (B) the \$CDN System Marginal Value. A weaker Canadian dollar will increase the RS 1893 revenue in \$CAD collected under (A), but this increase will potentially be offset by a directionally similar impact of the exchange rate on the System Marginal Value.

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**54.0 Reference: Exhibit B-4, BCUC 1.16.1  
Exhibit B-1, pages 80-81**

The response to BCUC 1.16.1 states:

The impact of the IER Pilot was based on the 46 weather sequences used in the Energy Studies, and 40 of these weather sequences showed a positive ratepayer impact.”

3.54.2 In the financial analysis performed, how many of the weather sequences showed a positive rate payer impact during: i) the three freshet months when the energy adder is \$3/MWh and ii) the nine non-freshet month when the energy adder is \$7/MWh?

**RESPONSE:**

**In the financial analysis performed for the RS 1893 pilot: i) in the freshet period, 25 of 46 sequences show a positive ratepayer impact; and ii) in the non-freshet period, 41 of 46 sequences show a positive ratepayer impact.**

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**55.0 Reference: Exhibit B-4, BCUC 1.17.3**

The responses states that:

“Any financial gains or losses of the IER Pilot will accrue to all ratepayers.”

3.55.1 Please explain exactly how this result will occur.

**RESPONSE:**

**Please refer to BC Hydro’s response to BCOAPO IR 3.52.2.1.**

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**56.0 Reference: Exhibit B-4, BCUC 1.20.1 and 1.20.2  
Exhibit B-1, pages 80-81 and Appendix D, pages 22-25 of 296**

Appendix D contains a description of how the marginal resources used to serve RS1892 load varies depending upon which of three system conditions exist and that rate payers' benefits are positive under Condition #1, negative under Condition #2 and typically positive under Condition #3.

3.56.1 Please confirm that the same description (i.e., per Appendix D) applies to the resources that would be used to supply RS1893 (IER) load during the non-freshet period of the year?

**RESPONSE:**

**Confirmed.**

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Appendix D contains a description of how the marginal resources used to serve RS1892 load varies depending upon which of three system conditions exist and that rate payers' benefits are positive under Condition #1, negative under Condition #2 and typically positive under Condition #3.

3.56.1 Please confirm that the same description (i.e., per Appendix D) applies to the resources that would be used to supply RS1893 (IER) load during the non-freshet period of the year?

3.56.1.1 If not, please describe what affects the determination of the marginal resources deemed to serve IER load during the non-freshet period and the resulting system marginal values.

**RESPONSE:**

**Please refer to BC Hydro's response to BCOAPO IR 3.56.1.**

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Appendix D contains a description of how the marginal resources used to serve RS1892 load varies depending upon which of three system conditions exist and that rate payers' benefits are positive under Condition #1, negative under Condition #2 and typically positive under Condition #3.

3.56.2 Please confirm that the same assessment (per Appendix D) applies to the IER as to under what system conditions rate payers' benefits will be positive versus negative during the non-freshet period of the year?

**RESPONSE:**

**Confirmed.**

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Appendix D contains a description of how the marginal resources used to serve RS1892 load varies depending upon which of three system conditions exist and that rate payers' benefits are positive under Condition #1, negative under Condition #2 and typically positive under Condition #3.

3.56.2 Please confirm that the same assessment (per Appendix D) applies to the IER as to under what system conditions rate payers' benefits will be positive versus negative during the non-freshet period of the year?

3.56.2.1 If not, please describe how the variation in system conditions will impact the determination of rate payer benefits during the non-freshet period.

**RESPONSE:**

**Please refer to BC Hydro's response to BCOAPO IR 3.56.2.**

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**57.0 Reference: Exhibit B-4, BCUC 1.20.5.2 and 1.20.5.2.1**

3.57.1 Does the will the existence of IER load impact in any way the determination of the NITS rate? If yes, how?

**RESPONSE:**

**Network Integration Transmission Service (NITS) is Rate Schedule 00 in our Open Access Transmission Tariff. As described in the Fiscal 2020 to Fiscal 2021 Revenue Requirements Application section 9.3.1, the NITS rate is designed to recover the Transmission Revenue Requirement (TRR) less any revenues from Point to Point and ancillary services used by external parties.**

**As RS 1893 load is non-firm and BC Hydro will not construct transmission system reinforcements to enable service, the addition of RS 1893 load will not impact the determination of the NITS rate.**



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**58.0 Reference: Exhibit B-4, BCUC 1.16.1 and BCUC 1.20.6  
Exhibit B-1, Appendix E, Table 5**

3.58.1 Based on the four year period covered by the Freshet Rate pilot, for what percentage of the time did each of the three System Conditions exist?

**RESPONSE:**

**A detailed response would require BC Hydro to perform an after-the-fact analysis for the non-freshet period for each day over the four years, triple the analytical effort required for the Freshet Rate pilot evaluations. Doing so would take several weeks of analytical effort, and as such BC Hydro is unable to complete this in the time allotted.**

**As an approximation, using the percentages for the freshet period as provided in BC Hydro's response to BCOAPO IR 1.9.5 and using the simplifying assumption that in the non-freshet period only Condition 3 applies, then under the hypothetical situation where RS 1893 service was offered over the four-year trial period covered by RS 1892 (F2017 through F2020) Condition No. 1 would have occurred approximately 3 per cent of the time, Condition No. 2 approximately 7 per cent of the time, and Condition No. 3 approximately 90 per cent of the time.**

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**58.0 Reference: Exhibit B-4, BCUC 1.16.1 and BCUC 1.20.6  
Exhibit B-1, Appendix E, Table 5**

3.58.2 During the time that System Condition 3 existed, what percentage of that time was the system value greater than what the RS1893 rate would have been based on the BC Hydro's proposal?

**RESPONSE:**

**BC Hydro is unable to provide the requested information for the reasons described in BC Hydro's response to BCOAPO IR 3.58.1.**

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**59.0 Reference: Exhibit B-4, BCUC 1.21.1, 1.21.3 and 1.21.4  
Exhibit B-5, BCOAPO 1.41.1  
Exhibit B-1, page 77 (Table 9)**

3.59.1 With respect to BCUC 1.21.4, did the consultations with customers yield a range of possible strike prices? If yes, what was the range of prices discussed?

**RESPONSE:**

**Yes, customers identified a range of possible strike prices based on their unique operating conditions, installed equipment and risk tolerance. The notional range of prices discussed was \$0/MWh to \$100.57/MWh as described below:**

- **the prevailing RS 1823 Tier 1 energy price, currently \$44.89/MWh;**
- **the prevailing RS 1823 Tier 2 energy price, currently \$100.57/MWh;**
- **the RS 1828 customer’s prevailing energy price, which is confidential;**
- **the incremental cost of self-generation, which varies based on fuel price and heat rate, and which could be as low as \$0/MWh; and**
- **the average price of RS 1823 electricity based on the RS 1823 Tier 1 price plus the average RS 1823 demand charge which, in F2019, was approximately \$55/MWh.**

**As described in BC Hydro’s response to BCUC IR 1.21.4, and consistent with BC Hydro’s observations regarding customer sensitivity to market-priced energy during the Freshet Rate Pilot, BC Hydro used \$55/MWh to reflect the notional daily price at which a customer, all else being equal, might consider avoiding incremental energy purchases.**

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**59.0 Reference: Exhibit B-4, BCUC 1.21.1, 1.21.3 and 1.21.4  
Exhibit B-5, BCOAPO 1.41.1  
Exhibit B-1, page 77 (Table 9)**

3.59.2 What exchange rate(s) was used in the analysis?

**RESPONSE:**

**The CAD/USD exchange rate forecast used for the analysis in Table 9 of the Application was based on spot and forward rates sourced from a Bloomberg Terminal in August 2019. The Bloomberg Terminal is a subscription based computer software system that provides financial market data.**

**The exchange rate forecast used in the analysis was 0.75 USD/CAD.**

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**59.0 Reference: Exhibit B-4, BCUC 1.21.1, 1.21.3 and 1.21.4  
Exhibit B-5, BCOAPO 1.41.1  
Exhibit B-1, page 77 (Table 9)**

3.59.2 What exchange rate(s) was used in the analysis?

3.59.2.1 How does the value(s) used compare with the most recent Treasury Board forecast?

**RESPONSE:**

**The exchange rate forecast used in the analysis was 0.75 USD/CAD. The BC Treasury Board exchange rate forecast, from the February 2020 B.C. Budget, was 0.76 USD/CAD for fiscal 2021 and fiscal 2022, and 0.77 USD/CAD for fiscal 2023.**

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**59.0 Reference: Exhibit B-4, BCUC 1.21.1, 1.21.3 and 1.21.4  
Exhibit B-5, BCOAPO 1.41.1  
Exhibit B-1, page 77 (Table 9)**

3.59.2 What exchange rate(s) was used in the analysis?

3.59.2.2 Please re-do the analysis set out in Table 9 using an exchange rate that is \$0.02 higher/lower than that used in the analysis.

**RESPONSE:**

**Repeating the analysis set out in Table 9 using a different exchange rate would require BC Hydro to re-run the Energy Study that was used in the Application two times. Doing so would take several weeks of analytical effort, and as such BC Hydro is unable to complete this in the time allotted.**

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**60.0 Reference: Exhibit B-4, BCUC 1.22.1  
 Exhibit B-1, page 77 (Table 9)**

3.60.1 Please confirm that in comparing Option 1A and Option 2A, that Option 1A results in: i) a 12% increase in expected incremental load net revenue and ii) a 0.8% decrease in incremental load.

**RESPONSE:**

**Confirmed.**

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**60.0 Reference: Exhibit B-4, BCUC 1.22.1  
Exhibit B-1, page 77 (Table 9)**

3.60.2 If one views the expected incremental load revenue as the “benefit” IER provides to non-participating customers and the incremental IER load as the benefit provided to participating customers, please why explain choosing Option 2A over Option 1A represents a reasonable balance between the interests of participating customers and non-participating customers.

**RESPONSE:**

**The model results presented assume no change in customer participation for differing levels of energy charge adder. Through consultations with potential IER customers and AMPC, BC Hydro determined Option 2A was preferable to maximize participation in the pilot.**



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**60.0 Reference: Exhibit B-4, BCUC 1.22.1  
Exhibit B-1, page 77 (Table 9)**

3.60.3 If BC Hydro believes that other metrics should be used to measure the benefits to participating vs. non-participating IER customers, please indicate what they are and discuss, based on these metrics, why Option 2A is preferable to Option 1A.

**RESPONSE:**

**BC Hydro's view is that the metrics used in Table 9 on page 77 of the application are appropriate. These metrics are incremental net revenue for assessing benefits to ratepayers, and incremental customer load for assessing customer participation.**

<b>BCOAPO et al.</b> Information Request No. <b>3.60.4</b> Dated: <b>May 22, 2020</b> British Columbia Hydro & Power Authority Response issued: <b>June 19, 2020</b>	Page 1 of 1
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**60.0 Reference: Exhibit B-4, BCUC 1.22.1  
Exhibit B-1, page 77 (Table 9)**

3.60.4 Please confirm that, in assessing the merits of the various energy adder options the views of potential IER customers (and related associations) were solicited and taken into account.

**RESPONSE:**

**Confirmed.**

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**60.0 Reference: Exhibit B-4, BCUC 1.22.1  
 Exhibit B-1, page 77 (Table 9)**

3.60.5 Please indicate whether the views of customers who would be unable to participate (i.e., non-RS 1823 and non-RS1828 customers) were solicited with the respect to the various energy adder options and what their views were.

**RESPONSE:**

**Yes, the views of customers who might be unable to participate were solicited. Please also refer to BC Hydro's response to BCOAPO IR 3.77.1.**

**BC Hydro's consultation with customers and stakeholders related to the Energy Charge Adder (including AMPC, existing RS 1823 customers and prospective new customers) and consideration of the feedback provided is described in detail at pages 37 to 40 of the Application. Further information regarding views provided as written feedback can be referenced on page 51 of Appendix G to the Application.**

**In general, customers stated that a higher energy charge adder may have a material impact on their economic incentive to participate. This may lead to lower incremental energy sales which, in turn, may reduce the benefits to participants and non-participants.**

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**61.0 Reference: Exhibit B-1, pages 73 and 80-81**

The Application states:

“BC Hydro used its forecast of system marginal value from the energy study models in estimating the ratepayer impact of serving incremental customer load under the proposed Incremental Energy Rate Pilot for the pilot period.”

- 3.61.1 What was the vintage for the energy study models used to forecast the system marginal values used in the analysis (i.e., when were the model results produced)?

**RESPONSE:**

**The energy study models outputs used in the ratepayer impact analysis were produced in summer 2019.**

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**61.0 Reference: Exhibit B-1, pages 73 and 80-81**

The Application states:

“BC Hydro used its forecast of system marginal value from the energy study models in estimating the ratepayer impact of serving incremental customer load under the proposed Incremental Energy Rate Pilot for the pilot period.”

- 3.61.2 Please discuss the degree to which system conditions have changed since the energy models used were developed and whether current forecast system marginal values for the period considered would not generally be higher, lower or approximately the same as those used in the analysis.

**RESPONSE:**

**The current forecast of system marginal values is ‘lower to approximately the same’ in comparison to what was used in the analysis.**

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**62.0 Reference: Exhibit B-4, BCUC 1.23.11**

3.62.1 Please confirm that forgone export at a later date can only occur under System Condition #3. If not confirmed please explain why.

**RESPONSE:**

**Confirmed.**

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**63.0 Reference: Exhibit B-4, BCUC 1.25.1 & 1.25.2  
Exhibit B-5, BCOAPO 1.23.1  
Exhibit B-1, Appendix C (revised)**

3.63.1 With respect to Appendix C, Special Condition 7, please confirm customers must have at least two years of historical electricity usage to be eligible for baseline determination.

**RESPONSE:**

**Confirmed. Customers will require at least two years of historical Electricity usage to be eligible for baseline determination.**

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**63.0 Reference: Exhibit B-4, BCUC 1.25.1 & 1.25.2  
Exhibit B-5, BCOAPO 1.23.1  
Exhibit B-1, Appendix C (revised)**

3.63.2 Given the likely impact of the COVID-19 pandemic on 2020 sales to RS1823 and RS1828 customers, will historical usage in either F2020 or F2021 be considered in assessing whether customers meet the “at least two years of historical Electricity usage” eligibility requirement? If yes, please explain why.

**RESPONSE:**

**A customer’s historical usage in F2020 or F2021 would be counted towards the minimum two years of historical Electricity usage under Special Condition 7, only where the customer commenced taking transmission voltage electricity service from BC Hydro in F2019, F2020 or F2021.**

**The LLH and HLH Baselines and Monthly Reference Demands determined in accordance with RS 1893 will be based on the customer’s Fiscal 2019 Electricity usage, unless the customer does not have Fiscal 2019 Electricity usage, in which case the most recent 12 Billing Periods will be used.**

**However, if the customer’s LLH and HLH Baselines and/or Monthly Reference Demands so determined are not representative of the customer’s normal expected RS 1823 or RS 1828 Electricity usage, alternative LLH and HLH Baselines and/or Monthly Reference Demands will be determined and filed with the BCUC in accordance with Special Conditions 8 and 9 of RS 1893. These Special Conditions provide BC Hydro and the customer with the ability to assess the impact of the COVID-19 pandemic on actual F2020 and F2021 Electricity usage and to make adjustments, if necessary, so that the RS 1893 baselines are representative of normal expected Electricity usage.**



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**63.0 Reference: Exhibit B-4, BCUC 1.25.1 & 1.25.2  
Exhibit B-5, BCOAPO 1.23.1  
Exhibit B-1, Appendix C (revised)**

3.63.3 With respect to Appendix C, Special Condition 7, please explain the circumstances under a customer would have the required two years of historical Electricity usage but not have historical annual electricity consumption for Fiscal 2019.

**RESPONSE:**

**Please refer to BC Hydro's response to BCOAPO IR 3.63.2.**

<b>BCOAPO et al.</b> Information Request No. <b>3.63.4</b> Dated: <b>May 22, 2020</b> British Columbia Hydro & Power Authority Response issued: <b>June 19, 2020</b>	Page 1 of 1
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**63.0 Reference: Exhibit B-4, BCUC 1.25.1 & 1.25.2  
Exhibit B-5, BCOAPO 1.23.1  
Exhibit B-1, Appendix C (revised)**

3.63.4 Given the likely impact of the COVID-19 pandemic on 2020 sales to RS1823 and RS1828 customers, if the customer does not have historical annual electricity consumption for Fiscal 2019 will more recent usage during periods when public health order existed regarding the pandemic be viewed as acceptable for purposes of setting the baselines? If yes, please explain why.

**RESPONSE:**

**Please refer to BC Hydro's response to BCOAPO IR 3.63.2.**

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**64.0 Reference: Exhibit B-4, BCUC 1.26.1**

3.64.1 Please explain the basis for choosing two times the monthly Reference Demand as the proposed limitation on RS 1893 usage (as oppose to some other value such as 1.25 times or 1.5 times).

**RESPONSE:**

**This limitation on RS 1893 usage was proposed as an alternative to a 10 MVA minimum size threshold after consultation with customers and AMPC. Please refer to BC Hydro’s response to BCUC IR 1.26.1.**

**The basis of the two times Monthly Reference Demand is premised on two concepts:**

- **for a facility with two production lines, only one of which is currently operating, re-start of the second production line under RS 1893 might result in a doubling of load; and**
- **where load exceeds the two times Monthly Reference Demand limitation, the RS 1893 baselines will be automatically adjusted so that 50 per cent of the load will be billed under RS 1823 and 50 per cent of the load will be billed under RS 1893.**

**The intent of these provisions is to strike a reasonable balance between providing an opportunity for the customer to increase load under RS 1893 under expected scenarios such as the temporary re-start of a second production line, while still mitigating the potential for the customer to purchase significant excess volumes of non-firm electricity that might have occurred anyway (such as re-start of multiple production lines or re-start of a shutdown plant).**

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**65.0 Reference: Exhibit B-4, BCUC 1.28.2  
Exhibit B-1, page 84 Exhibit A-8, BCUC 2.4**

Exhibit B-1 states that the evaluation will include “examination of whether load shifting by customers occurred and an assessment of the impact”.

BCUC 1.28.2 does not outline any measure for load shifting.

3.65.1 Will the examination of load shifting include an assessment of the IER sales made that would have occurred in the absence of the IER (e.g. natural load growth)?

**RESPONSE:**

**Yes, BC Hydro’s examination of load shifting is expected to include an assessment of RS 1893 sales that is consistent with the analysis methodology set out in section 3.1.7 of the Application.**

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**65.0 Reference: Exhibit B-4, BCUC 1.28.2  
Exhibit B-1, page 84 Exhibit A-8, BCUC 2.4**

Exhibit B-1 states that the evaluation will include “examination of whether load shifting by customers occurred and an assessment of the impact”.

BCUC 1.28.2 does not outline any measure for load shifting.

3.65.1 Will the examination of load shifting include an assessment of the IER sales made that would have occurred in the absence of the IER (e.g. natural load growth)?

3.65.1.1 If not, why not?

**RESPONSE:**

**Please refer to BC Hydro’s response to BCOAPO IR 3.65.1.**

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**65.0 Reference: Exhibit B-4, BCUC 1.28.2  
Exhibit B-1, page 84 Exhibit A-8, BCUC 2.4**

Exhibit B-1 states that the evaluation will include “examination of whether load shifting by customers occurred and an assessment of the impact”.

BCUC 1.28.2 does not outline any measure for load shifting.

3.65.1 Will the examination of load shifting include an assessment of the IER sales made that would have occurred in the absence of the IER (e.g. natural load growth)?

3.65.1.2 If yes, if not discussed in the response to BCUC 2.4, how does BC Hydro expect to measure/estimate this aspect of load shifting?

**RESPONSE:**

**Please refer to BC Hydro’s response to BCOAPO IR 3.65.1.**

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**66.0 Reference: Exhibit B-4, BCUC 1.28.3  
Exhibit A-8, BCUC 3.1, 3.2 & 3.3 and BCUC 4.3**

3.66.1 In view of the impacts of the COVID-19 pandemic on industrial sales, does BC Hydro still consider that the evaluation of results for the initial period (January 1, 2020 to March 31, 2021) and the three complete fiscal years (fiscal 2021, fiscal 2022 and fiscal 2023) will be sufficient to provide a satisfactory evaluation of the IER Pilot?

**RESPONSE:**

**In BC Hydro's view the proposed evaluation filing schedule of December 2023 is the appropriate timeline to allow for the pilot to be assessed over a range of conditions.**

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**66.0 Reference: Exhibit B-4, BCUC 1.28.3  
Exhibit A-8, BCUC 3.1, 3.2 & 3.3 and BCUC 4.3**

3.66.1 In view of the impacts of the COVID-19 pandemic on industrial sales, does BC Hydro still consider that the evaluation of results for the initial period (January 1, 2020 to March 31, 2021) and the three complete fiscal years (fiscal 2021, fiscal 2022 and fiscal 2023) will be sufficient to provide a satisfactory evaluation of the IER Pilot?

3.66.1.1 If yes, why?

**RESPONSE:**

**BC Hydro is unable to predict the impacts or timeline of the COVID-19 pandemic.**

**However, based on our experience with the evaluation of new BC Hydro rate schedules, three years generally provides an appropriate timeline for the collection and analysis of data on a range of issues and conditions, resulting in meaningful information on how the rate schedule has performed.**



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**66.0 Reference: Exhibit B-4, BCUC 1.28.3  
Exhibit A-8, BCUC 3.1, 3.2 & 3.3 and BCUC 4.3**

3.66.1 In view of the impacts of the COVID-19 pandemic on industrial sales, does BC Hydro still consider that the evaluation of results for the initial period (January 1, 2020 to March 31, 2021) and the three complete fiscal years (fiscal 2021, fiscal 2022 and fiscal 2023) will be sufficient to provide a satisfactory evaluation of the IER Pilot?

3.66.1.2 If not, should the pilot and the timing of the evaluation report be extended?

**RESPONSE:**

**Please refer to BC Hydro’s response to BCOAPO IR 3.66.1.**

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**67.0 Reference: Exhibit B-5, BCOAPO 1.1.2 and 1.39.1 & 1.39.2**

The purpose of this question is to understand the relationship (if any) between the Energy CBL established for RS1823 and the Energy Baselines established for RS1893.

3.67.1 Please confirm that: i) the RS1823 Energy CBL is an annual value and ii) for RS1893 Energy Baselines are established for the HLH and LLH of each month (i.e., 24 per year) and are an average hourly value.

**RESPONSE:**

**Confirmed.**

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**67.0 Reference: Exhibit B-5, BCOAPO 1.1.2 and 1.39.1 & 1.39.2**

The purpose of this question is to understand the relationship (if any) between the Energy CBL established for RS1823 and the Energy Baselines established for RS1893.

3.67.2 For a specific customer, can the RS1893 Energy Baselines when summed for the 12 months exceed the RS1823 (annual) Energy Baseline?

**RESPONSE:**

**Yes, it is possible for the annual sum of the monthly energy amount used to determine RS 1893 Energy Baselines to be higher or lower than the annual RS 1823 Energy CBL.**

**This could occur if energy consumption from the annual period used to determine the RS 1893 Energy Baselines (such as F2019) is higher or lower than energy consumption from the annual period used to determine the RS 1823 Energy CBL.**

**Further: (i) the RS 1823 Energy CBL might include adjustments made in accordance with Tariff Supplement No. 74; and (ii) the RS 1893 Energy Baselines might include adjustments made consistent with the principles and criteria of Tariff Supplement No. 74.**

**Such baseline adjustments, as approved by the BCUC, could also result in the annual sum of the energy amounts that correspond to monthly adjusted RS 1893 Energy Baselines being higher or lower than the annual RS 1823 Energy CBL.**

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**67.0 Reference: Exhibit B-5, BCOAPO 1.1.2 and 1.39.1 & 1.39.2**

The purpose of this question is to understand the relationship (if any) between the Energy CBL established for RS1823 and the Energy Baselines established for RS1893.

3.67.2 For a specific customer, can the RS1893 Energy Baselines when summed for the 12 months exceed the RS1823 (annual) Energy Baseline?

3.67.2.1 If yes, please explain how this result would arise.

**RESPONSE:**

**Please refer to BC Hydro's response to BCOAPO IR 3.67.2.**

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**67.0 Reference: Exhibit B-5, BCOAPO 1.1.2 and 1.39.1 & 1.39.2**

The purpose of this question is to understand the relationship (if any) between the Energy CBL established for RS1823 and the Energy Baselines established for RS1893.

3.67.2 For a specific customer, can the RS1893 Energy Baselines when summed for the 12 months exceed the RS1823 (annual) Energy Baseline?

3.67.2.2 If not, why not?

**RESPONSE:**

**Please refer to BC Hydro's response to BCOAPO IR 3.67.2.**

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**67.0 Reference: Exhibit B-5, BCOAPO 1.1.2 and 1.39.1 & 1.39.2**

The purpose of this question is to understand the relationship (if any) between the Energy CBL established for RS1823 and the Energy Baselines established for RS1893.

3.67.2 For a specific customer, can the RS1893 Energy Baselines when summed for the 12 months exceed the RS1823 (annual) Energy Baseline?

3.67.2.3 In such circumstances, is it possible for a customer to shift load either between months or between HLH and LLH within a month so as to take advantage of periods with lower IER rates without impacting the total annual energy billed under RS1823 or its future RS1823 CBL? If yes, will this impact be assessed as part of the proposed evaluation and reporting?

**RESPONSE:**

**It is possible for a customer to shift load between months or between HLH and LLH within a specific month. If this load shifting were to occur, for a fixed total amount of annual energy sales, RS 1823 energy sales would be lower and RS 1893 energy sales would be higher.**

**BC Hydro's response to BCOAPO IR 1.39.2 provides a detailed example of the prospective RS 1823 Energy CBL annual reset risk that the customer might face if such a load shift were to occur.**

**BC Hydro's examination of load shifting is expected to include an assessment of RS 1893 energy sales that is consistent with the analysis methodology set out in section 3.1.7 of the Application.**

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**67.0 Reference: Exhibit B-5, BCOAPO 1.1.2 and 1.39.1 & 1.39.2**

The purpose of this question is to understand the relationship (if any) between the Energy CBL established for RS1823 and the Energy Baselines established for RS1893.

3.67.3 For a specific customer, can the RS1893 Energy Baselines when summed for the 12 months be less than the RS1823 (annual) Energy Baseline?

**RESPONSE:**

**Please refer to BC Hydro's response to BCOAPO IR 3.67.2.**

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**67.0 Reference: Exhibit B-5, BCOAPO 1.1.2 and 1.39.1 & 1.39.2**

The purpose of this question is to understand the relationship (if any) between the Energy CBL established for RS1823 and the Energy Baselines established for RS1893.

3.67.3 For a specific customer, can the RS1893 Energy Baselines when summed for the 12 months be less than the RS1823 (annual) Energy Baseline?

3.67.3.1 If yes, please explain how this result would arise.

**RESPONSE:**

**Please refer to BC Hydro's response to BCOAPO IR 3.67.2.**



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**67.0 Reference: Exhibit B-5, BCOAPO 1.1.2 and 1.39.1 & 1.39.2**

The purpose of this question is to understand the relationship (if any) between the Energy CBL established for RS1823 and the Energy Baselines established for RS1893.

3.67.3 For a specific customer, can the RS1893 Energy Baselines when summed for the 12 months be less than the RS1823 (annual) Energy Baseline?

3.67.3.2 If not, why not?

**RESPONSE:**

**Please refer to BC Hydro's response to BCOAPO IR 3.67.2.**

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**67.0 Reference: Exhibit B-5, BCOAPO 1.1.2 and 1.39.1 & 1.39.2**

The purpose of this question is to understand the relationship (if any) between the Energy CBL established for RS1823 and the Energy Baselines established for RS1893.

3.67.3 For a specific customer, can the RS1893 Energy Baselines when summed for the 12 months be less than the RS1823 (annual) Energy Baseline?

3.67.3.3 In such circumstances, is it possible for a customer to shift load either between months or between HLH and LLH within a month so as to take advantage of periods with lower IER rates without impacting the total annual energy billed under RS1823 or its future RS1823 CBL? If yes, will this impact be assessed as part of the proposed evaluation and reporting?

**RESPONSE:**

**Please refer to BC Hydro's response to BCOAPO IR 3.67.2.3.**

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**67.0 Reference: Exhibit B-5, BCOAPO 1.1.2 and 1.39.1 & 1.39.2**

The purpose of this question is to understand the relationship (if any) between the Energy CBL established for RS1823 and the Energy Baselines established for RS1893.

3.67.4 For a specific customer, is it possible that the RS1893 Energy Baselines when summed for the 12 months be less than 90% of the RS1823 (annual) Energy Baseline?

**RESPONSE:**

**This outcome is theoretically possible, but unlikely. BC Hydro is not aware of any current circumstance where this is the case.**

**The scenario could hypothetically arise where the customer has a large Customer-funded Demand Side Management (DSM) Project with verified annual energy savings that exceed 10 per cent of the RS 1823 Energy CBL.**

**Consider an example based on F2019 electricity consumption data (F2019 is the default year for RS 1893 Baseline determination) whereby:**

- **The customer's F2019 RS 1823 Final Energy CBL is 100 GWh;**
- **Verified annual energy savings of the Customer-funded DSM Project in F2019 are 15 GWh; and**
- **Actual F2019 RS 1823 annual energy purchases net of the Customer-funded DSM Project savings are 85 GWh.**

**All else being equal, the sum of the customer's RS 1893 Energy Baselines determined using F2019 RS 1823 annual energy purchases would be 85 GWh. This is less than 90 per cent of the RS 1823 Energy CBL of 100 GWh.**

**Importantly, such RS 1893 Energy Baselines would be appropriate for setting the threshold for incremental energy use each month under RS 1893 since they reflect the customer's normal expected operations with the Customer-funded DSM Project in place.**

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**67.0 Reference: Exhibit B-5, BCOAPO 1.1.2 and 1.39.1 & 1.39.2**

The purpose of this question is to understand the relationship (if any) between the Energy CBL established for RS1823 and the Energy Baselines established for RS1893.

3.67.4 For a specific customer, is it possible that the RS1893 Energy Baselines when summed for the 12 months be less than 90% of the RS1823 (annual) Energy Baseline?

3.67.4.1 If yes, please explain how this result would arise.

**RESPONSE:**

**Please refer to BC Hydro's response to BCOAPO IR 3.67.4.**

<b>BCOAPO et al.</b> Information Request No. <b>3.67.4.2</b> Dated: <b>May 22, 2020</b> British Columbia Hydro & Power Authority Response issued: <b>June 19, 2020</b>	Page 1 of 1
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**67.0 Reference: Exhibit B-5, BCOAPO 1.1.2 and 1.39.1 & 1.39.2**

The purpose of this question is to understand the relationship (if any) between the Energy CBL established for RS1823 and the Energy Baselines established for RS1893.

3.67.4 For a specific customer, is it possible that the RS1893 Energy Baselines when summed for the 12 months be less than 90% of the RS1823 (annual) Energy Baseline?

3.67.4.2 If not, why not?

**RESPONSE:**

**Please refer to BC Hydro's response to BCOAPO IR 3.67.4.**

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**67.0 Reference: Exhibit B-5, BCOAPO 1.1.2 and 1.39.1 & 1.39.2**

The purpose of this question is to understand the relationship (if any) between the Energy CBL established for RS1823 and the Energy Baselines established for RS1893.

3.67.5 The response to BCOAPO 1.1.2 states:  
 “For example, if the customer undertakes capital investments to permanently increase plant production capacity and makes a request to BC Hydro in accordance with TS 74 for its RS 1823 Energy CBL to be increased, BC Hydro would make a corresponding adjustment to the customer’s RS 1893 baselines to reflect this change.”  
 Please explain how the “corresponding adjustment” to each of the 24 RS1893 energy baselines and the 12 monthly reference demands would be determined.

**RESPONSE:**

**BC Hydro would use the energy consumption impact of the plant capacity increase project that was previously reviewed and verified in accordance with Tariff Supplement No. 74 and apply a corresponding adjustment to the customer’s RS 1893 HLH and LLH Energy Baselines to ensure the impact of the plant capacity increase project is recognized - consistent with the principles and criteria of Tariff Supplement No. 74 and in accordance with Special Condition 9 of RS 1893.**

**RS 1893 Energy Baselines would then be adjusted as follows:**

- **Start with the previously verified annual energy consumption impact of the plant capacity increase project (in kWh);**
- **Calculate the average hourly energy consumption impact by dividing the verified annual energy consumption impact of the plant capacity increase project by 8,760 hrs (kWh/hr);**
- **Apply the average hourly energy consumption impact (in kWh/hr) as a credit adjustment to each of the customer’s RS 1893 HLH and LLH Energy Baselines; and**
- **File the adjusted RS 1893 Energy Baselines with the BCUC for approval.**

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Similarly, RS 1893 Monthly Reference Demands would be adjusted as follows:

- **Determine the verified increase in kVA demand associated with the plant capacity increase project (in kVA);**
- **Add the verified kVA demand impact as a credit adjustment to each of the customer's RS 1893 Monthly Reference Demands (in kVA); and**
- **File the adjusted RS 1893 Monthly Reference Demands with the BCUC for approval.**

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**67.0 Reference: Exhibit B-5, BCOAPO 1.1.2 and 1.39.1 & 1.39.2**

The purpose of this question is to understand the relationship (if any) between the Energy CBL established for RS1823 and the Energy Baselines established for RS1893.

3.67.6 Assuming the twenty four RS1893 Energy Baselines are based on a customer's F2019 usage under RS1823 is it possible for the customer's annual usage under RS1823 in future years (when the customer is also using RS1893) to exceed the annual sum of the RS1893 Energy Baselines?

**RESPONSE:**

**No, based on the specified assumptions, it is not possible for the customer's annual RS 1823 energy usage to exceed the annual sum of the RS 1893 Energy Baselines.**



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**67.0 Reference: Exhibit B-5, BCOAPO 1.1.2 and 1.39.1 & 1.39.2**

The purpose of this question is to understand the relationship (if any) between the Energy CBL established for RS1823 and the Energy Baselines established for RS1893.

3.67.6 Assuming the twenty four RS1893 Energy Baselines are based on a customer's F2019 usage under RS1823 is it possible for the customer's annual usage under RS1823 in future years (when the customer is also using RS1893) to exceed the annual sum of the RS1893 Energy Baselines?

3.67.6.1 If yes, please explain how this could occur.

**RESPONSE:**

**Please refer to BC Hydro's response to BCOAPO IR 3.67.6.**

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**68.0 Reference: Exhibit B-5, BCOAPO 1.5.1**

3.68.1 The response provided did not answer the specific question asked which was – “how many of the current RS 1823 customers would not be able to take service under the proposed (IER) rate” due to lack of available local/network transmission capability. Please respond to the question assuming the RS1893 energy and reference demand baselines are based on F2019 usage.

**RESPONSE:**

**BC Hydro considers that, with currently available transmission capacity and under normal system operating conditions, the existing system will have sufficient energy and capacity to serve both current RS 1823 customer load and expected incremental RS 1893 load.**

**As such, and consistent with the stated assumptions, BC Hydro expects that no current RS 1823 customer that is eligible to take service under RS 1893 would be prevented from doing so due to lack of available local or network transmission capability.**

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**69.0 Reference: Exhibit B-5, BCOAPO 1.7.1**

3.69.1 As part of the evaluation and reporting for the IER Pilot will BC Hydro undertake to report the number of participating customers from whom the RS1893 Energy Baselines when summed for the 12 months were less than versus greater than their RS1823 (annual) Energy Baseline?

**RESPONSE:**

**BC Hydro is not opposed to including this information as part of its evaluation and reporting of RS 1893.**

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**69.0 Reference: Exhibit B-5, BCOAPO 1.7.1**

3.69.1 As part of the evaluation and reporting for the IER Pilot will BC Hydro undertake to report the number of participating customers from whom the RS1893 Energy Baselines when summed for the 12 months were less than versus greater than their RS1823 (annual) Energy Baseline?

3.69.1.1 If not, why not?

**RESPONSE:**

**Please refer to BC Hydro's response to BCOAPO IR 3.69.1.**

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**70.0 Reference: Exhibit B-5, BCOAPO 1.22.1**

3.70.1 Consistent with the original question, please separate out the sources of the responses from intervenors/stakeholders as between those that represent customers served under RS1823 or RS1828 and those that don't.

**RESPONSE:**

**A total of three interveners/stakeholders provided a feedback form to BC Hydro from the October 2018 workshop: (1) Association of Major Power Customers – AMPC; (2) BC Sustainable Energy and Sierra Club; and (3) MoveUp. Of these, AMPC represents customers served under RS 1823 or RS 1828.**

**The table provided in BC Hydro's response to BCOAPO IR 1.22.1 incorporates a "yes" response from AMPC in support of the question and "no response" from the other two interveners listed above.**

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**71.0 Reference: Exhibit B-5, BCOAPO 1.26.2, 1.27.1 and 1.29.2 Exhibit B-1, page 77 (Table 9)**

3.71.1 What was the contribution to the total expected incremental load net revenue from during the periods when each of the three system conditions existed in the financial modelling exercise?

**RESPONSE:**

**The contribution to the total expected incremental net revenue during Condition 1 is from the difference between the adder and the transmission and loss charges deemed avoided and is a gain of approximately \$10/MWh and \$14/MWh for adders of \$3/MWh and \$7/MWh.**

**The contribution to the total expected incremental net revenue during Condition 2 is from the difference between the adder and the transmission and loss charges deemed incurred and, for non-negative Mid-C prices, is typically a loss of approximately \$4/MWh and break-even for adders of \$3/MWh and \$7/MWh, respectively. If Mid-C prices are negative, the aforementioned contribution is made more positive by approximately the amount the Mid-C price is negative.**

**The contribution to the total expected incremental net revenue during Condition 3 is from the difference between the RS 1893 energy charges and the deemed System Marginal Value. The contribution is positive when the RS 1893 energy charges are higher.**

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**71.0 Reference: Exhibit B-5, BCOAPO 1.26.2, 1.27.1 and 1.29.2 Exhibit B-1, page 77 (Table 9)**

3.71.1 What was the contribution to the total expected incremental load net revenue from during the periods when each of the three system conditions existed in the financial modelling exercise?

3.71.1.1 If the response is considered confidential please explain why providing it would result in financial harm to BC Hydro and/or its rate payers.

**RESPONSE:**

**Please refer to BC Hydro's response to BCOAPO IR 3.71.1.**

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**72.0 Reference: Exhibit B-5, BCOAPO 1.34.1**

3.72.1 Why is an “adjustment” required to account for seasonal storage (i.e., how does seasonal storage impact the “cost” of providing energy under RS1893)?

**RESPONSE:**

The “adjustment” refers to the Energy Charge Adder of \$3/MWh in May, June and July and \$7/MWh in all other Billing Periods.

As BC Hydro described in section 5 of the Application, starting at page 73, system marginal value represents the estimated marginal value of energy stored as water in the system.

BC Hydro used its forecast of system marginal value (which accounts for seasonal storage) from the energy study models in estimating the ratepayer impact of servicing incremental customer load under the proposed IER Pilot and setting the pricing of the Energy Charge Adder (which considers the costs of providing energy under RS 1893).



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73.0 **Reference:** Exhibit B-5, BCOAPO 1.35.1 and 1.39.3

The response to BCOAPO 1.35.1 states:

“In either case, BC Hydro seeks to make clear that the established baselines are representative of the customer’s expected future electricity consumption under the applicable firm service rate (RS 1823 or RS 1828) during the forthcoming freshet period (for RS 1892) or forthcoming Billing Year (for RS 1893)”.

3.73.1 Please confirm that the approach for establishing the RS1893 baselines assumes that there will be no “natural growth” in the load for RS1823 customers who apply for service under RS1893.

**RESPONSE:**

**Not confirmed. RS 1893 Baselines will be set to ensure they are representative of the customer’s expected future electricity consumption. This determination is made in accordance with Special Conditions 8 and 9 of RS 1893 and may include baseline adjustment for natural load growth.**

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73.0 **Reference:** Exhibit B-5, BCOAPO 1.35.1 and 1.39.3

The response to BCOAPO 1.35.1 states:

“In either case, BC Hydro seeks to make clear that the established baselines are representative of the customer’s expected future electricity consumption under the applicable firm service rate (RS 1823 or RS 1828) during the forthcoming freshet period (for RS 1892) or forthcoming Billing Year (for RS 1893)”.

3.73.1 Please confirm that the approach for establishing the RS1893 baselines assumes that there will be no “natural growth” in the load for RS1823 customers who apply for service under RS1893.

3.73.1.1 If not confirmed, please explain why.

**RESPONSE:**

**Please refer to BC Hydro’s response to BCOAPO IR 3.73.1.**

<b>BCOAPO et al.</b> Information Request No. <b>3.73.1.2</b> Dated: <b>May 22, 2020</b> British Columbia Hydro & Power Authority Response issued: <b>June 19, 2020</b>	Page 1 of 1
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73.0 **Reference:** Exhibit B-5, BCOAPO 1.35.1 and 1.39.3

The response to BCOAPO 1.35.1 states:

“In either case, BC Hydro seeks to make clear that the established baselines are representative of the customer’s expected future electricity consumption under the applicable firm service rate (RS 1823 or RS 1828) during the forthcoming freshet period (for RS 1892) or forthcoming Billing Year (for RS 1893)”.

3.73.1 Please confirm that the approach for establishing the RS1893 baselines assumes that there will be no “natural growth” in the load for RS1823 customers who apply for service under RS1893.

3.73.1.2 If confirmed, please contrast this “assumption” with the large industrial load forecast for F2019 (the default year for RS1093 Baselines) versus later years in BC Hydro’s F2020 to F2021 Revenue Requirements Application.

**RESPONSE:**

**The October 2018 Load Forecast was the basis for BC Hydro’s Fiscal 2020 to Fiscal 2021 Revenue Requirements Application. Based on the October 2018 Load Forecast, the forecasted net growth for transmission service customers is 11 per cent between fiscal 2019 (baseline setting year) and fiscal 2024 (the end of the RS 1893 pilot period)**

**However, as noted in BC Hydro’s response to MOVEUP IR 3.1.1, more recently there has been a decline in industrial load associated with the COVID-19 pandemic.**

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**74.0 Reference: Exhibit B-5, BCOAPO 1.39.3 and 1.41.4**

BCOAPO 1.39.3 states:

“No, the RS 1823 Energy CBL reset will not capture any natural load growth that was billed under RS 1893. In accordance with TS 74, the Energy CBL reset determination can only consider RS 1823 energy purchases”.

BCOAPO 1.41.4 states:

“For illustrative purposes, if 5 per cent or 10 per cent of incremental load purchased under RS 1893 was deemed to be energy that would have been purchased under RS 1823 there would be, holding that volume of energy constant:

A reduction in BC Hydro’s expected net revenue if RS 1893 was priced lower than RS 1823; and

An increase in expected net revenue if RS 1893 was priced higher than RS 1823.

The revenue impact would also need to consider the prospective impacts of RS 1823 Energy CBL reset on the relative mix of each customer’s RS 1823 Tier 1 and Tier 2 energy volumes”.

- 3.74.1 With respect to the first part of BCOAPO 1.41.4 referenced in the Preamble, please confirm that, given the assumptions regarding the “strike price” energy purchased under RS1893 is more likely to be priced lower than RS1823.

**RESPONSE:**

**Not confirmed.**

**The modelling assumption for estimating incremental load is an average “strike price” of \$55/MWh. This model input results in the following model outputs:**

- **If the daily Mid-C energy price plus Energy Charge Adder is less than \$55/MWh, there will be incremental energy purchases on that day; and**
- **If the daily Mid-C energy price plus Energy Charge Adder greater than \$55/MWh, there will no incremental energy purchases on that day.**

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The model is intended to represent an expected participant customer response to a notional daily price point. Actual customer response may vary significantly.

BC Hydro reiterates its response to BCOAPO IR 1.41.1 and includes current RS 1823 pricing information for context.

There would be a reduction, or increase, in BC Hydro’s expected net revenue if RS 1893 was priced lower, or higher, than the prevailing RS 1823 electricity charge.

This could occur if RS 1893 energy sales were priced lower, or higher, than the RS 1823 Tier 1 energy price (currently \$44.89/MWh), the RS 1823A energy price (currently \$50.47/MWh), the RS 1823 Tier 2 energy price (currently \$100.57/MWh) or an estimate of the “all-in” average RS 1823 electricity price (currently \$58.76/MWh).<sup>1</sup>

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<sup>1</sup> Assumes RS 1823 energy purchases are priced at RS 1823 Tier 1 and kVA demand charges reflect unity power factor and 85 per cent load factor.

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A reduction in BC Hydro’s expected net revenue if RS 1893 was priced lower than RS 1823; and

An increase in expected net revenue if RS 1893 was priced higher than RS 1823.

The revenue impact would also need to consider the prospective impacts of RS 1823 Energy CBL reset on the relative mix of each customer’s RS 1823 Tier 1 and Tier 2 energy volumes”.

3.74.1 With respect to the first part of BCOAPO 1.41.4 referenced in the Preamble, please confirm that, given the assumptions regarding the “strike price” energy purchased under RS1893 is more likely to be priced lower than RS1823.

3.74.1.1 If not confirmed, please explain why.

**RESPONSE:**

**Please refer to BC Hydro’s response to BCOAPO IR 3.74.1.**

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A reduction in BC Hydro’s expected net revenue if RS 1893 was priced lower than RS 1823; and

An increase in expected net revenue if RS 1893 was priced higher than RS 1823.

The revenue impact would also need to consider the prospective impacts of RS 1823 Energy CBL reset on the relative mix of each customer’s RS 1823 Tier 1 and Tier 2 energy volumes”.

3.74.2 Given that the RS 1823 Energy CBL reset will not capture any natural load growth that was billed under RS 1893 (per BCOAPO 1.39.3), please provide the analysis originally requested in BCOAPO 1.41.4 assuming current RS1823 rates and that all of incremental load was load that would have occurred under RS 1823 is natural load growth such the RS1823 Energy CBLs would not be reset.

**RESPONSE:**

**In order to complete such an analysis, BC Hydro would require an average daily RS 1893 electricity price and an average daily RS 1823 electricity price from which a revenue differential for any fixed volume of energy sales might be determined. BC Hydro does not consider it appropriate to make such speculative price assumptions for the reasons outlined below:**

- **In its response to BCOAPO IR 3.74.1, BC Hydro identified a range of pricing outcomes that might apply to a participant customer. The revenue impact**

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would need to be assessed on a daily basis for each customer over the entire Pilot period and could be higher or lower.

- In its response to BCOAPO IR 1.41.4, BC Hydro advised that the revenue impact would need to consider the prospective impacts of RS 1823 Energy CBL reset on the relative mix of each customer's RS 1823 Tier 1 and Tier 2 energy volumes. This impact would also need to be assessed over the entire Pilot period.



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**75.0 Reference: Exhibit B-5, BCSEA 1.6.1 and 1.6.2**

3.75.1 Please confirm that in the determination of the revenue to cost ratios for the Transmission Service Rate class RS1893 loads are included in the determination of the energy and demand allocators used in the Fully Allocated Cost of Service Study.

**RESPONSE:**

**RS 1893 loads will be included in the estimation of the cost of serving the Transmission Service Rate Class in BC Hydro's Fully Allocated Cost of Service (FACOS) Studies.**

**The inclusion of RS 1893 load in the FACOS Study will start with the F2020 study which will be the first to include the time during which service under RS 1893 is available. BC Hydro anticipates completing the F2020 FACOS by March 31, 2021.**

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**75.0 Reference: Exhibit B-5, BCSEA 1.6.1 and 1.6.2**

3.75.1 Please confirm that in the determination of the revenue to cost ratios for the Transmission Service Rate class RS1893 loads are included in the determination of the energy and demand allocators used in the Fully Allocated Cost of Service Study.

3.75.1.1 If not confirmed, please clarify how the RS1893 loads are used in the allocation of costs.

**RESPONSE:**

**Please refer to BC Hydro's response to BCOAPO IR 3.75.1.**

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76.0 Reference: Exhibit B-5, BCSEA 1.12.1

The response states:

“As the annual energy surplus in the planning view decreases, the operational view of the annual surplus will also decrease. On average, RS 1892 and RS 1893 are expected to provide benefits to all ratepayers while BC Hydro has an operational annual surplus of energy. As the annual energy surplus decreases, the benefit to non- participating customers will generally decrease, all else being equal. From an energy perspective, the economic impact on ratepayers of RS 1892 is expected to be less sensitive to whether or not BC Hydro is in an operational annual surplus or deficit because BC Hydro may experience energy oversupply in the freshet period even during a period of an annual deficit”.

3.76.1 Assuming RS1893 is made permanent after the completion of the pilot, based on the above response will there be a need to monitor the continuing viability of RS1893 as the load resource balance changes over time?

**RESPONSE:**

**In BC Hydro’s view, it is premature to make the assessment requested in this information request. BC Hydro proposes that this question be addressed through the proposed RS 1893 evaluation, which will provide information on the performance of the RS 1893 pilot over a range of conditions.**

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3.76.1 Assuming RS1893 is made permanent after the completion of the pilot, based on the above response will there be a need to monitor the continuing viability of RS1893 as the load resource balance changes over time?

3.76.1.1 If not, why not?

**RESPONSE:**

**Please refer to BC Hydro’s response to BCOAPO IR 3.76.1.**

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76.0 Reference: Exhibit B-5, BCSEA 1.12.1

The response states:

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3.76.1 Assuming RS1893 is made permanent after the completion of the pilot, based on the above response will there be a need to monitor the continuing viability of RS1893 as the load resource balance changes over time?

3.76.1.2 If yes, how frequently should this be done and in what forum (e.g., as part of a Revenue Requirements Application, as part of the periodic Long Term Resource Plan Applications or as part of the periodic Rate Design Applications).

**RESPONSE:**

**Please refer to BC Hydro’s response to BCOAPO IR 3.76.1.**

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**77.0 Reference: Exhibit B-5, CEC 1.4.3.1 and 1.12.3**

The response to CEC 1.4.3.1 states:

“BC Hydro consulted with customers and stakeholders on the appropriate value for the energy charge adder in freshet and non-freshet months.”

3.77.1 Specifically which customers (i.e., what are the rate schedules for those customers who had not participated in RS1892 and the prospective customers – per CEC 1.12.3) and stakeholders did BC Hydro consult regarding the appropriate value for the IER energy charge adder in freshet and non-freshet months?

**RESPONSE:**

**In its response to CEC IR 1.12.3, BC Hydro identified existing customers that have participated in RS 1892 and existing customers that have not participated in RS 1892. All of these existing customers are RS 1823 customers.**

**Prospective new customers are not yet taking electricity service from BC Hydro and so do not presently have a corresponding rate schedule. However, if/when they do connect to the transmission system, they would likely be served under RS 1823 as this is BC Hydro’s default rate for transmission voltage electricity service.**

**Please also refer to BC Hydro’s response to BCOAPO IR 3.70.1 for a discussion of stakeholders consulted.**

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**78.0 Reference: Exhibit B-1, pages 58 & 84 and Appendix D  
Exhibit B-4, BCUC 1.28.1.2  
Exhibit A-8, BCUC 5.1 & 5.2**

In the Application (page 58) BC Hydro proposes that the IER Pilot run from January 1, 2020 to December 31, 2024. BC Hydro also indicates (page 84) that the evaluation is expected to be undertaken after completion of the third full fiscal year of the pilot (fiscal 2023) and will be filed with the BCUC in fall 2023.

The response to BCUC 1.28.1.2 states:

“BC Hydro is of the view that a single final evaluation report filed in fall 2023 would be more useful for stakeholders since the results would be covering three full fiscal years of the pilot”.

3.78.1 It is noted that while the Final Evaluation Report for the Freshet Rate Pilot (dated December 2018) covered three years of the Freshet Rate Pilot it only included an evaluation of the actual load shifting impacts for the first two years of the pilot and preliminary forecast for year 3. Will the proposed timing of the evaluation for the IER Pilot allow BC Hydro to complete an evaluation of the actual impacts of load shifting for the first three years of the IER Pilot?

**RESPONSE:**

**Yes, the proposed timing of the fall 2023 evaluation report will allow BC Hydro to complete an evaluation of the actual impacts of load shifting for the first three full years of the IER Pilot (being F2021, F2022 and F2023).**

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**78.0 Reference: Exhibit B-1, pages 58 & 84 and Appendix D  
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In the Application (page 58) BC Hydro proposes that the IER Pilot run from January 1, 2020 to December 31, 2024. BC Hydro also indicates (page 84) that the evaluation is expected to be undertaken after completion of the third full fiscal year of the pilot (fiscal 2023) and will be filed with the BCUC in fall 2023.

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3.78.1.1 If not, what time frame does BC Hydro expect its evaluation as to the impact of load shifting (including natural load growth) to cover?

**RESPONSE:**

**Please refer to BC Hydro’s response to BCOAPO IR 3.78.1.**



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3.78.1.2 If not, please indicate what the anticipated timing of the evaluation report would be if the BCUC directed that it include an evaluation of load shifting impacts for all three years.

**RESPONSE:**

**Please refer to BC Hydro’s response to BCOAPO IR 3.78.1.**

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**14.0 Topic: Incremental Energy Rate Pilot Proposal**

**Reference: Exhibit A-8, BCUC IR 3.0**

The Commission refers to, and asks questions regarding, BC Hydro's May 2020 report titled "Demand dilemma: How BC Hydro is responding to declining load and operational challenges resulting from COVID-19," located at [https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/electricity-alternativeenergy/electricity/bc-hydro-review/bc\\_hydro\\_cr\\_ph2\\_ir\\_mar06\\_2020\\_f.pdf](https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/electricity-alternativeenergy/electricity/bc-hydro-review/bc_hydro_cr_ph2_ir_mar06_2020_f.pdf)

3.14.1 Please file a copy of BC Hydro's May 2020 report titled "Demand dilemma: How BC Hydro is responding to declining load and operational challenges resulting from COVID-19."

**RESPONSE:**

**BC Hydro's May 2020 report titled "Demand dilemma: How BC Hydro is responding to declining load and operational challenges resulting from COVID-19," can be found on BC Hydro's website located at: [https://www.bchydro.com/content/dam/BCHydro/customer-portal/documents/news-and-features/BC%20Hydro%20Report\\_COVID19\\_DemandDilemma.pdf](https://www.bchydro.com/content/dam/BCHydro/customer-portal/documents/news-and-features/BC%20Hydro%20Report_COVID19_DemandDilemma.pdf).**

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3.14.2 Does BC Hydro see the Incremental Energy Rate Pilot Proposal as more important, or less important, as a result of the current and future economic impacts of the COVID-19 pandemic? Why?

**RESPONSE:**

**BC Hydro continues to view RS 1893 as being important and we continue to expect it will result in benefits to ratepayers and participating customers.**

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**14.0 Reference: Exhibit B-1, Application, Appendix E, Freshet Rate Pilot Final Evaluation Report for Year 4, 2019, pages 13 to 16, Discussion of Ratepayer Impact Analysis, and summary Table 5, and Exhibit B-1, Section 5.5, Economic Justification and Ratepayer Impacts of the Incremental Energy Rate Pilot Proposal.**

In Section 1.8.3 of Appendix E, BC Hydro explained the differences between Conditions 1, 2, and 3, and in Table 5, BC Hydro presented the “Monthly Ratepayer Impact by Marginal Resource”, for the Freshet Rate Pilot, over the 4 years from 2016 to 2019:

**Table 5 RS 1892 Monthly Ratepayer Impact by Marginal Resource for Years 1 - 4**

Year 1 (2016)	Forced Export	Market Import	System Basin	Revenue gain (loss)
May	\$ 61	\$ (6)	\$ 481	\$ 536
June	\$ -	\$ -	\$ 806	\$ 806
July	\$ -	\$ -	\$ 917	\$ 917
	<b>\$ 61</b>	<b>\$ (6)</b>	<b>\$ 2,204</b>	<b>\$ 2,259</b>
Year 2 (2017)	Forced Export	Market Import	System Basin	Revenue gain (loss)
May	\$ 56	\$ (93)	\$ 424	\$ 387
June	\$ 117	\$ (55)	\$ 402	\$ 464
July	\$ 38	\$ -	\$ 1,305	\$ 1,343
	<b>\$ 211</b>	<b>\$ (148)</b>	<b>\$ 2,131</b>	<b>\$ 2,194</b>
Year 3 (2018)	Forced Export	Market Import	System Basin	Revenue gain (loss)
May	\$ 205	\$ (78)	\$ -	\$ 127
June	\$ 170	\$ (77)	\$ 50	\$ 143
July	\$ 65	\$ (4)	\$ 1,541	\$ 1,602
	<b>\$ 440</b>	<b>\$ (159)</b>	<b>\$ 1,591</b>	<b>\$ 1,872</b>
Year 4 (2019)	Forced Export	Market Import	System Basin	Revenue gain (loss)
May	\$ 45	\$ (107)	\$ (275)	\$ (337)
June	\$ 65	\$ (91)	\$ (55)	\$ (81)
July	\$ -	\$ (94)	\$ (31)	\$ (125)
	<b>\$ 110</b>	<b>\$ (292)</b>	<b>\$ (361)</b>	<b>\$ (543)</b>
<b>Totals</b>	<b>\$ 822</b>	<b>\$ (605)</b>	<b>\$ 5,565</b>	<b>\$ 5,782</b>

In this table, the three Conditions (1, 2, and 3) are represented by the three columns “Forced Export”, “Market Import”, and “System Basin”, respectively.

3.14.1 Please confirm that the three columns in Table 5 (representing the three Marginal Resources), correspond to the three Conditions described by BC Hydro in Section 1.8.3 of Appendix E. And please confirm that these same three Conditions (or Marginal Resources) are also used for the evaluation of the Incremental Energy Rate (“IER”), as they did for the Freshet Rate. If there is a difference, please explain in detail.

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**RESPONSE:**

**Confirmed.**

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**14.0 Reference: Exhibit B-1, Application, Appendix E, Freshet Rate Pilot Final Evaluation Report for Year 4, 2019, pages 13 to 16, Discussion of Ratepayer Impact Analysis, and summary Table 5, and Exhibit B-1, Section 5.5, Economic Justification and Ratepayer Impacts of the Incremental Energy Rate Pilot Proposal.**

In Section 1.8.3 of Appendix E, BC Hydro explained the differences between Conditions 1, 2, and 3, and in Table 5, BC Hydro presented the “Monthly Ratepayer Impact by Marginal Resource”, for the Freshet Rate Pilot, over the 4 years from 2016 to 2019:

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July	\$ -	\$ -	\$ 917	\$ 917
	<b>\$ 61</b>	<b>\$ (6)</b>	<b>\$ 2,204</b>	<b>\$ 2,259</b>
Year 2 (2017)	Forced Export	Market Import	System Basin	Revenue gain (loss)
May	\$ 56	\$ (93)	\$ 424	\$ 387
June	\$ 117	\$ (55)	\$ 402	\$ 464
July	\$ 38	\$ -	\$ 1,305	\$ 1,343
	<b>\$ 211</b>	<b>\$ (148)</b>	<b>\$ 2,131</b>	<b>\$ 2,194</b>
Year 3 (2018)	Forced Export	Market Import	System Basin	Revenue gain (loss)
May	\$ 205	\$ (78)	\$ -	\$ 127
June	\$ 170	\$ (77)	\$ 50	\$ 143
July	\$ 65	\$ (4)	\$ 1,541	\$ 1,602
	<b>\$ 440</b>	<b>\$ (159)</b>	<b>\$ 1,591</b>	<b>\$ 1,872</b>
Year 4 (2019)	Forced Export	Market Import	System Basin	Revenue gain (loss)
May	\$ 45	\$ (107)	\$ (275)	\$ (337)
June	\$ 65	\$ (91)	\$ (55)	\$ (81)
July	\$ -	\$ (94)	\$ (31)	\$ (125)
	<b>\$ 110</b>	<b>\$ (292)</b>	<b>\$ (361)</b>	<b>\$ (543)</b>
<b>Totals</b>	<b>\$ 822</b>	<b>\$ (605)</b>	<b>\$ 5,565</b>	<b>\$ 5,782</b>

In this table, the three Conditions (1, 2, and 3) are represented by the three columns “Forced Export”, “Market Import”, and “System Basin”, respectively.

3.14.2 Please provide a table similar to Table 5, covering the same 4 year period, F2016 to F2019, but showing the hypothetical Ratepayer Impacts that would have occurred for the Incremental Energy Rate, if it had been in effect for that period. However, instead of a monthly breakdown, break each fiscal year into 3 segments: “Freshet” (May-July), “Winter” (October-March), and “Shoulder” (April, August, September), in the same way that BC Hydro has used for the evaluation of the “Shaped Adder” alternatives described on page 76 of the Application. Assume the

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\$7 Flat Adder alternative (\$3 during Freshet months) throughout the period, and assume the same participation and incremental loads as were assumed for the Flat vs. Shaped Adder analysis shown in Tables 7-12 in Section 5.5 of the Application.

**RESPONSE:**

**BC Hydro is unable to provide the requested information for the reasons described in BC Hydro's response to BCOAPO IR 3.58.1.**

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**14.0 Reference: Exhibit B-1, Application, Appendix E, Freshet Rate Pilot Final Evaluation Report for Year 4, 2019, pages 13 to 16, Discussion of Ratepayer Impact Analysis, and summary Table 5, and Exhibit B-1, Section 5.5, Economic Justification and Ratepayer Impacts of the Incremental Energy Rate Pilot Proposal.**

In Section 1.8.3 of Appendix E, BC Hydro explained the differences between Conditions 1, 2, and 3, and in Table 5, BC Hydro presented the “Monthly Ratepayer Impact by Marginal Resource”, for the Freshet Rate Pilot, over the 4 years from 2016 to 2019:

**Table 5 RS 1892 Monthly Ratepayer Impact by Marginal Resource for Years 1 - 4**

Year 1 (2016)	Forced Export	Market Import	System Basin	Revenue gain (loss)
May	\$ 61	\$ (6)	\$ 481	\$ 536
June	\$ -	\$ -	\$ 806	\$ 806
July	\$ -	\$ -	\$ 917	\$ 917
	<b>\$ 61</b>	<b>\$ (6)</b>	<b>\$ 2,204</b>	<b>\$ 2,259</b>
Year 2 (2017)	Forced Export	Market Import	System Basin	Revenue gain (loss)
May	\$ 56	\$ (93)	\$ 424	\$ 387
June	\$ 117	\$ (55)	\$ 402	\$ 464
July	\$ 38	\$ -	\$ 1,305	\$ 1,343
	<b>\$ 211</b>	<b>\$ (148)</b>	<b>\$ 2,131</b>	<b>\$ 2,194</b>
Year 3 (2018)	Forced Export	Market Import	System Basin	Revenue gain (loss)
May	\$ 205	\$ (78)	\$ -	\$ 127
June	\$ 170	\$ (77)	\$ 50	\$ 143
July	\$ 65	\$ (4)	\$ 1,541	\$ 1,602
	<b>\$ 440</b>	<b>\$ (159)</b>	<b>\$ 1,591</b>	<b>\$ 1,872</b>
Year 4 (2019)	Forced Export	Market Import	System Basin	Revenue gain (loss)
May	\$ 45	\$ (107)	\$ (275)	\$ (337)
June	\$ 65	\$ (91)	\$ (55)	\$ (81)
July	\$ -	\$ (94)	\$ (31)	\$ (125)
	<b>\$ 110</b>	<b>\$ (292)</b>	<b>\$ (361)</b>	<b>\$ (543)</b>
<b>Totals</b>	<b>\$ 822</b>	<b>\$ (605)</b>	<b>\$ 5,565</b>	<b>\$ 5,782</b>

In this table, the three Conditions (1, 2, and 3) are represented by the three columns “Forced Export”, “Market Import”, and “System Basin”, respectively.

3.14.3 During the Non-Freshet months, over the entire 4 year period, how many GWh of incremental energy was modeled to have occurred during periods designated as Condition 1 (i.e. Forced Export), during those Non-Freshet months? And how many GWh occurred during periods designated as Condition 2 (i.e. Market Import), during those Non-Freshet months?



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**RESPONSE:**

**BC Hydro is unable to provide the requested information for the reasons described in BC Hydro's response to BCOAPO IR 3.58.2.**

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**15.0 Reference: Exhibit B-1, Application, section 5.5.4, BC Hydro’s Energy Charge Adder Proposal, and Exhibit B-1-1, erratum for page 79, Table 13**

In its evaluation of the possible Adder alternatives, BC Hydro presented the following summary table, showing the expected incremental loads and Net Revenue impacts:

Table 13 Summary of Expected Net Revenue by Adder Option

ENERGY CHARGE ADDER ALTERNATIVES	ADDER (\$/MWh)	Expected Incremental Load (GWh)	Expected Incremental Net Revenue (\$M)
Option 1A - Flat	<del>\$6.00</del> 8.00	264	\$ 1.47
Option 1B - Shaped		263	\$ 1.45
Option 2A - Flat	\$ 7.00	266	\$ 1.32
Option 2B - Shaped		265	\$ 1.29
Option 3A - Flat	<del>\$8.00</del> 6.00	268	\$ 1.12
Option 3B - Shaped		267	\$ 1.13

BC Hydro states that its proposed alternative is Option 2A – the Flat \$7 Adder during all Non-Freshet months, with a \$3 Adder during the Freshet months.

3.15.1 Please confirm that this table means that BC Hydro’s proposed \$7 Adder is expected to yield an average of 266 GWh of incremental load, annually, and approximately \$1.32 million of Net Revenue, annually.

**RESPONSE:**

**Confirmed.**

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**15.0 Reference: Exhibit B-1, Application, section 5.5.4, BC Hydro’s Energy Charge Adder Proposal, and Exhibit B-1-1, erratum for page 79, Table 13**

In its evaluation of the possible Adder alternatives, BC Hydro presented the following summary table, showing the expected incremental loads and Net Revenue impacts:

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ENERGY CHARGE ADDER ALTERNATIVES	ADDER (\$/MWh)	Expected Incremental Load (GWh)	Expected Incremental Net Revenue (\$M)
Option 1A - Flat	<del>\$6.00</del> 8.00	264	\$ 1.47
Option 1B - Shaped		263	\$ 1.45
Option 2A - Flat	\$ 7.00	266	\$ 1.32
Option 2B - Shaped		265	\$ 1.29
Option 3A - Flat	<del>\$8.00</del> 6.00	268	\$ 1.12
Option 3B - Shaped		267	\$ 1.13

BC Hydro states that its proposed alternative is Option 2A – the Flat \$7 Adder during all Non-Freshet months, with a \$3 Adder during the Freshet months.

3.15.2 Were the values in this table produced by simulating the operation of the Incremental Energy Rate (“IER”) over the 46 different system inflow scenarios (years 1973-2019) used by BC Hydro’s Energy Studies models? Please describe all of the key assumptions that were used, and how the models were operated to produce these simulations.

**RESPONSE:**

The values in the table were produced by using output from the Energy Studies models for the 46 sequences in combination with estimates of customer participation and behaviour to calculate the expected incremental load and revenue.

BC Hydro’s August 2019 Energy Study was used in the Application and it included inflow and market forecasts from that date. The Energy Studies modeling process has been described in other BCUC proceedings, including at a workshop as part of the BC Hydro Fiscal 2012 to Fiscal 2014 Revenue Requirements Application (RRA) proceeding, in BC Hydro’s response to BCUC IR 1.15.1.1 as part of BC Hydro’s Fiscal 2017 to Fiscal 2019 RRA proceeding, and in Appendix DD of the Fiscal 2020 to Fiscal 2021 Revenue Requirements Application (RRA) proceeding.

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**Key assumptions used with respect to customer participation and behaviour include incremental customer load modeled to be taken under RS 1893 (in aggregate) and a daily “strike price” of \$55/MWh for the RS 1893 energy charge in both HLH and LLH at which it was modeled that customers would no longer take supply under RS 1893.**

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**15.0 Reference: Exhibit B-1, Application, section 5.5.4, BC Hydro’s Energy Charge Adder Proposal, and Exhibit B-1-1, erratum for page 79, Table 13**

In its evaluation of the possible Adder alternatives, BC Hydro presented the following summary table, showing the expected incremental loads and Net Revenue impacts:

Table 13 Summary of Expected Net Revenue by Adder Option

ENERGY CHARGE ADDER ALTERNATIVES	ADDER (\$/MWh)	Expected Incremental Load (GWh)	Expected Incremental Net Revenue (\$M)
Option 1A - Flat	<del>\$6.00</del> 8.00	264	\$ 1.47
Option 1B - Shaped		263	\$ 1.45
Option 2A - Flat	\$ 7.00	266	\$ 1.32
Option 2B - Shaped		265	\$ 1.29
Option 3A - Flat	<del>\$8.00</del> 6.00	268	\$ 1.12
Option 3B - Shaped		267	\$ 1.13

BC Hydro states that its proposed alternative is Option 2A – the Flat \$7 Adder during all Non-Freshet months, with a \$3 Adder during the Freshet months.

3.15.3 Of the 266 annual GWh of incremental load achieved under Option 2A, how much of it occurred during the Non-Freshet months, in a period designated as Condition 1 (i.e. Forced Exports)? And how much of it occurred in the Non-Freshet months during periods designated as Condition 2 (i.e. Market Import)?

**RESPONSE:**

**BC Hydro has not conducted detailed analysis but expects that, outside of the freshet period, the portion of incremental load deemed to occur in Conditions 1 and 2 will be small.**

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**15.0 Reference: Exhibit B-1, Application, section 5.5.4, BC Hydro’s Energy Charge Adder Proposal, and Exhibit B-1-1, erratum for page 79, Table 13**

In its evaluation of the possible Adder alternatives, BC Hydro presented the following summary table, showing the expected incremental loads and Net Revenue impacts:

Table 13 Summary of Expected Net Revenue by Adder Option

ENERGY CHARGE ADDER ALTERNATIVES	ADDER (\$/MWh)	Expected Incremental Load (GWh)	Expected Incremental Net Revenue (\$M)
Option 1A - Flat	<del>\$6.00</del> 8.00	264	\$ 1.47
Option 1B - Shaped		263	\$ 1.45
Option 2A - Flat	\$ 7.00	266	\$ 1.32
Option 2B - Shaped		265	\$ 1.29
Option 3A - Flat	<del>\$8.00</del> 6.00	268	\$ 1.12
Option 3B - Shaped		267	\$ 1.13

BC Hydro states that its proposed alternative is Option 2A – the Flat \$7 Adder during all Non-Freshet months, with a \$3 Adder during the Freshet months.

3.15.4 How did BC Hydro determine that 266 GWh was the appropriate amount of incremental energy that would be achieved by this year-round Incremental Energy Rate? The Freshet Rate Pilot, only operating for 3 months each year, achieved 569 GWh of incremental energy over a 4 year period, an average of 142 GWh per year. How much of the 266 GWh/year of the IER’s expected incremental energy is expected to occur in the Freshet Months?

**RESPONSE:**

266 GWh is an output of the model that represents the average annual volume of RS 1893 energy over the RS 1893 Pilot. BC Hydro considers this to reflect a reasonable estimate of annual customer participation based on its confidential discussions with customers regarding their incremental load capability and operating factors such as economic pricing.

Directionally, BC Hydro expects that up to half of this annual estimate might occur in the freshet months since RS 1893 energy charges (daily Mid-C price in HLH and LLH plus \$3/MWh Adder) are expected to be lower than in non-freshet months (daily Mid-C price in HLH and LLH plus \$7/MWh Adder).

Please also refer to BC Hydro’s response to BCUC IR 1.7.1 for an updated estimate of RS 1892 energy sales when both rates are offered simultaneously.

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**15.0 Reference: Exhibit B-1, Application, section 5.5.4, BC Hydro’s Energy Charge Adder Proposal, and Exhibit B-1-1, erratum for page 79, Table 13**

In its evaluation of the possible Adder alternatives, BC Hydro presented the following summary table, showing the expected incremental loads and Net Revenue impacts:

Table 13 Summary of Expected Net Revenue by Adder Option

ENERGY CHARGE ADDER ALTERNATIVES	ADDER (\$/MWh)	Expected Incremental Load (GWh)	Expected Incremental Net Revenue (\$M)
Option 1A - Flat	<del>\$6.00</del> 8.00	264	\$ 1.47
Option 1B - Shaped		263	\$ 1.45
Option 2A - Flat	\$ 7.00	266	\$ 1.32
Option 2B - Shaped		265	\$ 1.29
Option 3A - Flat	<del>\$8.00</del> 6.00	268	\$ 1.12
Option 3B - Shaped		267	\$ 1.13

BC Hydro states that its proposed alternative is Option 2A – the Flat \$7 Adder during all Non-Freshet months, with a \$3 Adder during the Freshet months.

3.15.5 The table appears to show that increasing the Flat Adder from \$7 to \$8 would result in a loss of only 2 GWh per year of incremental load, but a gain of \$150,000 in Net Revenue. However, there should be an immediate gain of \$1 x 264,000 MWh = \$264,000. This immediate gain would be offset by the loss of 2,000 MWh, but for that loss to amount to \$114,000, would require a loss per MWh of \$57. Please explain how the Net Revenue lost per MWh could possibly be that large.

**RESPONSE:**

For Option 1A, 264,000 MWh of incremental load with an Adder of \$8/MWh would produce \$2,112,000 of Energy Charge Adder revenue. For Option 2A, 266,000 MWh of incremental load with an Adder of \$7/MWh would produce \$1,862,000 of Energy Charge Adder revenue.

Thus, as between Option 1A and Option 2A:

- the difference in Energy Charge Adder revenue is \$250,000;
- the difference in incremental load is 2,000 MWh; and
- the difference in expected net revenue is \$150,000.

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**Based on these model values, the offsetting net revenue impact related to the load reduction of 2,000 MWh is \$100,000. This implies the average rate for the marginal net revenue per MWh of load between Options 1A and 1B is \$50/MWh.**



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**15.0 Reference: Exhibit B-1, Application, section 5.5.4, BC Hydro’s Energy Charge Adder Proposal, and Exhibit B-1-1, erratum for page 79, Table 13**

In its evaluation of the possible Adder alternatives, BC Hydro presented the following summary table, showing the expected incremental loads and Net Revenue impacts:

Table 13 Summary of Expected Net Revenue by Adder Option

ENERGY CHARGE ADDER ALTERNATIVES	ADDER (\$/MWh)	Expected Incremental Load (GWh)	Expected Incremental Net Revenue (\$M)
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Option 2A - Flat	\$ 7.00	266	\$ 1.32
Option 2B - Shaped		265	\$ 1.29
Option 3A - Flat	<del>\$8.00</del> 6.00	268	\$ 1.12
Option 3B - Shaped		267	\$ 1.13

BC Hydro states that its proposed alternative is Option 2A – the Flat \$7 Adder during all Non-Freshet months, with a \$3 Adder during the Freshet months.

3.15.6 Please explain how the 2 GWh change in Expected Incremental Load is determined as a result of the \$1 change in the Adder. Is there some elasticity of demand assumed on the part of the participants? If so, how was that elasticity determined and applied?

**RESPONSE:**

The model does not use an estimate of price elasticity of demand for electricity.

The model applies the Adder to the daily Mid-C HLH and LLH energy price to determine the daily RS 1893 energy charge. During non-freshet months, the use of an \$8/MWh Adder rather than a \$7/MWh Adder results in a \$1/MWh increase in the daily RS 1893 energy charge.

If the daily RS 1893 energy charge is greater than the model strike-price assumption of \$55/MWh, there are no RS 1893 energy sales. Over the forecast period considered by the model, there was on average a 2 GWh annualized reduction in incremental energy arising from a daily RS 1893 energy charge that was \$1/MWh higher in each day during non-freshet months.

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**15.0 Reference: Exhibit B-1, Application, section 5.5.4, BC Hydro’s Energy Charge Adder Proposal, and Exhibit B-1-1, erratum for page 79, Table 13**

In its evaluation of the possible Adder alternatives, BC Hydro presented the following summary table, showing the expected incremental loads and Net Revenue impacts:

Table 13 Summary of Expected Net Revenue by Adder Option

ENERGY CHARGE ADDER ALTERNATIVES	ADDER (\$/MWh)	Expected Incremental Load (GWh)	Expected Incremental Net Revenue (\$M)
Option 1A - Flat	<del>\$6.00</del> 8.00	264	\$ 1.47
Option 1B - Shaped		263	\$ 1.45
Option 2A - Flat	\$ 7.00	266	\$ 1.32
Option 2B - Shaped		265	\$ 1.29
Option 3A - Flat	<del>\$8.00</del> 6.00	268	\$ 1.12
Option 3B - Shaped		267	\$ 1.13

BC Hydro states that its proposed alternative is Option 2A – the Flat \$7 Adder during all Non-Freshet months, with a \$3 Adder during the Freshet months.

3.15.7 If the \$8 Adder is expected to produce \$150,000 more per year than the \$7 Adder, then why is Option 1A not BC Hydro’s preferred alternative?

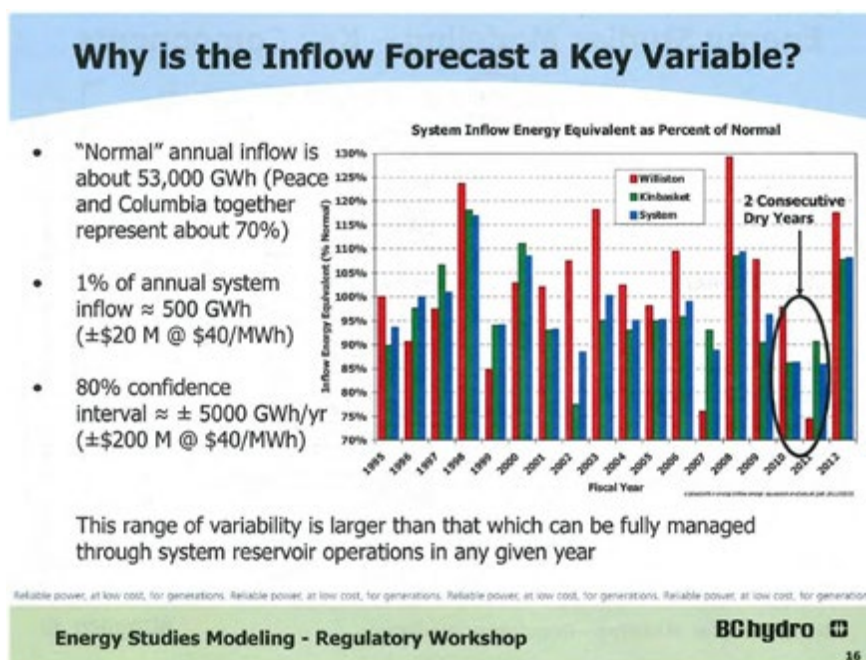
**RESPONSE:**

As explained in sections 3.4.2, 3.4.3 and 5.5.4 of the Application, BC Hydro’s proposal is to proceed with Option 2A (the \$7/MWh Adder) because it reflects AMPC’s proposal and customer feedback.

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**16.0 Reference: Exhibit B-1, Application, Section 5.5, Economic Justification and Ratepayer Impacts of the Incremental Energy Rate Pilot Proposal, and BC Hydro’s Energy Studies modeling.**

On page 73 of the Application, BC Hydro describes the use of its energy modeling process for the evaluation of economic justification and ratepayer impacts of the Incremental Energy Rate Pilot Proposal. It refers to a workshop presentation from the F2012-F2014 RRA (Exhibit B-13 from that RRA), and that presentation contains the following chart (slide 16):



This chart gives a very good picture of the degree of variability in the inflows between one year and the next, and between one basin and the others basins, but only shows a limited time period.

3.16.1 Please provide a similar chart, showing the full 46 year period that is currently being used in the Energy Studies models. Include a 4<sup>th</sup> bar designated as the "Overall System" (assuming that the blue bar designated as "System" in the chart represents all the system inflows other than Williston and Kinbasket).

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**RESPONSE:**

**BC Hydro no longer discloses multiple years of inflow information for our reservoirs. Information on individual basin inflow conditions is commercially sensitive and confidential because its disclosure could be used by third-parties to model BC Hydro's system, to the disadvantage of BC Hydro and its ratepayers.**

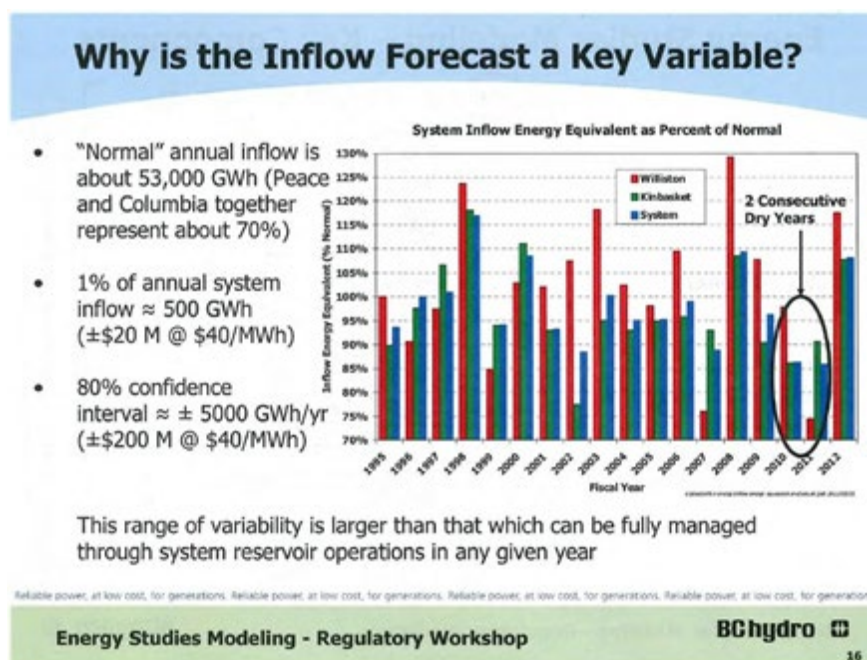
**The statistics on the historic Total System Inflow as a percent of normal is not available prior to 1995. Below is the historic Total System Inflow as a percent of normal from Fiscal 2012 to Fiscal 2019.**

	<b>Total System Inflow (% of Normal)</b>
<b>Fiscal 2012</b>	<b>108</b>
<b>Fiscal 2013</b>	<b>109</b>
<b>Fiscal 2014</b>	<b>95</b>
<b>Fiscal 2015</b>	<b>102</b>
<b>Fiscal 2016</b>	<b>99</b>
<b>Fiscal 2017</b>	<b>101</b>
<b>Fiscal 2018</b>	<b>98</b>
<b>Fiscal 2019</b>	<b>87</b>

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**16.0 Reference: Exhibit B-1, Application, Section 5.5, Economic Justification and Ratepayer Impacts of the Incremental Energy Rate Pilot Proposal, and BC Hydro’s Energy Studies modeling.**

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This chart gives a very good picture of the degree of variability in the inflows between one year and the next, and between one basin and the others basins, but only shows a limited time period.

3.16.2 The slide states that “Normal” annual inflow is about 53,000 GWh, and that the Peace and Columbia systems together represent about 70%. Are those statements still correct, or have they changed since 2012? Is “Normal” considered to be the same as “Average”? When the legend refers to “Columbia” does it referring only to Mica and Revelstoke generation? Does the blue bar designated as “System” represent all the other inflows in the system other than Williston and Kinbasket?

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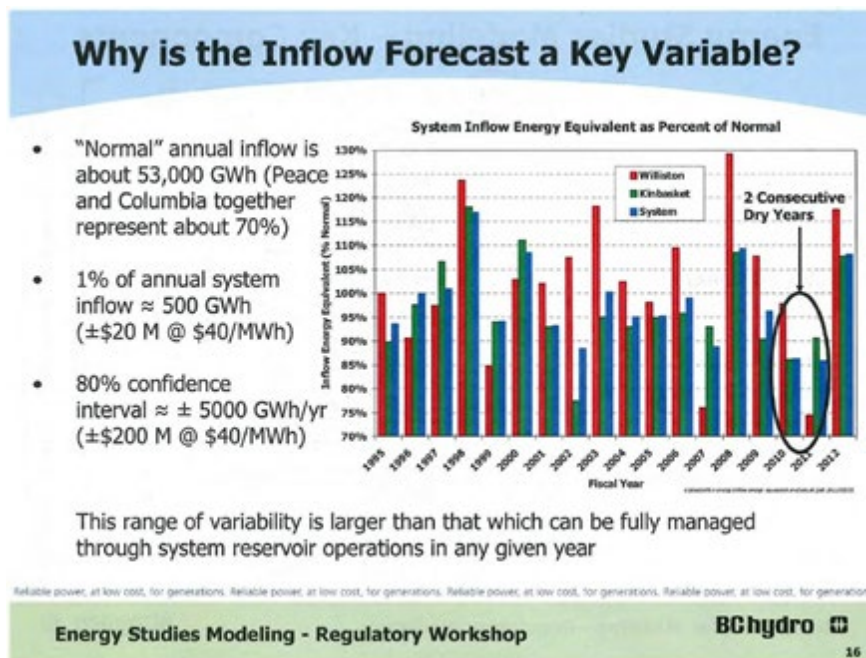
**RESPONSE:**

**System inflow includes Williston and Kinbasket and “Columbia” includes Revelstoke. The relative percentage has been provided in BC Hydro’s response to CEABC IR 3.16.1. The “Normal” annual inflow in GWh has the same meaning as ‘average’ and changes every year depending on the system capabilities and updated historical inflow data.**

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**16.0 Reference: Exhibit B-1, Application, Section 5.5, Economic Justification and Ratepayer Impacts of the Incremental Energy Rate Pilot Proposal, and BC Hydro’s Energy Studies modeling.**

On page 73 of the Application, BC Hydro describes the use of its energy modeling process for the evaluation of economic justification and ratepayer impacts of the Incremental Energy Rate Pilot Proposal. It refers to a workshop presentation from the F2012-F2014 RRA (Exhibit B-13 from that RRA), and that presentation contains the following chart (slide 16):



This chart gives a very good picture of the degree of variability in the inflows between one year and the next, and between one basin and the others basins, but only shows a limited time period.

3.16.3 When Site C is put into service in F2025, what will be its impact on the amount of the “Normal” annual inflow generation equivalent, and how will Site C’s generation be reflected in the above chart?

**RESPONSE:**

BC Hydro is unable to answer this question in the context of this application since the RS 1893 Pilot, as proposed, ends March 31, 2024. F2025 therefore falls outside of the RS 1893 Pilot period.

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**17.0 Reference: Exhibit B-6, BC Hydro response to BCUC Questions for Streamlined Review Process IR 1.7, energy modeling for ratepayer impact of the Freshet Rate.**

In its response, BC Hydro defines three scenarios for evaluation:

- Favourable water conditions – at least 10% wetter than average;
- Normal water conditions – within +/- 10% of average; and
- Unfavourable water conditions – at least 10% lower than average.

BC Hydro goes on to explain that “the majority of inflow scenarios fall into the normal and favourable categories...”

3.17.1 Based on the 46 years of system inflow data that is used in BC Hydro’s Energy Studies modeling, and as charted in the previous question, please provide a histogram showing the frequency distribution of the “Overall System” annual inflows, ranging from 80% to 120% of the average, in 1% increments.

**RESPONSE:**

**BC Hydro does not disclose information on the statistical distribution of system inflow information for our reservoirs. Information on system inflow conditions is commercially sensitive and confidential because its disclosure could be used by third parties to model BC Hydro’s system inflows, to the disadvantage of BC Hydro and its ratepayers.**



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**17.0 Reference: Exhibit B-6, BC Hydro response to BCUC Questions for Streamlined Review Process IR 1.7, energy modeling for ratepayer impact of the Freshet Rate.**

In its response, BC Hydro defines three scenarios for evaluation:

- Favourable water conditions – at least 10% wetter than average;
- Normal water conditions – within +/- 10% of average; and
- Unfavourable water conditions – at least 10% lower than average.

BC Hydro goes on to explain that “the majority of inflow scenarios fall into the normal and favourable categories...”

3.17.2            Given this frequency histogram, what Overall System inflow levels correspond to the 10<sup>th</sup>, the 20<sup>th</sup>, the 50<sup>th</sup>, the 80<sup>th</sup>, and the 90<sup>th</sup> percentiles?

**RESPONSE:**

**Please refer to BC Hydro’s response to CEABC IR 3.17.1.**

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**17.0 Reference: Exhibit B-6, BC Hydro response to BCUC Questions for Streamlined Review Process IR 1.7, energy modeling for ratepayer impact of the Freshet Rate.**

In its response, BC Hydro defines three scenarios for evaluation:

- Favourable water conditions – at least 10% wetter than average;
- Normal water conditions – within +/- 10% of average; and
- Unfavourable water conditions – at least 10% lower than average.

BC Hydro goes on to explain that “the majority of inflow scenarios fall into the normal and favourable categories...”

3.17.3           What percentiles would correspond to the levels of +10% or -10% of average?

**RESPONSE:**

**Please refer to BC Hydro’s response to CEABC IR 3.17.1.**

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**18.0 Reference: Exhibit B-6, BC Hydro response to BCUC Questions for Streamlined Review Process IR 1.7, energy modeling for ratepayer impact of the Freshet Rate.**

3.18.1 In a similar way to that used for the response to BCUC SRP IR 1.7 (Exhibit B-6), please model the annual Net Revenue impacts that BC Hydro would forecast for the Incremental Energy Rate, under conditions where the Overall System annual inflows are at the 10<sup>th</sup>, the 20<sup>th</sup>, the 50<sup>th</sup>, the 80<sup>th</sup>, and the 90<sup>th</sup> percentiles, as determined in the histogram frequency analysis from the previous question. Please describe all the key assumptions that BC Hydro makes in doing this modeling analysis.

**RESPONSE:**

**Please refer to BC Hydro's response to CEABC IR 3.17.1.**

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**19.0 Reference: Exhibit B-1, Application, Section 5.5.5, Discussion of Risks**

On page 81, BC Hydro describes “An additional scenario which could occur is if, in high load periods, BC Hydro has to reduce its sales of energy to market so serve Incremental Energy Rate Pilot load.”

3.19.1 If BC Hydro sees an additional profitable opportunity for market sales, why would it not take advantage of that opportunity, in addition to supplying the IER load? Why can BC Hydro not do both?

**RESPONSE:**

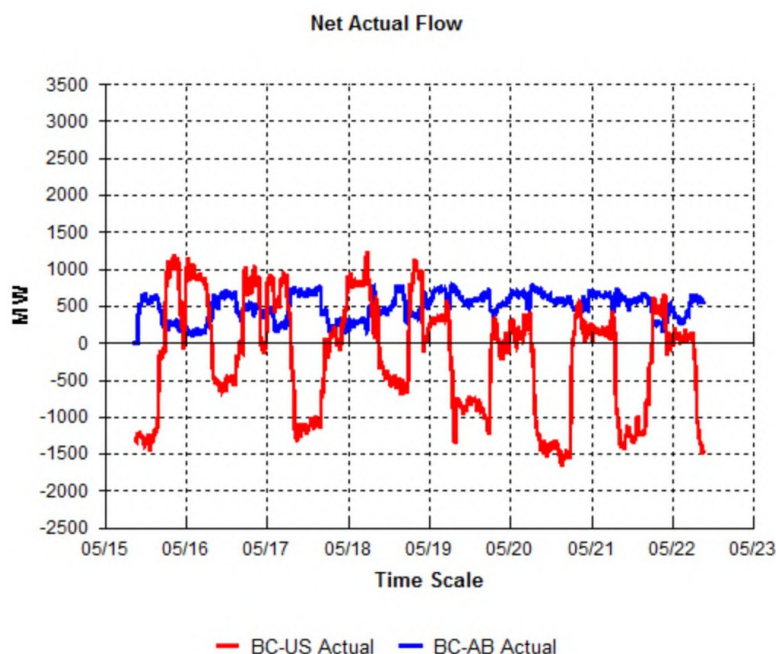
The situation described on page 81 of the Application is one where the BC Hydro system is in a “maximum generation” state (i.e., generation cannot be further increased) such that an incremental market export is not possible, even where there is available transmission, in addition to supplying RS 1893 load. As such, BC Hydro cannot do both.

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**20.0 Reference: Impact of RS 1892 and RS 1893 during current market conditions.**

BC Hydro posts the following import/export energy flows on its website:

<https://www.bchydro.com/energy-in-bc/operations/transmission/transmission-system/actual-flow-data.html>



The current week’s energy flows indicate that, during mid-day hours, BC Hydro has been importing significant amounts of energy from the U.S. For roughly 8 to 10 hours each day, it has imported at rates that ranged from ~500MW on Saturday, May 16, to ~1500MW on Wednesday, May 20. During the same periods, it simultaneously exported ~500MW to Alberta. During the overnight hours, BC Hydro has been primarily exporting energy to both the U.S. and Alberta.

All of this importing and exporting is occurring while RS 1892 and RS 1893 are in effect, and both allow industrial customers to purchased incremental energy with a \$3 adder over the Mid-C price. It would, therefore, be of interest to know how much impact these two incremental energy rates are having on BC Hydro’s imports and exports during the current freshet period.

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3.20.1 How many participants are currently subscribed under RS 1892 and RS 1893, as compared to last year, and what are the reasons for any difference?

**RESPONSE:**

The number of customer participants currently subscribed under each of RS 1892 and RS 1893 is set out in the table below.

RS 1892		
	Year 4 - F2020 (01 May - 31 May 2019)	Year 5 - F2021 (01 May - 31 July 2020)
Number of RS 1892 Participant Customers	37	25
RS 1893		
	01 January 2020 - 31 March 2020	01 April 2020 - 31 March 2021
Number of RS 1893 Participant Customers	13	17

For RS 1892 comparison purposes, BC Hydro has identified the number of RS 1892 customer participants for the freshet period of Year 4 (May 1 to July 31, 2019). The number of current RS 1892 customer participants in Year 5 (May 1 to July 31, 2020) is lower than in Year 4 due primarily to certain customers electing to take RS 1893 service rather than RS 1892 service. No concurrent service is allowed.

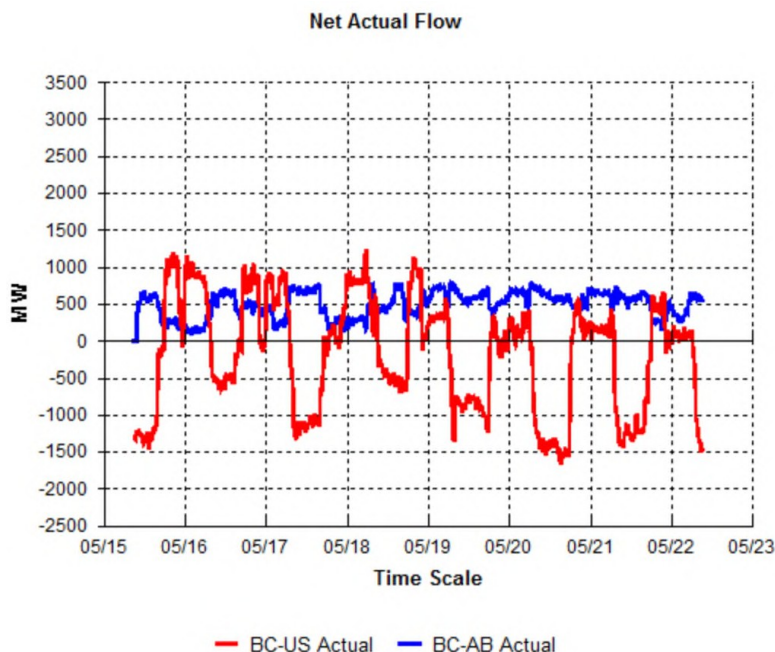
For RS 1893 comparison purposes, BC Hydro has identified the number of RS 1893 customer participants for the period of January 1, 2020 to March 31, 2020. This represents the only available comparison period since RS 1893 was only approved on an interim basis effective January 1, 2020.

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**20.0 Reference: Impact of RS 1892 and RS 1893 during current market conditions.**

BC Hydro posts the following import/export energy flows on its website:

<https://www.bchydro.com/energy-in-bc/operations/transmission/transmission-system/actual-flow-data.html>



The current week’s energy flows indicate that, during mid-day hours, BC Hydro has been importing significant amounts of energy from the U.S. For roughly 8 to 10 hours each day, it has imported at rates that ranged from ~500MW on Saturday, May 16, to ~1500MW on Wednesday, May 20. During the same periods, it simultaneously exported ~500MW to Alberta. During the overnight hours, BC Hydro has been primarily exporting energy to both the U.S. and Alberta.

All of this importing and exporting is occurring while RS 1892 and RS 1893 are in effect, and both allow industrial customers to purchased incremental energy with a \$3 adder over the Mid-C price. It would, therefore, be of interest to know how much impact these two incremental energy rates are having on BC Hydro’s imports and exports during the current freshet period.

3.20.2 Are all of the mid-day energy imports, shown on the above chart, considered to be Market Imports, and those periods therefore

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designated as Condition 2, under the terms of RS 1892 and RS 1893?

**RESPONSE:**

**This answer also provides BC Hydro's response to CEABC IRs 3.20.3, 3.20.4, 3.20.5, and 3.20.6**

**BC Hydro has not completed any portion of the after-the-fact deemed ratepayer impact analysis for the period from January 1, 2020 forward, for either RS 1892 or RS 1893. Doing so would take several weeks of analytical effort which cannot be completed in the time allotted.**

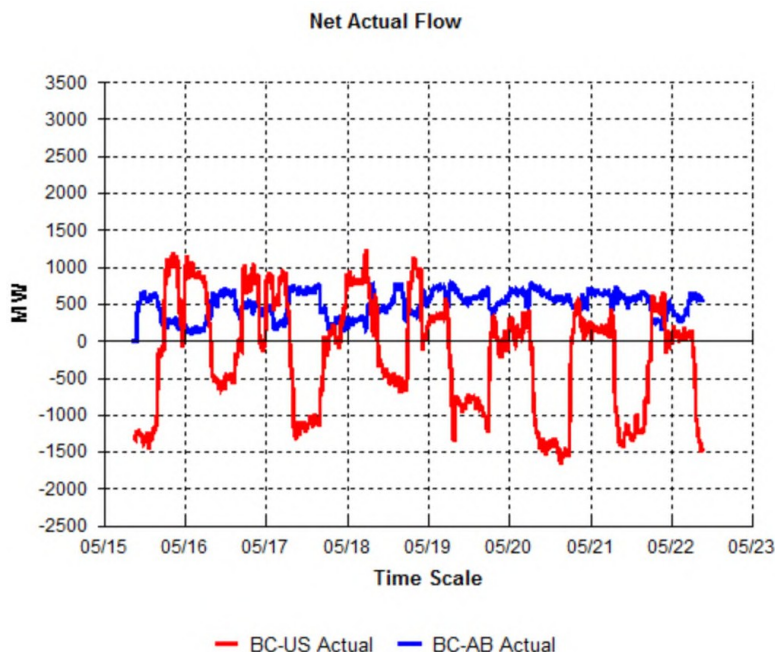


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**20.0 Reference: Impact of RS 1892 and RS 1893 during current market conditions.**

BC Hydro posts the following import/export energy flows on its website:

<https://www.bchydro.com/energy-in-bc/operations/transmission/transmission-system/actual-flow-data.html>



The current week's energy flows indicate that, during mid-day hours, BC Hydro has been importing significant amounts of energy from the U.S. For roughly 8 to 10 hours each day, it has imported at rates that ranged from ~500MW on Saturday, May 16, to ~1500MW on Wednesday, May 20. During the same periods, it simultaneously exported ~500MW to Alberta. During the overnight hours, BC Hydro has been primarily exporting energy to both the U.S. and Alberta.

All of this importing and exporting is occurring while RS 1892 and RS 1893 are in effect, and both allow industrial customers to purchased incremental energy with a \$3 adder over the Mid-C price. It would, therefore, be of interest to know how much impact these two incremental energy rates are having on BC Hydro's imports and exports during the current freshet period.

3.20.3 Of the 22 days so far in May, how many HLH and LLH time periods have been classified as Condition 1 (Forced Export), and

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how many have been classified as Condition 2 (Market Import)?  
And how much incremental energy, pursuant to RS 1892 and  
RS 1893, has been purchased under each Condition? What  
average loads do these energy purchases represent?

**RESPONSE:**

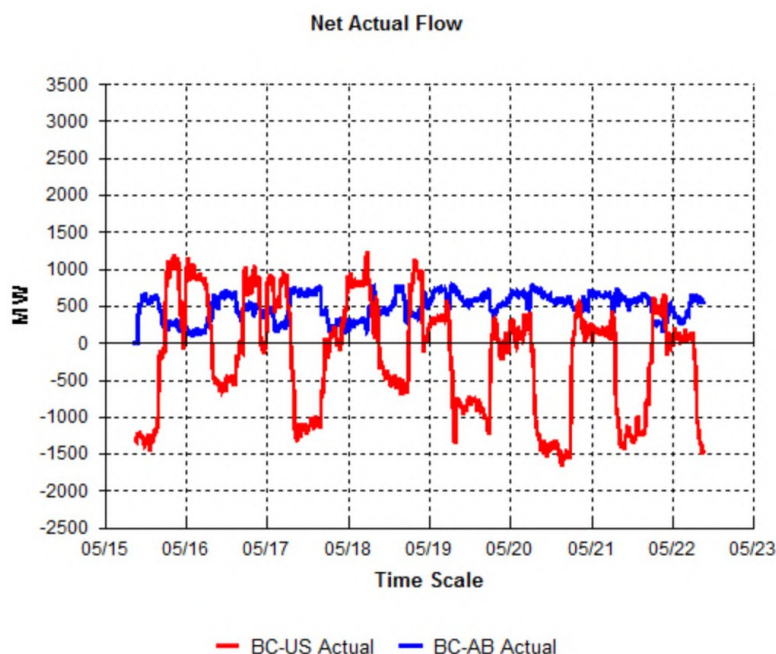
**Please refer to BC Hydro's response to CEABC IR 3.20.2.**

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**20.0 Reference: Impact of RS 1892 and RS 1893 during current market conditions.**

BC Hydro posts the following import/export energy flows on its website:

<https://www.bchydro.com/energy-in-bc/operations/transmission/transmission-system/actual-flow-data.html>



The current week's energy flows indicate that, during mid-day hours, BC Hydro has been importing significant amounts of energy from the U.S. For roughly 8 to 10 hours each day, it has imported at rates that ranged from ~500MW on Saturday, May 16, to ~1500MW on Wednesday, May 20. During the same periods, it simultaneously exported ~500MW to Alberta. During the overnight hours, BC Hydro has been primarily exporting energy to both the U.S. and Alberta.

All of this importing and exporting is occurring while RS 1892 and RS 1893 are in effect, and both allow industrial customers to purchased incremental energy with a \$3 adder over the Mid-C price. It would, therefore, be of interest to know how much impact these two incremental energy rates are having on BC Hydro's imports and exports during the current freshet period.

3.20.4 The above chart shows a roughly even balance between exports and imports during the current week. For the total month of May,

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so far, what are the total exports and imports to each of Alberta and the U.S?

**RESPONSE:**

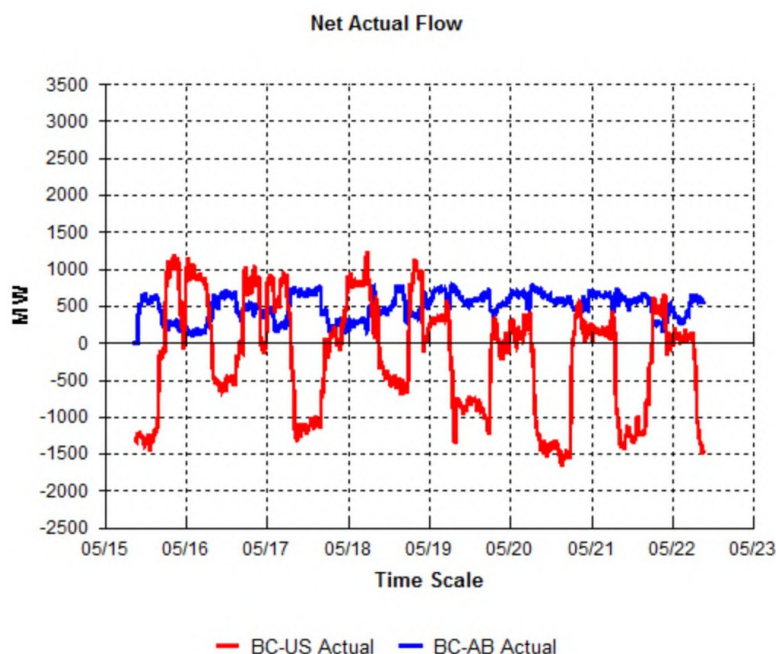
**Please refer to BC Hydro's response to CEABC IR 3.20.2.**

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**20.0 Reference: Impact of RS 1892 and RS 1893 during current market conditions.**

BC Hydro posts the following import/export energy flows on its website:

<https://www.bchydro.com/energy-in-bc/operations/transmission/transmission-system/actual-flow-data.html>



The current week's energy flows indicate that, during mid-day hours, BC Hydro has been importing significant amounts of energy from the U.S. For roughly 8 to 10 hours each day, it has imported at rates that ranged from ~500MW on Saturday, May 16, to ~1500MW on Wednesday, May 20. During the same periods, it simultaneously exported ~500MW to Alberta. During the overnight hours, BC Hydro has been primarily exporting energy to both the U.S. and Alberta.

All of this importing and exporting is occurring while RS 1892 and RS 1893 are in effect, and both allow industrial customers to purchased incremental energy with a \$3 adder over the Mid-C price. It would, therefore, be of interest to know how much impact these two incremental energy rates are having on BC Hydro's imports and exports during the current freshet period.

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3.20.5 Of all of the exports to Alberta in May, what proportion is classified as Market Exports and what proportion is designated as System Basin supply?

**RESPONSE:**

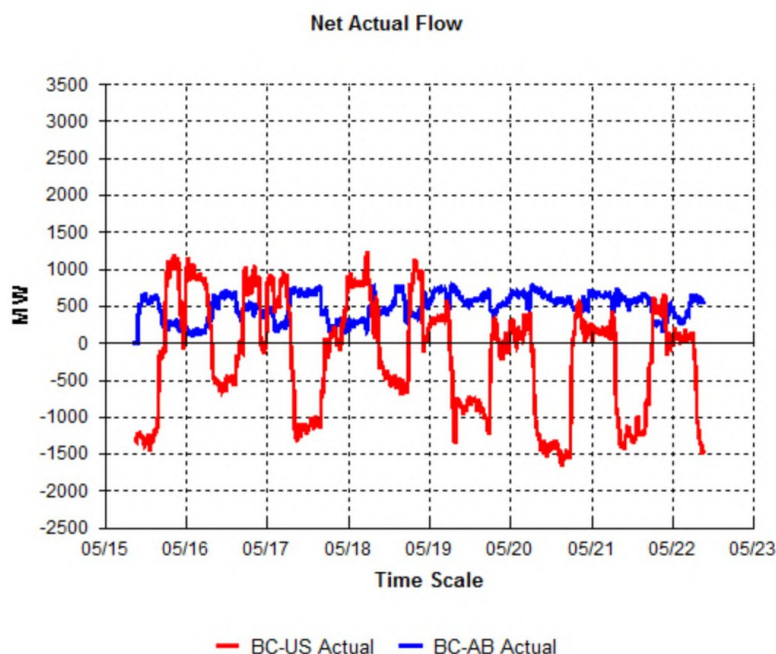
**Please refer to BC Hydro's response to CEABC IR 3.20.2.**

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**20.0 Reference: Impact of RS 1892 and RS 1893 during current market conditions.**

BC Hydro posts the following import/export energy flows on its website:

<https://www.bchydro.com/energy-in-bc/operations/transmission/transmission-system/actual-flow-data.html>



The current week's energy flows indicate that, during mid-day hours, BC Hydro has been importing significant amounts of energy from the U.S. For roughly 8 to 10 hours each day, it has imported at rates that ranged from ~500MW on Saturday, May 16, to ~1500MW on Wednesday, May 20. During the same periods, it simultaneously exported ~500MW to Alberta. During the overnight hours, BC Hydro has been primarily exporting energy to both the U.S. and Alberta.

All of this importing and exporting is occurring while RS 1892 and RS 1893 are in effect, and both allow industrial customers to purchased incremental energy with a \$3 adder over the Mid-C price. It would, therefore, be of interest to know how much impact these two incremental energy rates are having on BC Hydro's imports and exports during the current freshet period.

3.20.6 What are the MWh of Forced Exports to Alberta and the U.S. in May, so far?

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**RESPONSE:**

**Please refer to BC Hydro's response to CEABC IR 3.20.2.**



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**13.0 Reference: Exhibit B-1, page 58 and 59 and Order G-104-20 Appendix A Reasons for Decision page 22**

1. The proposed Incremental Energy Rate Pilot is responsive to customer feedback. Transmission service customers have requested flexible rate options that better match their individual operating capabilities and electricity service requirements. Customers have identified the annual availability of non-firm service with market-referenced pricing and monthly settlement as a key objective during the consultation process. The Incremental Energy Rate Pilot is

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also responsive to the 2013 Industrial Electricity Policy Review (IEPR) taskforce recommendations to develop innovative rate options for industrial customers;

- 3.13.1 Please confirm that BC Hydro is open to exploring options for an Incremental Energy Rate for Commercial customers, as well as a Freshet rate.

**RESPONSE:**

**BC Hydro is open to exploring optional rates for Commercial customers, including rate design options that may reflect elements of RS 1892 and RS 1893.**

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**13.0 Reference: Exhibit B-1, page 58 and 59 and Order G-104-20 Appendix A Reasons for Decision page 22**

1. The proposed Incremental Energy Rate Pilot is responsive to customer feedback. Transmission service customers have requested flexible rate options that better match their individual operating capabilities and electricity service requirements. Customers have identified the annual availability of non-firm service with market-referenced pricing and monthly settlement as a key objective during the consultation process. The Incremental Energy Rate Pilot is

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also responsive to the 2013 Industrial Electricity Policy Review (IEPR) taskforce recommendations to develop innovative rate options for industrial customers;

- 3.13.2 Please provide details of when and how BC Hydro plans to consult with commercial customers or a representative thereof to examine these options.

**RESPONSE:**

**BC Hydro consults with larger commercial customers directly and on an ongoing basis through our Key Account Managers. BC Hydro also periodically conducts rate design workshops to which customers and stakeholders are invited. However, BC Hydro has no commercial customer rate design workshops scheduled at this time.**

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**14.0 Reference: Exhibit B-1, page 60**

- The Incremental Energy Rate Pilot is non-firm and interruptible. BC Hydro will provide energy and capacity under this rate schedule only to the extent it is available. BC Hydro is not required to undertake system reinforcements to serve load under this rate schedule. RS 1893 load is not included in BC Hydro's load forecast. BC Hydro has the right to interrupt RS 1893 service for transmission and generation system constraints; and

3.14.1 Please provide an overview with quantification of BC Hydro's experience with interrupting customers for each interruptible rate schedule for each of the last five years including duration and notice time.

**RESPONSE:**

**BC Hydro has a total of five existing interruptible rate schedules for non-firm service in its Electric Tariff for transmission service customers.**

**For each of these interruptible rate schedules BC Hydro's right to curtail is the same (i.e., BC Hydro will provide energy and capacity under the applicable rate schedule only to the extent it is available).**

**However, there may be differences in the procedures related to interruption of service as specified in each different rate schedule. Please also refer to BC Hydro's response to BCUC IR 1.19.3.**

**BC Hydro has not interrupted any of its transmission service customers under any of its interruptible rate schedules in each of the last five years.**

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**14.0 Reference: Exhibit B-1, page 60**

- The Incremental Energy Rate Pilot is non-firm and interruptible. BC Hydro will provide energy and capacity under this rate schedule only to the extent it is available. BC Hydro is not required to undertake system reinforcements to serve load under this rate schedule. RS 1893 load is not included in BC Hydro's load forecast. BC Hydro has the right to interrupt RS 1893 service for transmission and generation system constraints; and

3.14.2 Please comment on the historical impacts of interruption to customer business activities. Do the interruptions have severe impacts on customer operations, or are they generally manageable? Please explain.

**RESPONSE:**

**Please refer to BC Hydro's response to CEC IR 3.14.1.**

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**14.0 Reference: Exhibit B-1, page 60**

- The Incremental Energy Rate Pilot is non-firm and interruptible. BC Hydro will provide energy and capacity under this rate schedule only to the extent it is available. BC Hydro is not required to undertake system reinforcements to serve load under this rate schedule. RS 1893 load is not included in BC Hydro's load forecast. BC Hydro has the right to interrupt RS 1893 service for transmission and generation system constraints; and

3.14.3 To the extent that BC Hydro has not provided significant interruption to customers, how does BC Hydro verify that customers do not use interruptible service to replace firm service where they have opportunities for load growth?

**RESPONSE:**

**From the preamble to this IR, BC Hydro understands it to be referring to RS 1893 only.**

**Please refer to BC Hydro's response to BCUC IR 3.2.3. for a discussion of how RS 1893 baselines consider load growth and to BCUC IR 3.2.4 for a discussion of how load shifting as between RS 1893 and RS 1823 is addressed.**

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**15.0 Reference: Exhibit B-1, page 61**

**5.3 Implementation Considerations**

BC Hydro proposes to implement RS 1893 on a 51-month pilot basis beginning January 1, 2020 and ending March 31, 2024 (the end of BC Hydro's fiscal year), subject to BCUC approval.

3.15.1 Has BC Hydro commenced the pilot already?

**RESPONSE:**

**The pilot commenced January 1, 2020, as approved in BCUC Order No. G-300-19.**

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**15.0 Reference: Exhibit B-1, page 61**

**5.3 Implementation Considerations**

BC Hydro proposes to implement RS 1893 on a 51-month pilot basis beginning January 1, 2020 and ending March 31, 2024 (the end of BC Hydro's fiscal year), subject to BCUC approval.

3.15.1 Has BC Hydro commenced the pilot already?

3.15.1.1 If yes, please provide the results to date including number of customers, GWh and revenues.

**RESPONSE:**

**Yes, the RS 1893 Pilot commenced on January 1, 2020.**

**Please also refer to BC Hydro's response to BCUC IR 3.4.3.**

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**16.0 Reference: Exhibit B-1, page 61**

BC Hydro also proposes to conduct annual monitoring and prepare an evaluation report to consider the results and impacts of the rate in fall 2023 after the results for the initial period (January 1, 2020 to March 31, 2021) and three complete fiscal years (fiscal 2021, fiscal 2022 and fiscal 2023) are available. BC Hydro proposes that the evaluation will consider the following:

- (i) Ratepayer and participant economics;
- (ii) Appropriateness of the energy charge adder;
- (iii) Customer understanding and acceptance;
- (iv) Practicality of administration; and
- (v) Interactions and possible opportunities for synergies between the Incremental Energy Rate Pilot and the Freshet Rate.

3.16.1 Does BC Hydro expect that the Report will be available for intervener review?

**RESPONSE:**

**BC Hydro expects to file the report with the BCUC and copy interveners to the Transmission Service Market Reference-Priced Rates Application proceeding.**



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**16.0 Reference: Exhibit B-1, page 61**

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- (i) Ratepayer and participant economics;
- (ii) Appropriateness of the energy charge adder;
- (iii) Customer understanding and acceptance;
- (iv) Practicality of administration; and
- (v) Interactions and possible opportunities for synergies between the Incremental Energy Rate Pilot and the Freshet Rate.

3.16.2 Please confirm that BC Hydro can use the information being collected to explore pilots for commercial customers as the Pilot is ongoing, and would not require a completed Report to do so.

**RESPONSE:**

**To the extent that any information collected for this RS 1893 evaluation is relevant to commercial customers, it could be used to inform future commercial customer rate design options. While a completed evaluation report is not required for this purpose, certain information, such as ratepayer and participant economics for transmission customers, will only become available at the time the evaluation report is completed.**

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**16.0 Reference: Exhibit B-1, page 61**

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- (i) Ratepayer and participant economics;
- (ii) Appropriateness of the energy charge adder;
- (iii) Customer understanding and acceptance;
- (iv) Practicality of administration; and
- (v) Interactions and possible opportunities for synergies between the Incremental Energy Rate Pilot and the Freshet Rate.

3.16.3 Please elaborate on the possible 'synergies' that BC Hydro envisions could be available.

**RESPONSE:**

**Please refer to BC Hydro's response to BCSEA IR 1.9.2.**

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**17.0 Reference: Exhibit B-1, page 66**

*Customers with Self-generation*

BC Hydro is proposing that Customers with self-generation may elect to use RS 1893 as an alternative to RS 1880 for the instantaneous pick-up of load due to loss of self-generation. However, the Customer must choose one service or the other. There is no ability to switch back and forth between RS 1893 and RS 1880. For example, a customer taking RS 1893 service can subsequently elect to take RS 1880 service at any time during the Billing Year. Where this occurs, the customer will be automatically cancelled out of RS 1893 for the remainder of the Billing Year in accordance with Special Condition 13, but remain eligible to request RS 1880

service for any event of forced or planned generator outage. The Customer must wait until March 1 before being eligible to re-enrol in the Incremental Energy Rate Pilot.

3.17.1 Why was March 1 selected as the date for re-enrolment eligibility?

**RESPONSE:**

**BC Hydro consulted with its Transmission Service Customers and AMPC and agreed that March 1 is the appropriate cut-off date by which customers must provide notice of intent to take electricity under RS 1893 for the upcoming Billing Year commencing April 1. March 1 is also the notice date required under RS 1892.**

**The purpose of this notice timing is: (i) to provide the customer with sufficient time to prepare its forecasts of, and operating plans for, incremental load; and (ii) to provide BC Hydro with sufficient time (i.e., minimum of 30 days) to review and determine RS 1893 baselines with the Customer and update the billing system.**

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service for any event of forced or planned generator outage. The Customer must wait until March 1 before being eligible to re-enrol in the Incremental Energy Rate Pilot.

- 3.17.2 Please elaborate on the rationale for not allowing a customer to switch back and forth between RS 1880 and RS 1893, which the CEC understands are both non-firm.

**RESPONSE:**

**BC Hydro's rationale is that a customer with self-generation should not be allowed to switch back and forth between RS 1893 pricing and RS 1880 pricing (which are different) for each event of generator curtailment, based on whichever service is priced lower. Please refer to Special Condition 13 of RS 1893.**

**BC Hydro notes that even though both rates are for non-firm electricity service, RS 1880 is only available to customers with self-generation who may be required to take energy from BC Hydro on an ad hoc basis to make up for reduced self-generation when all or part of their generating plant is curtailed.**

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**17.0 Reference: Exhibit B-1, page 66**

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BC Hydro is proposing that Customers with self-generation may elect to use RS 1893 as an alternative to RS 1880 for the instantaneous pick-up of load due to loss of self-generation. However, the Customer must choose one service or the other. There is no ability to switch back and forth between RS 1893 and RS 1880. For example, a customer taking RS 1893 service can subsequently elect to take RS 1880 service at any time during the Billing Year. Where this occurs, the customer will be automatically cancelled out of RS 1893 for the remainder of the Billing Year in accordance with Special Condition 13, but remain eligible to request RS 1880

service for any event of forced or planned generator outage. The Customer must wait until March 1 before being eligible to re-enrol in the Incremental Energy Rate Pilot.

- 3.17.3 Could switching back and forth permit a customer to game the system? Please explain.

**RESPONSE:**

**Please refer to BC Hydro's response to CEC IR 3.17.2.**

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**18.0 Reference: Exhibit B-1, page 71 and page 67**

*Cancellation and Opt In/Out Provisions*

There are automatic and voluntary cancellation provisions in RS 1893. Acting reasonably, BC Hydro has the discretion to automatically cancel RS 1893 service where: (i) a customer does not respond to a BC Hydro curtailment notice; and (ii) where a customer with self-generation requests RS 1880 service in place of RS 1893 service in order to prevent the customer from switching between the two rates. On a voluntary basis, the subscribing customer can elect to opt-out of the pilot by providing written notice to BC Hydro at any time.

In all cases of cancellation, BC Hydro will terminate RS 1893 service for the entire Billing Period in which the cancellation occurs. BC Hydro will not rebill for any Electricity supplied under RS 1893 in a prior Billing Period. If supply under RS 1893 is cancelled, all electricity supplied will be billed under RS 1823 or RS 1828 and/or RS 1880, as applicable.

Further, after cancellation, whether automatic or voluntary, the customer is not eligible to re-enrol for RS 1893 service for the balance of the current Billing Year. This will prevent customers having the ability to “opt in/out” of the rate depending on the price of firm Electricity service under RS 1823 or RS 1828 and non-firm electricity service under RS 1893 and/or RS 1880.

service for any event of forced or planned generator outage. The Customer must wait until March 1 before being eligible to re-enrol in the Incremental Energy Rate Pilot.

3.18.1 Is March 1st the reset date?

**RESPONSE:**

**There is no reset date under RS 1893. BC Hydro understands the question to refer to the March 1 date in Special Condition 3(b) of RS 1893. This represents the date by which the customer must provide written notice of intent to participate under RS 1893 for the upcoming Billing Year.**

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service for any event of forced or planned generator outage. The Customer must wait until March 1 before being eligible to re-enrol in the Incremental Energy Rate Pilot.

3.18.1 Is March 1st the reset date?

3.18.1.1 If yes, please explain whether or not having a fixed reset date enables some gaming to the extent that a customer is able to reset as the March 1st date approaches.

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**RESPONSE:**

**As described in BC Hydro's response to CEC IR 3.18.1, there is no "fixed reset date" under RS 1893.**

**March 1 represents the final date by which a customer must provide written notice of their intent to participate in RS 1893 for the upcoming Billing Year. This is an eligibility provision for service. No gaming consideration is apparent to BC Hydro.**



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**18.0 Reference: Exhibit B-1, page 71 and page 67**

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There are automatic and voluntary cancellation provisions in RS 1893. Acting reasonably, BC Hydro has the discretion to automatically cancel RS 1893 service where: (i) a customer does not respond to a BC Hydro curtailment notice; and (ii) where a customer with self-generation requests RS 1880 service in place of RS 1893 service in order to prevent the customer from switching between the two rates. On a voluntary basis, the subscribing customer can elect to opt-out of the pilot by providing written notice to BC Hydro at any time.

In all cases of cancellation, BC Hydro will terminate RS 1893 service for the entire Billing Period in which the cancellation occurs. BC Hydro will not rebill for any Electricity supplied under RS 1893 in a prior Billing Period. If supply under RS 1893 is cancelled, all electricity supplied will be billed under RS 1823 or RS 1828 and/or RS 1880, as applicable.

Further, after cancellation, whether automatic or voluntary, the customer is not eligible to re-enrol for RS 1893 service for the balance of the current Billing Year. This will prevent customers having the ability to “opt in/out” of the rate depending on the price of firm Electricity service under RS 1823 or RS 1828 and non-firm electricity service under RS 1893 and/or RS 1880.

service for any event of forced or planned generator outage. The Customer must wait until March 1 before being eligible to re-enrol in the Incremental Energy Rate Pilot.

- 3.18.1 Is March 1st the reset date?
  - 3.18.1.1 If yes, please explain whether or not having a fixed reset date enables some gaming to the extent that a customer is able to reset as the March 1st date approaches.
  - 3.18.1.1.1 If there is the potential for gaming due to a fixed March 1 reset date, could the reset instead be made to be 1 year from the date of termination? Please explain.

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**RESPONSE:**

Please refer to BC Hydro's response to CEC IR 3.18.1.1.

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**19.0 Reference: Exhibit B-1-1, page 79 and Exhibit B-1 page 80**

**Table 13 Summary of Expected Net Revenue by Adder Option**

ENERGY CHARGE ADDER ALTERNATIVES	ADDER (\$/MWh)	Expected Incremental Load (GWh)	Expected Incremental Net Revenue (\$M)
Option 1A - Flat	<del>\$6.00</del> 8.00	264	\$ 1.47
Option 1B - Shaped		263	\$ 1.45
<b>Option 2A - Flat</b>	<b>\$ 7.00</b>	266	<b>\$ 1.32</b>
Option 2B - Shaped		265	\$ 1.29
Option 3A - Flat	<del>\$8.00</del> 6.00	268	\$ 1.12
Option 3B - Shaped		267	\$ 1.13

BC Hydro's proposal in this application is to proceed with Option 2A, which uses a flat energy charge adder of \$7/MWh in non-freshet months and a flat \$3/MWh energy charge adder of \$3/MWh in freshet months. This option reflects AMPC's proposal and is generally consistent with customer feedback requesting simplicity in adder pricing.

Based on the assumptions provided, for energy charge adder Option 2A:

- Expected incremental RS 1893 energy sales are 266 GWh per year and expected net revenue to BC Hydro is approximately \$1.3 million per year;
- At the 10<sup>th</sup> percentile, there is a 10 per cent chance that BC Hydro would see a forecast annual net revenue loss of approximately (\$0.3 million) or more for approximately 243 GWh of incremental energy sales; and
- At the 90<sup>th</sup> percentile, there is a 10 per cent chance that BC Hydro would see a forecast annual net revenue gain of approximately \$2.9 million or more for approximately 282 GWh of incremental energy sales.

BC Hydro would also support using Option 2B if that is the BCUC's preference.

Although the modeling indicates that there is no material financial difference between Option 2A and Option 2B on an annualized basis, BC Hydro does consider the shape of the energy charge adder in Option 2B to provide a price signal that better matches monthly pricing signals with prospective costs and risks.

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3.19.1 For each option, please provide the expected losses and gains based on the 10<sup>th</sup> percentile and 90<sup>th</sup> percentiles as calculated above for Option 2A.

**RESPONSE:**

Please refer to the table below:

Energy Charge Adder Alternative	10 <sup>th</sup> Percentile Load (GWh)	10 <sup>th</sup> Percentile Net Revenue (\$ million)	90 <sup>th</sup> Percentile Load (GWh)	90 <sup>th</sup> Percentile Net Revenue (\$ million)
Option 1A	240	-0.1	280	3.0
Option 1B	239	-0.1	280	3.0
Option 2A	243	-0.3	282	2.9
Option 2B	243	-0.3	281	2.8
Option 3A	246	-0.5	283	2.7
Option 3B	246	-0.5	283	2.7

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**19.0 Reference: Exhibit B-1-1, page 79 and Exhibit B-1 page 80**

**Table 13 Summary of Expected Net Revenue by Adder Option**

ENERGY CHARGE ADDER ALTERNATIVES	ADDER (\$/MWh)	Expected Incremental Load (GWh)	Expected Incremental Net Revenue (\$M)
Option 1A - Flat	<del>\$6.00</del> 8.00	264	\$ 1.47
Option 1B - Shaped		263	\$ 1.45
<b>Option 2A - Flat</b>	<b>\$ 7.00</b>	266	<b>\$ 1.32</b>
Option 2B - Shaped		265	\$ 1.29
Option 3A - Flat	<del>\$8.00</del> 6.00	268	\$ 1.12
Option 3B - Shaped		267	\$ 1.13

BC Hydro's proposal in this application is to proceed with Option 2A, which uses a flat energy charge adder of \$7/MWh in non-freshet months and a flat \$3/MWh energy charge adder of \$3/MWh in freshet months. This option reflects AMPC's proposal and is generally consistent with customer feedback requesting simplicity in adder pricing.

Based on the assumptions provided, for energy charge adder Option 2A:

- Expected incremental RS 1893 energy sales are 266 GWh per year and expected net revenue to BC Hydro is approximately \$1.3 million per year;
- At the 10<sup>th</sup> percentile, there is a 10 per cent chance that BC Hydro would see a forecast annual net revenue loss of approximately (\$0.3 million) or more for approximately 243 GWh of incremental energy sales; and
- At the 90<sup>th</sup> percentile, there is a 10 per cent chance that BC Hydro would see a forecast annual net revenue gain of approximately \$2.9 million or more for approximately 282 GWh of incremental energy sales.

BC Hydro would also support using Option 2B if that is the BCUC's preference. Although the modeling indicates that there is no material financial difference between Option 2A and Option 2B on an annualized basis, BC Hydro does consider the shape of the energy charge adder in Option 2B to provide a price signal that better matches monthly pricing signals with prospective costs and risks.

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3.19.2 The CEC notes that there is approximately 2GWh difference, or less than 1% change in load, comparing Option 1A, to 2A. However, there is an approximate 10% change in revenues. Please explain whether or not BC Hydro would consider Option 1A or 1B in order to provide more benefits to non-participants or for any other reason, and explain why.

**RESPONSE:**

**Please refer to BC Hydro’s response to CEABC IR 3.15.7.**

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Option 1B - Shaped		263	\$ 1.45
<b>Option 2A - Flat</b>	<b>\$ 7.00</b>	266	<b>\$ 1.32</b>
Option 2B - Shaped		265	\$ 1.29
Option 3A - Flat	<del>\$8.00</del> 6.00	268	\$ 1.12
Option 3B - Shaped		267	\$ 1.13

BC Hydro's proposal in this application is to proceed with Option 2A, which uses a flat energy charge adder of \$7/MWh in non-freshet months and a flat \$3/MWh energy charge adder of \$3/MWh in freshet months. This option reflects AMPC's proposal and is generally consistent with customer feedback requesting simplicity in adder pricing.

Based on the assumptions provided, for energy charge adder Option 2A:

- Expected incremental RS 1893 energy sales are 266 GWh per year and expected net revenue to BC Hydro is approximately \$1.3 million per year;
- At the 10<sup>th</sup> percentile, there is a 10 per cent chance that BC Hydro would see a forecast annual net revenue loss of approximately (\$0.3 million) or more for approximately 243 GWh of incremental energy sales; and
- At the 90<sup>th</sup> percentile, there is a 10 per cent chance that BC Hydro would see a forecast annual net revenue gain of approximately \$2.9 million or more for approximately 282 GWh of incremental energy sales.

BC Hydro would also support using Option 2B if that is the BCUC's preference.

Although the modeling indicates that there is no material financial difference between Option 2A and Option 2B on an annualized basis, BC Hydro does consider the shape of the energy charge adder in Option 2B to provide a price signal that better matches monthly pricing signals with prospective costs and risks.

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3.19.3 Does BC Hydro consider there to be a social element to the overall IER proposal given the current COVID-19 pandemic?

**RESPONSE:**

**RS 1893 is justified on an economic basis as it is expected to provide economic benefits to all ratepayers. As such, to the extent there are any broader benefits of the pilot, including potential social benefits, they did not inform the pilot design nor are they required for its approval by the BCUC.**



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Option 1B - Shaped		263	\$ 1.45
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Option 2B - Shaped		265	\$ 1.29
Option 3A - Flat	<del>\$8.00</del> 6.00	268	\$ 1.12
Option 3B - Shaped		267	\$ 1.13

BC Hydro's proposal in this application is to proceed with Option 2A, which uses a flat energy charge adder of \$7/MWh in non-freshet months and a flat \$3/MWh energy charge adder of \$3/MWh in freshet months. This option reflects AMPC's proposal and is generally consistent with customer feedback requesting simplicity in adder pricing.

Based on the assumptions provided, for energy charge adder Option 2A:

- Expected incremental RS 1893 energy sales are 266 GWh per year and expected net revenue to BC Hydro is approximately \$1.3 million per year;
- At the 10<sup>th</sup> percentile, there is a 10 per cent chance that BC Hydro would see a forecast annual net revenue loss of approximately (\$0.3 million) or more for approximately 243 GWh of incremental energy sales; and
- At the 90<sup>th</sup> percentile, there is a 10 per cent chance that BC Hydro would see a forecast annual net revenue gain of approximately \$2.9 million or more for approximately 282 GWh of incremental energy sales.

BC Hydro would also support using Option 2B if that is the BCUC's preference. Although the modeling indicates that there is no material financial difference between Option 2A and Option 2B on an annualized basis, BC Hydro does consider the shape of the energy charge adder in Option 2B to provide a price signal that better matches monthly pricing signals with prospective costs and risks.

<b>Commercial Energy Consumers Association of British Columbia</b> Information Request No. <b>3.19.3.1</b> Dated: <b>May 22, 2020</b> British Columbia Hydro & Power Authority Response issued: <b>June 19, 2020</b>	Page 2 of 2
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3.19.3 Does BC Hydro consider there to be a social element to the overall IER proposal given the current COVID-19 pandemic?

3.19.3.1 If so, please elaborate and explain why BC Hydro considers this to be an appropriate role for the utility.

**RESPONSE:**

**Please refer to BC Hydro's response to CEC IR 3.19.3.**

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## 1.0 Impact of COVID-19 Pandemic and Associated Recession

**Reference: Exhibit A-8, BCUC IR 3.1 – 3.3**

MoveUP recognizes that the characteristics, scale and duration of the global economic decline triggered by the pandemic cannot be known with any degree of certainty at this juncture.

3.1.1 Subject to this high degree of uncertainty, what is BC Hydro’s best current directional and quantitative estimation of the impact of COVID-19 and the associated recession upon the following:

- a) The magnitude of BC Hydro’s energy surplus during the term of the proposed incremental energy rate pilot?

### **RESPONSE:**

**As stated in BC Hydro’s May 11, 2020 News Release, “Report: COVID-19 leads to drop in power usage and operational challenges for BC Hydro”, the COVID-19 pandemic has resulted in a nearly 10 per cent drop in electricity demand. The report also states that electricity demand could decrease by up to 12 per cent by April 2021.**

**Correspondingly, this decrease in electricity demand could create an additional annual energy surplus.**

**We are still in the midst of the COVID-19 pandemic and the resulting consequences are unknown. Whatever BC Hydro’s expectations might be at this time, the outcome will be highly uncertain. Any attempt to forecast the impacts on BC Hydro’s operations will be an uncertain exercise.**

**Please refer to BC Hydro’s response to BCUC IR 3.3.1.**

<b>Movement of United Professionals</b> Information Request No. <b>3.1.1.b</b> Dated: <b>May 22, 2020</b> British Columbia Hydro & Power Authority Response issued: <b>June 19, 2020</b>	Page 1 of 1
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## 1.0 Impact of COVID-19 Pandemic and Associated Recession

**Reference: Exhibit A-8, BCUC IR 3.1 – 3.3**

MoveUP recognizes that the characteristics, scale and duration of the global economic decline triggered by the pandemic cannot be known with any degree of certainty at this juncture.

3.1.1 Subject to this high degree of uncertainty, what is BC Hydro's best current directional and quantitative estimation of the impact of COVID-19 and the associated recession upon the following:

- b) The degree of seasonality of BC Hydro's energy surplus during term of the proposed incremental energy rate pilot?

### **RESPONSE:**

**Please refer to BC Hydro's response to MOVEUP IR 3.1.1(a).**

<b>Movement of United Professionals</b> Information Request No. <b>3.1.1.c</b> Dated: <b>May 22, 2020</b> British Columbia Hydro & Power Authority Response issued: <b>June 19, 2020</b>	Page 1 of 1
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## 1.0 Impact of COVID-19 Pandemic and Associated Recession

**Reference: Exhibit A-8, BCUC IR 3.1 – 3.3**

MoveUP recognizes that the characteristics, scale and duration of the global economic decline triggered by the pandemic cannot be known with any degree of certainty at this juncture.

3.1.1 Subject to this high degree of uncertainty, what is BC Hydro's best current directional and quantitative estimation of the impact of COVID-19 and the associated recession upon the following:

- c) Industrial loads (including the impact on segments that are the likeliest candidates for the incremental energy rate, where possible)?

### **RESPONSE:**

**BC Hydro is currently updating our Load Forecast to reflect potential impacts of the COVID-19 pandemic however this work is not yet available for inclusion here.**

<b>Movement of United Professionals</b> Information Request No. <b>3.1.1.d</b> Dated: <b>May 22, 2020</b> British Columbia Hydro & Power Authority Response issued: <b>June 19, 2020</b>	Page 1 of 1
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## 1.0 Impact of COVID-19 Pandemic and Associated Recession

**Reference: Exhibit A-8, BCUC IR 3.1 – 3.3**

MoveUP recognizes that the characteristics, scale and duration of the global economic decline triggered by the pandemic cannot be known with any degree of certainty at this juncture.

3.1.1 Subject to this high degree of uncertainty, what is BC Hydro's best current directional and quantitative estimation of the impact of COVID-19 and the associated recession upon the following:

- d) The extent of interest and likely take-up of the proposed rate by domestic industrial customers?

### **RESPONSE:**

**Please refer to BC Hydro's response to BCUC IR 3.3.1.**

<b>Movement of United Professionals</b> Information Request No. <b>3.1.1.e</b> Dated: <b>May 22, 2020</b> British Columbia Hydro & Power Authority Response issued: <b>June 19, 2020</b>	Page 1 of 1
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## 1.0 Impact of COVID-19 Pandemic and Associated Recession

**Reference: Exhibit A-8, BCUC IR 3.1 – 3.3**

MoveUP recognizes that the characteristics, scale and duration of the global economic decline triggered by the pandemic cannot be known with any degree of certainty at this juncture.

3.1.1 Subject to this high degree of uncertainty, what is BC Hydro’s best current directional and quantitative estimation of the impact of COVID-19 and the associated recession upon the following:

- e) The usefulness of the information that can be gleaned from the pilot under these economic circumstances, in relation to the appropriateness of maintaining the rate during “normal” economic times?

### **RESPONSE:**

**BC Hydro expects that the four-year period of the proposed RS 1893 pilot will encompass a range of conditions and that its evaluation will provide relevant information to inform a decision on offering RS 1893 beyond the four-year pilot period.**

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## 1.0 Impact of COVID-19 Pandemic and Associated Recession

**Reference: Exhibit A-8, BCUC IR 3.1 – 3.3**

MoveUP recognizes that the characteristics, scale and duration of the global economic decline triggered by the pandemic cannot be known with any degree of certainty at this juncture.

3.1.2 In BC Hydro’s view, would it make better sense to postpone the operation of the pilot until the British Columbia economy has recovered sufficiently that the “new normal” can at least be described?

### **RESPONSE:**

**BC Hydro’s view is that the RS 1893 pilot should not be postponed. The proposed pilot duration of more than four years, from January 1, 2020 to March 31, 2024, will likely cover a range of conditions and these will be assessed through its evaluation.**



<b>Movement of United Professionals</b> Information Request No. <b>3.2.1</b> Dated: <b>May 22, 2020</b> British Columbia Hydro & Power Authority Response issued: <b>June 19, 2020</b>	Page 1 of 1
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## 2.0 Pilot Rationale: Energy Surplus - Mitigation Efforts

**Reference: from BC Hydro News Release, May 11, 2020, Report: COVID-19 leads to drop in power usage and operational challenges for BC Hydro:**

The report examines how the drop in power demand coupled with high inflows from spring snowmelt and a limited export market have created a large surplus in BC Hydro's system. This has created challenges for BC Hydro and the potential for its reservoirs to reach capacity. Further adding to its surplus challenges is the majority of the Independent Power Producers (IPPs) it has agreements with are producing the most amount of energy at this time of year – accounting for about 29 per cent of BC Hydro's total generation.

BC Hydro's system is designed and operated to perform safely across a wide range of conditions and extreme events, and its staff are highly trained and experienced to adapt quickly to changing conditions. To ensure the safety of the public, the environment and its system, BC Hydro is taking the following immediate measures:

- Shutting down operations at some of its smaller plants to reduce generation.
- Spilling water at its facilities, including Seven Mile and Revelstoke, to balance
- generation and the province's electricity load in real-time when needed.
- Reducing generation from other sources, including invoking provisions within its contracts with some of its large IPPs to reduce power purchases during the spring.
- Powerex – BC Hydro's trading subsidiary – will export electricity to other jurisdictions.

3.2.1 With reference to BC Hydro's ongoing energy surplus as a rationale for the incremental energy rate pilot, please identify the nature of the "provisions within its contracts with some of its large IPPs" and provide BC Hydro's best current estimate of the overall quantity of surplus energy deliveries that may be avoidable through this strategy.

### **RESPONSE:**

**The "provisions within its contracts with some of its large IPPs" referred to in the preamble are force majeure provisions, which are common contractual terms that relieve the parties from performing their contractual obligations when certain circumstances arise, such as an epidemic.**

**Please refer to BC Hydro's response to MOVEUP IR 3.1.1(a) where we stated that we are still in the midst of the pandemic and any attempt to forecast the impacts on BC Hydro's operations will be an uncertain exercise.**

<b>Movement of United Professionals</b> Information Request No. <b>3.2.2</b> Dated: <b>May 22, 2020</b> British Columbia Hydro & Power Authority Response issued: <b>June 19, 2020</b>	Page 1 of 1
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BC Hydro's system is designed and operated to perform safely across a wide range of conditions and extreme events, and its staff are highly trained and experienced to adapt quickly to changing conditions. To ensure the safety of the public, the environment and its system, BC Hydro is taking the following immediate measures:

- Shutting down operations at some of its smaller plants to reduce generation.
- Spilling water at its facilities, including Seven Mile and Revelstoke, to balance
- generation and the province's electricity load in real-time when needed.
- Reducing generation from other sources, including invoking provisions within its contracts with some of its large IPPs to reduce power purchases during the spring.
- Powerex – BC Hydro's trading subsidiary – will export electricity to other jurisdictions.

3.2.2 What is BC Hydro's best estimation of the impact of those potential energy delivery reductions on the rationale for the incremental energy rate?

### **RESPONSE:**

**Please refer to BC Hydro's response to BCUC IR 3.3.1.**