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BC HYDRO F2020–F2021 REVENUE REQUIREMENTS EXHIBIT A-19

Mr. Fred James
Chief Regulatory Officer
Regulatory & Rates Group
British Columbia Hydro and Power Authority
16th Floor - 333 Dunsmuir Street
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**Re: British Columbia Hydro and Power Authority – F2020–F2021 Revenue Requirements Application –
Project No. 1598990 – Information Request No. 4**

Dear Mr. James:

Further to British Columbia Utilities Commission Order G-218-19, enclosed please find BCUC Information Request No. 4 on the 20-year load forecast to British Columbia Hydro and Power Authority. In accordance with the Regulatory Timetable, please file your responses no later than Thursday, November 14, 2019.

Sincerely,

Original Signed By:

Patrick Wruck
Commission Secretary

/nd
Enclosure



British Columbia Hydro and Power Authority
F2020-F2021 Revenue Requirements Application

INFORMATION REQUEST NO. 4 TO BRITISH COLUMBIA HYDRO AND POWER AUTHORITY

**317.0 Reference: TWENTY YEAR LOAD FORECAST
Exhibit B-15, 20-Year Load Forecast, cover letter, p. 1; Figure 1, p. 2;
Appendix B, Figure B-1, Figure B-3, pp. 2, 6; Appendix D; Exhibit B-1, Appendix O
Relevance of 20-year forecast to the Test Period**

British Columbia Hydro and Power Authority (BC Hydro) states that:

In response to a commitment made at the March 15, 2019 Workshop and information requests received to-date and in accordance with BCUC Order G-218-19, BC Hydro writes to file its June 2019 Load Forecast, covering fiscal 2020 to fiscal 2039... BC Hydro suggests that Information Requests on the June 2019 Load Forecast be focused on the Test Period of the Application (fiscal 2020 and fiscal 2021). Questions regarding the years beyond the Test Period are more appropriately addressed in the 2021 IRP [Integrated Resource Plan] proceeding.

BC Hydro provides the June 2019 load forecast in Figure 1 of Exhibit B-15, as well as in Appendix D.

BC Hydro provides the peak load forecast in Appendix B of Exhibit B-15 and shows the building blocks of the peak demand in Figure B-1 and the total integrated system peak forecast in Figure B-3.

BC Hydro also includes the Electric Load Forecast Report Fiscal 2019 to Fiscal 2024 (F2019-F2024) in Appendix O of the Application.

317.1 Please explain whether the energy load forecast beyond the Test Period and the 20-year June 2019 peak forecast, respectively, impact any component of the revenue requirement for the Test Period such as: capital planning; capital expenditures; cost of energy; and deferral account balances to be recovered within the Test Period.

317.1.1 Please specify and explain which years out of the forecast provided for F2021 to F2039 included in the 20-year energy and peak load forecasts, respectively, impact each component of the Test Period revenue requirement.

317.2 To the extent the 20-year load forecast has impact on any component of the Test Period revenue requirement, please explain the load forecast methodology and input assumptions for each customer class for the June 2019 mid forecast and the uncertainty range. Please highlight and explain any differences in the forecast methodology from those explained in Appendix O of the Application.

317.3 To the extent the 20-year peak forecast has impact on any component of the Test Period revenue requirement, please explain the following:

- The input assumption and methodology to produce the uncertainty range of the peak load forecast;

- Whether the peak load forecast represents the coincidental peak across all customer classes; and
- The basis for the assumption around EV charging time profile.

**318.0 Reference: TWENTY YEAR LOAD FORECAST
Exhibit B-15, p. 10; Exhibit B-12, BCUC IR 208.1, 209.1
Purpose of the June 2019 load forecast**

BC Hydro states on page 10 that “[t]he June 2019 Load Forecast was prepared as an interim step to inform BC Hydro’s capital planning cycle and the February 2020 Service Plan. In early 2020, BC Hydro will complete an updated comprehensive 20-year load forecast to inform the 2021 [Integrated Resource Plan].”

BC Hydro stated in response to BCUC IR 208.1 that:

BC Hydro normally completes a comprehensive load forecast once per year as part of BC Hydro’s annual Service Plan schedule. The latest approved load forecast is the October 2018 Load Forecast, and it will be used in the Energy Studies until the next service plan load forecast is available in October 2019.

BC Hydro elaborated in response to BCUC IR 209.1:

BC Hydro normally makes changes to our load forecast in three ways, and each with different frequency:

- By building a comprehensive system level energy and peak load forecast, (referred to as a ‘comprehensive load forecast’);
- By developing partial updates to a comprehensive load forecast, which we call a ‘load forecast update’; and
- By adjusting a version of a comprehensive load forecast or a load forecast update within a fiscal year for financial forecasting purposes.

318.1 Please elaborate on how the June 2019 load forecast informs BC Hydro’s capital planning cycle and the February 2020 Service Plan.

318.2 Please explain whether there is any other application of the June 2019 load forecast beyond informing BC Hydro’s capital planning cycle and the February 2020 Service Plan.

318.3 Considering that the 20-year load forecast was filed on October 3, 2019, please explain why the load forecast is dated June 2019 rather than a more recent date.

318.4 Please explain whether BC Hydro will be producing a comprehensive system level energy and peak load forecast for the 2021 IRP.

318.4.1 If yes, please explain when the forecast will be completed and whether this timing has any impact on BC Hydro’s existing schedule to produce a comprehensive load forecast and any subsequent updates going forward.

318.4.2 If no, please explain how BC Hydro intends to make changes to its load forecast for presentation in the IRP, including which load forecast will be the base forecast to which BC Hydro will be updating, if applicable.

318.4.2.1 Please explain how BC Hydro has determined that this level of review and update to the load forecast is appropriate for the purpose of the IRP.

**319.0 Reference: TWENTY YEAR LOAD FORECAST
Exhibit B-15, pp. 8, 9; CBC News, Mill workers and forest industry staff call on B.C. for policy change amid closures, dated September 13, 2019¹
Forestry**

BC Hydro states on pages 8 to 9 of Exhibit B-15 that:

Forecast sales to the forestry sub-sector in fiscal 2020 have decreased as a result of temporary shift and mill curtailments at some transmission serviced forestry mills due to fibre shortages and market conditions... The October 2018 Load Forecast assumed that electricity sales to the forestry sub-sector would decline; however, the recent closures and curtailments have been greater than forecast and most of this incremental impact is reflected in the June 2019 Load Forecast.

BC Hydro also states on page 9 that “[f]orecast sales to the forestry sub-sector in fiscal 2021 increase due to deferred closure risk for a major pulp and paper mill. This deferred closure risk more than offsets the decline in fiscal 2020 because a single pulp and paper mill consumes significantly more electricity than multiple sawmills.”

In a CBC article dated September 13, 2019, it states: “B.C. has been plagued by a series of mill curtailments and closures over the past few months, affecting nearly 6,000 workers at 25 different mills across the province.”

319.1 In light of the recent announcements regarding mill closures to date, please discuss whether there are any mill closures that have not been accounted for in the June 2019 forecast.

319.1.1 If yes, please identify the mill closures, and discuss and quantify the impact on the Test Period load forecast and the 20-year load forecast to the extent it impacts the Test Period revenue requirement.

319.1.1.1 If applicable, please provide an update to Appendix A.

**320.0 Reference: TWENTY YEAR LOAD FORECAST
Exhibit B-15, Appendix A; Exhibit B-5, BCUC IR 9.2; Midcontinent Independent System Operator (MISO), Peak Forecast Methodology Review,² p. 7
Industrial customer load forecast**

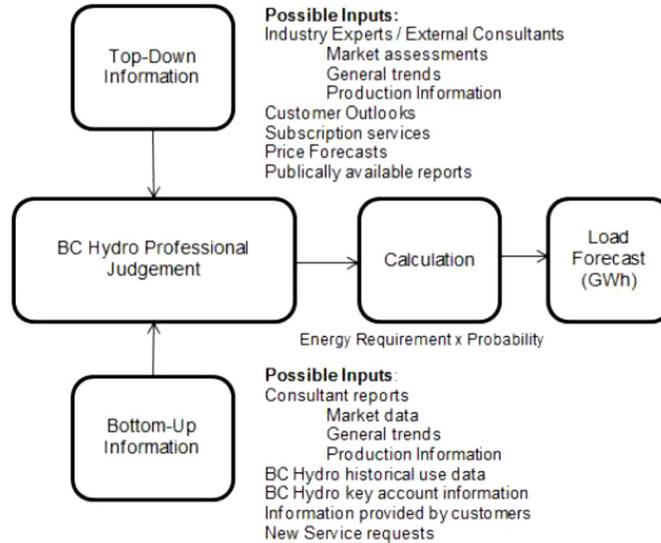
BC Hydro provides customer specific updates in Appendix A of Exhibit B-15.

In response to BCUC IR 9.2, BC Hydro provided the following figure explaining the general overview of top-down bottom-up forecasting methodology for the large industrial customer class:

¹ Retrieved October 30, 2019, from <https://www.cbc.ca/news/canada/british-columbia/mill-workers-forest-industry-staff-reactions-closures-1.5283821>.

² <https://cdn.misoenergy.org/Peak%20Forecasting%20Methodology%20Review%20Whitepaper173766.pdf>.

Figure 1 General Overview of Top-Down, Bottom-Up Forecasting Methodology



BC Hydro further provided Figure 2 in response to BCUC IR 9.2 on whether top-down analysis was done on each sub-sector within the large industrial customer class.

In the Peak Forecast Methodology Review by MISO, it states on page 7 that:

A forecast based on informed opinion is determined from expert judgement. This method is sometimes used to predict large industrial customer use, or new uses of electricity. The primary difficulties in using informed opinion are the lack of quantitative support, the inability to examine alternatives, and the qualifications of the ‘expert’ making the forecast. Informed opinion should be used, in our judgement, to design a forecasting system that quantifies the ‘expert’ knowledge in a way that allows for examination by outside parties.

- 320.1 Please comment on whether BC Hydro’s load forecast methodology for the Test Period for light and large industrial customers, involving information provided by customers and/or a third-party expert, is susceptible to the weaknesses of “informed opinion” as a forecast methodology as stated in the report by MISO.
- 320.2 Please explain how the 20-year energy load forecast is conducted for light and large industrial customers and highlight any difference from the methodology for the Test Period load forecast, as explained in Appendix O of the Application.
 - 320.2.1 If an “informed opinion,” either from an “expert” or from the customer is used to produce the load forecast for industrial customers, please discuss whether BC Hydro’s load forecast methodology is susceptible to the weaknesses of “informed opinion” as a forecast methodology as stated in the report by MISO.
 - 320.2.2 Please provide BC Hydro’s opinion, on whether the use of customer information (such as customer’s energy nomination) is appropriate for a longer term forecast up to 20-years.

**321.0 Reference: TWENTY YEAR LOAD FORECAST
Exhibit B-11, Appendix A, Schedule 1.0; Exhibit B-15, p. 5
Impact on revenue requirement forecast**

BC Hydro states on page 5 that:

...the June 2019 Load Forecast is on average within 0.1 per cent of the October 2018 Load Forecast for the Test Period. Accordingly, and given that the Evidentiary Update incorporated two months of actual results for fiscal 2020, BC Hydro is not proposing any further adjustments to the revenue forecast provided in the Evidentiary Update. Any variances between forecast and actual revenue would be deferred in the normal course for future recovery from, or refund to, ratepayers.

In schedule 1.0 of Appendix A to the Evidentiary Update, BC Hydro provides its revenue requirements summary.

321.1 Please discuss the impact the 0.1 percent average change between the October 2018 and June 2019 load forecast has on each component of the Test Period revenue requirements forecast. If possible, please update schedule 1.0 of Appendix A to show the revenue requirements for each year of the Test Period based on the June 2019 load forecast compared to the October 2018 load forecast.

**322.0 Reference: TWENTY YEAR LOAD FORECAST
Exhibit B-15, p. 7
Impact on Demand-Side Management (DSM) savings**

BC Hydro states on page 7 that:

In 2019, Navigant Inc. completed an independent review of the overlap in codes and standards included in the EIA [U.S. Energy Information Administration] projections and BC Hydro's DSM Plan. The review reconciled codes and standards set out by legislation in British Columbia and Canada, which are reflected in BC Hydro's DSM Plan, with the U.S. federal codes and standards reflected in the EIA projections. The review found that there were additional end uses technologies which overlapped between the EIA and DSM plan relative to previous assumptions reflected in the October 2018 Load Forecast.

322.1 Please explain whether the overlap identified between the EIA and DSM plan has any impact on the DSM energy savings included in Chapter 10 of the Application. If yes, please discuss the extent of the impact and provide an update to the applicable sections of the revenue requirements application (RRA), where possible.

**323.0 Reference: TWENTY YEAR LOAD FORECAST
Exhibit B-1, p. 3-56; Exhibit B-15, p. 8;
BC Hydro Fleet Electrification Rate Application, Exhibit B-1, cover letter, pp. 8, 10
Electric vehicle (EV) load and revenue forecasts**

BC Hydro states in Exhibit B-15 that "the high EV forecast assumes that the natural uptake of EVs is greater than the requirements set out in the ZEV Act [Zero-Emission Vehicles Act], resulting in a higher total EV forecast. Due to the significant level of uncertainty when developing a long-term EV forecast, BC Hydro developed its mid-EV forecast by taking the average between the high and low EV forecasts."

323.1 Please explain the input assumptions and methodology used to produce the high EV forecast under each customer class, respectively. Please include references, if available.

323.2 Please provide a breakdown of the EV load forecast as presented in the June 2019 forecast by customer class.

On August 7, 2019, BC Hydro filed the Fleet Electrification Rate Application with the BCUC for approval of Rate Schedules 164x - Overnight Rate (150 kW and over) and 165x - Demand Transition Rate (150 kW and over) for use for charging of electric fleet vehicles and vessels. The Overnight Rate is proposed to be effective as of April 1, 2021, and the Demand Transition Rate is proposed to be effective as of April 1, 2020.

BC Hydro states in the Application that “[t]he Revenue Forecast for fiscal 2020 to fiscal 2021 is based on fiscal 2019 rates approved by the Decision from the Previous Application, and excludes the proposed rate increases sought in this application and the impact of any future rate structure changes.”

323.3 Please explain what the assumed rate schedules under which revenue will be collected from EV customers in each respective customer class (e.g. residential, commercial, industrial) in BC Hydro’s revenue forecast for the Test Period. If BC Hydro assumes revenue from EV customers within the Test Period will be collected under EV-specific rate schedules, please elaborate on the rate structure, eligibility and implementation date of the respective EV-specific rate schedules.

323.4 Please explain whether the proposal to implement the Demand Transition Rate effective April 1, 2020 is expected to have any impact on the EV load from fleets within the Test Period. If yes, please explain whether this has been accounted for in the June 2019 load forecast. If not, why not?

323.5 Please discuss and quantify, where possible, any impact on the EV load from electric fleets in light of the proposed rates under BC Hydro’s Fleet Electrification Rate Application.

**324.0 Reference: TWENTY YEAR LOAD FORECAST
CTV News, The Canadian Press, B.C. gives \$4 million in rebates for electric vehicle charge stations,³ dated September 26, 2019
EV charger rebates**

In the news article by CTV News dated September 26, 2019, it states:

A \$2,000 rebate is available for installation of a Level 2 charging station designed for multiple users in apartments or workplaces... More than \$4 million has been set aside for the new CleanBC rebate program.

324.1 Please explain whether the EV load forecast accounts for the potential impact as a result of the government rebate on charging stations. If yes, please explain how the impact has been accounted for in the load forecast, both in the Test Period and in the 20-year horizon. If not, please explain why not.

324.2 Please explain how the rebates on charging stations will be offered, including details on: the source of funding; the cost recovery mechanism of the funding; entities involved in the administration, implementation and oversight of these rebates; and eligibility criteria for the rebates.

324.2.1 If BC Hydro is contributing towards the funds for the rebates, please elaborate on how BC Hydro intends to recover those funds.

³ Retrieved September 30, 2019, from <https://www.ctvnews.ca/autos/b-c-gives-4-million-in-rebates-for-electric-vehicle-charge-stations-1.4612352>.

**325.0 Reference: TWENTY YEAR LOAD FORECAST
Exhibit B-15, p. 11; Government of BC, CleanBC plan,⁴ updated March 2019, p. 10
Impact of CleanBC strategies**

BC Hydro states in Exhibit B-15 that “The June 2019 Load Forecast reflects the CleanBC plan during the Test Period as it incorporates changes to the EV methodology to align with the CleanBC Plan for light duty electric vehicles.”

The CleanBC plan states on page 10: “Specifically, by 2030, the policies in this strategy will require an additional 4,000 gigawatt-hours of electricity over and above currently projected demand growth to electrify key segments of our economy.”

- 325.1 Please identify whether any other strategies are mentioned in the CleanBC plan, aside from the strategy regarding light duty electric vehicles, which may impact BC Hydro’s Test Period load forecast. If yes, please discuss and quantify the expected impact on BC Hydro’s load forecast for each customer class, where possible.
- 325.2 Please explain whether the 20-year energy and peak load forecasts include the estimated increase in electricity demand as discussed in the CleanBC plan.

**326.0 Reference: TWENTY YEAR LOAD FORECAST
Exhibit B-15, Appendix D, Table D-3; BC Hydro F2017 to F2019 Revenue Requirements Application, Exhibit B-1-1, Application, Table 3-8; Government of BC, Ministry of Energy, Mines and Petroleum Resources, Comprehensive Review of BC Hydro: Phase 1 Report, pp. 22, 23
IPP Renewals**

BC Hydro provides the planning view of the energy load resource balance after planned resources in Table D-3 included in Appendix D of Exhibit B-15. It shows the future supply-side resources for F2036 includes 8,123 GWh of energy from Independent Power Producer (IPP) renewals and 226 GWh of energy from expected Standing Offer Program (SOP) Projects and other first nations commitments.

BC Hydro provides the energy load resource balance after planned resources in Table 3-8 of its F2017 to F2019 Revenue Requirements Application. It shows that the future supply-side resources for F2036 includes 5,515 GWh and 2,045 GWh of energy from IPP renewals and the SOP, respectively.

Page 22 of the Comprehensive Review of BC Hydro: Phase 1 Report states “[t]he cost of energy procured from Independent Power Producers is now one of BC Hydro’s biggest cost drivers and these costs will be recovered from ratepayers. Though BC Hydro has not conducted competitive calls for power since 2011, it is projected to have an energy surplus into the 2030s.” The report further states on page 23 that “[t]he primary opportunities for managing costs moving forward relate to expiring biomass agreements and the Standing Offer Program.”

- 326.1 Please provide a breakdown of the “existing and committed IPP Resources” line item by resource type for each year in the load resource balance included in Table D-3 and in Table 3-8 from the F2017-F2019 RRA, respectively, and include a line comparing any difference in terms of volume (GWh) between the two load resource balances for each resource type. Please also provide this information in Excel format.

⁴ https://blog.gov.bc.ca/app/uploads/sites/436/2019/02/CleanBC_Full_Report_Updated_Mar2019.pdf.

- 326.1.1 For the years that overlap between the load resource balance provided in Table 3-8 of the F2017-2019 RRA and in Table D-3, please explain any difference between the “existing and committed IPP Resources” volumes by resource type.
- 326.2 Please provide a table with the total volume of IPP resources (in GWh) for each year as included in Table D-3 and in Table 3-8 from the F2017-F2019 RRA, respectively, and break down by: existing IPP; future IPP renewals; expected SOP projects; and First Nations commitments. Please also include a “total” line and present each component’s proportion (in percentage terms) of the total amount in each year. Please also provide this information in Excel format.
- 326.2.1 For the years that overlap between the load resource balance provided in Table 3-8 of the F2017-F2019 RRA and in Table D-3, please explain any difference between the breakdown and total volume of IPP energy expected to be part of BC Hydro’s supply-side resources in the future.
- 326.3 Please explain the increase in IPP renewals under “future resources” for each year up to F2036 included in Table D-3 compared to the load resource balance filed as Table 3-8 in the F2017-F2019 RRA.
- 326.3.1 Please comment on whether the increase in IPP renewals is consistent with the Comprehensive Review of BC Hydro: Phase 1 Report.
- 326.4 Please explain whether, and if so how, the planned reliance on IPPs in the future could impact BC Hydro’s capital planning and expenditures. For example, would BC Hydro increase maintenance, upgrades and construction of BC Hydro’s generation facilities if energy and capacity from IPPs make a smaller portion of BC Hydro’s total future resource?