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September 30, 2019

Sent via eFile

**BC HYDRO FLEET ELECTRIFICATION RATE  
EXHIBIT A-4**

Mr. Fred James  
Chief Regulatory Officer  
Regulatory & Rates Group  
British Columbia Hydro and Power Authority  
16th Floor - 333 Dunsmuir Street  
Vancouver, BC V6B 5R3  
bhydroregulatorygroup@bhydro.com

**Re: British Columbia Hydro and Power Authority – Fleet Electrification Rate Application – Project No. 1599032 – Information Request No. 1**

Dear Mr. James:

Further to British Columbia Utilities Commission Order G-198-19, enclosed please find BCUC Information Request No. 1 to British Columbia Hydro and Power Authority. In accordance with the Regulatory Timetable, please file your responses no later than Wednesday, October 30, 2019.

Sincerely,

*Original Signed By:*

Patrick Wruck  
Commission Secretary

/nd



British Columbia Hydro and Power Authority  
Fleet Electrification Rate Application

**INFORMATION REQUEST NO. 1 TO BRITISH COLUMBIA HYDRO AND POWER AUTHORITY**

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**A. INTRODUCTION**

- 1.0 Reference: INTRODUCTION**  
**Exhibit B-1, Application, Section 1.2, 1.3, 1.4, pp. 2, 8–11; Appendix A, p. 1;**  
**CTV News, The Canadian Press, B.C. gives \$4 million in rebates for electric vehicle**  
**charge stations,<sup>1</sup> dated September 26, 2019**  
**Registration and eligibility for optional rates**

British Columbia Hydro and Power Authority (BC Hydro) states on page 2 of its Fleet Electrification Rate Application (Application) that there is an identified need for new optional rates for fleet charging services because electric fleet charging as described in this Application does not currently exist in BC Hydro’s service territory.

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

The government says in a statement that BC Hydro customers can apply for an additional \$350 in a matching rebate to buy and install the equipment in single-family homes. More than \$4 million has been set aside for the new CleanBC rebate program.

- 1.1 Please confirm, or otherwise explain, that BC Hydro is requesting approval of new rate schedules in this Application, and not for investment in capital infrastructure by BC Hydro.
- 1.2 Please discuss BC Hydro’s role in introducing the rebates for charging stations.
  - 1.2.1 Please discuss whether any regulatory approval by the British Columbia Utilities Commission (BCUC) is anticipated to introduce the rebates for charging stations referenced above.

<sup>1</sup> Retrieved September 30, 2019, from <https://www.ctvnews.ca/autos/b-c-gives-4-million-in-rebates-for-electric-vehicle-charge-stations-1.4612352>.

BC Hydro states: “Absent a new rate design, the load associated with charging fleet vehicles or vessels would be charged under BC Hydro’s LGS [Large General Service] Rate.”

- 1.3 Given the identified need for fleet charging service, please explain why the proposed rates are proposed to be “optional.”
  - 1.3.1 For greater clarity, please provide a list of rate schedule selections for customers eligible for the proposed Overnight and Demand Transition Rates and identify the “default rate” (e.g. LGS Rate), if the optional rates are not selected.
  - 1.3.2 For one customer account, please clarify and describe the circumstances, if any, in which a customer may take service under more than one of the rate schedule selections identified above, and/or at the same time. For example, can one customer account be enrolled in both the Overnight Rate and the Demand Transition Rate, or the Overnight Rate and the LGS Rate at the same time?
    - 1.3.2.1 Please explain how the rates would be metered and billed in the situations described above.

On pages 8 to 11 of the Application, BC Hydro provides an overview of the proposed Overnight Rate and Demand Transition Rate. BC Hydro states that the rates “would be available to BC Hydro customers that are businesses, government agencies or other organization that own, or lease, and operate electric fleet vehicles or vessels, for separately metered charging with maximum demand equal to or greater than 150 kW.”

- 1.4 Please describe BC Hydro’s proposed process for customers to enroll in each of the new optional rates, including what information they would be required to submit to establish eligibility for the rate. Specifically, please discuss how a potential customer’s “maximum demand” will be determined.
  - 1.4.1 Please explain how BC Hydro will evaluate and assess the above information:
    - i. at the time of enrollment; and
    - ii. after enrollment (i.e. to verify ongoing eligibility).
- 1.5 Given that the proposed rates are new optional rates for service, please explain whether customers will also be provided with the option to “opt out” of the optional rates for services at any time.
  - 1.5.1 If yes, please discuss if there is a minimum amount of time that customers must stay enrolled in each of the optional rates for services prior to being allowed to “opt out.” If applicable, please provide support for what the proposed minimum amount of time is.
- 1.6 Please explain if there is a proposed “enrollment period” by which customers who wish to take service under each of the new optional rates for service must submit their eligibility.
- 1.7 For BC Hydro’s existing customers in general, please explain how (e.g. based on forecast, historical or actual load) BC Hydro determines which rate schedule(s) would apply to the customer.
  - 1.7.1 Please confirm, or explain otherwise, that the process is the same under the proposed new optional rates.

**2.0 Reference: INTRODUCTION**  
**Exhibit B-1, Section 1.3, 1.5.1, pp. 9, 13;**  
**BCUC Inquiry into the Regulation of Electric Vehicle Charging Service, Phase 1 Report**  
**dated November 26, 2018, p. 12**  
**Expanding the availability of the proposed rates**

On page 9 of the Application, BC Hydro states:

[The Overnight Rate] is not proposed for Medium General Service Customers (MGS) with new fleet charging load as there have been no Customer requests for such a rate option. Further, from a practical perspective it is unlikely a customer looking to charge their fleet would qualify for MGS as the expectation is most fleet chargers would require charging capacity in excess of the maximum demand of the MGS rate which is 150 kW.

The following table reproduced below from page 12 of the BCUC Inquiry into the Regulation of Electric Vehicle (EV) Charging Service Phase 1 Report<sup>2</sup> shows the three types of EV charging service currently available, their typical use and the characteristics of each type:

**EV Charging Types**

Type of Charging	Charging Level	Time to Charge	Vehicle Type	Typical Locations	Costs to Install
Level 1	AC (120 volt)	Four hours for 30 minutes of driving	PHEV or BEV	Residences, some public	\$200- \$2,000
Level 2	AC (240 volt)	Four hours for full charge	PHEV or BEV	Residences, Municipal locations, office towers, parks, recreational facilities, shopping malls	\$1,000 - \$2,500
Level 3	Direct Current Fast Charging (DCFC)	30 – 60 minutes for full charge	BEV only	Highway corridors	\$50,000 - \$100,000

On page 2 of the Application, BC Hydro states that potential fleet customers have indicated that the LGS demand charge is a barrier to converting their fleets to electric operations. This Application is in response to that concern.

On page 13 of the Application, BC Hydro states: “the legal test that BC Hydro will refer to for whether the rate proposed in this Application should be approved is whether they are ‘fair, just, reasonable and not unduly discriminatory.’”

- 2.1 With reference to the three types of EV charging service currently available, please elaborate on why from “a practical perspective” it is unlikely that a customer looking to charge their fleet would qualify for MGS.
- 2.2 Given the demand charge savings on these proposed rates and considering that these optional rates will not be extended to MGS customers, please discuss BC Hydro’s considerations for the legal test of rates to be fair, just, reasonable and not unduly discriminatory.

On page 13 of the Application, BC Hydro states:

... stakeholder feedback with regard to this Application indicated a desire to expand the availability of the proposed services, and rates, to customers that provide charging services to third-parties. In BC Hydro’s view expanding the availability of the proposed

<sup>2</sup> Retrieved from: [https://www.bcuc.com/Documents/Proceedings/2018/DOC\\_52916\\_2018-11-26-PhaseOne-Report.pdf](https://www.bcuc.com/Documents/Proceedings/2018/DOC_52916_2018-11-26-PhaseOne-Report.pdf).

services to that customer segment would materially reduce the likelihood that ratepayers would benefit from them and thus undermine their lawfulness.<sup>3</sup>

- 2.3 Please explain how expanding the availability of the proposed services, and rates, to customers segments with reduced likelihood of benefits would “undermine [the] lawfulness” of the proposed services. Why or how would the proposed services become unlawful?

**3.0 Reference: INTRODUCTION  
Exhibit B-1, Section 1.2, p. 2  
LGS Rate customers**

BC Hydro states in its Application:

In the early stages of battery electric fleet conversion from fossil fuel to electricity, the characteristics of the charging load can result in demand charges that make up a higher proportion of a customer’s bill than is typical for LGS Rate customers. This is due to the fact until the entire fleet is converted to electricity, charger utilization may be low.

- 3.1 Please provide the typical proportion of LGS Rate customers’ bill which is attributable to demand charges.

**4.0 Reference: INTRODUCTION  
Exhibit B-1, Section 1.2.1, pp. 6–7  
Achievement of BC policy goals**

BC Hydro states on page 6 that the BC Government’s legislated targets for carbon emissions reductions are a 40 percent reduction from 2007 levels by 2030, a 60 percent reduction from 2007 levels by 2040 and an 80 percent reduction by 2050.

In the Application, BC Hydro outlines BC Transit’s and TransLink’s respective long-term strategies to introduce electric buses into their fleet (i.e. the approximate number of buses to be replaced by electric buses by a specified year).

Specifically, BC Hydro states:

The new services and rates described in this Application will contribute to BC Transit’s and TransLink’s respective long term strategies to reduce green house gases related to the operation of their fleet in support of the B.C. Government’s greenhouse gas reduction targets.

The Vancouver Fraser Port Authority (VFPA)... has also indicated that electrification of port activities provides a significant opportunity to reduce the Port of Vancouver’s greenhouse gas emissions.

- 4.1 If possible, please provide the amount (e.g. percent reduction from 2007 levels) which BC Transit’s and TransLink’s respective long-term strategies to introduce electric buses into their fleet will contribute to the legislated targets for carbon emissions for 2030, 2040 and 2050, respectively.
- 4.2 Please quantify the “significant opportunity to reduce the Port of Vancouver’s greenhouse gas emissions” from the electrification of port activities, if possible.

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<sup>3</sup> Emphasis added.

**5.0 Reference: INTRODUCTION**  
**Exhibit B-1, Section 1.3, 1.4, pp. 8–10;**  
**Exhibit A2-1, BC Hydro Electric Tariff, LGS Interim Rate, p. 1**  
**Overview of the Optional Rates**

In the Application, BC Hydro provides descriptions and amounts for the Overnight Rate to be effective April 1, 2021 (F2022) and the Demand Transition Rate to be effective April 1, 2020 (F2021).

BC Hydro’s current (interim) LGS Rate, effective April 1, 2019 (F2020) is provided in Exhibit A2-1.

5.1 Please complete the following table summarizing the proposed rates compared to BC Hydro’s current (interim) LGS Rate for: F2020; forecast F2021; and forecast F2022. Please explain and provide all assumptions.

		Basic Charge			Demand Charge			Energy Charge		
		Interim F2020	Forecast F2021	Forecast F2022	Interim F2020	Forecast F2021	Forecast F2022	Interim F2020	Forecast F2021	Forecast F2022
LGS Rate	Existing	\$0.2673/day			\$12.34/kW			\$0.0606/kWh		
Overnight Rate	Proposed	N/A		\$0.2752/day	N/A		\$12.70/kW	N/A		\$0.0741/kWh
Demand Transition Rate	Proposed	N/A	\$0.2692/day		N/A	\$0/kW		N/A	\$0.0924/kWh	

BC Hydro states on page 8 of the Application that the proposed “level” of the demand charge and basic charge for the Overnight Rate in F2022 are “the same as” the level of the demand charge and basic charge used in BC Hydro’s LGS Rate, and the energy charge is “higher than the level [of the] energy charge” used in BC Hydro’s LGS Rate.

5.2 Given that BC Hydro’s LGS Rate is a forecast for F2022, please explain what impact, if any, variances between the actual and forecast F2022 LGS Rate will have on the pricing of the proposed Overnight Rate, to be effective April 1, 2021.

5.2.1 For clarity, is BC Hydro seeking approval for the specific amounts of the Overnight Rate as shown in Appendix B of the Application, or the Overnight Rate in relation to BC Hydro’s prevailing LGS Rate as described on page 8 of the Application. If it is the latter, please clarify how the energy charge will be determined.

On page 10 of the Application, BC Hydro states that the “level” of the energy charge for F2021 for the Demand Transition Rate is “higher than” the level of the energy charge that applies to BC Hydro’s LGS Rate and that the basic charge “aligns with” the basic charge used in BC Hydro’s LGS Rate.

5.3 Given that BC Hydro’s LGS Rate is a forecast for F2021, please explain what impact, if any, variances between the actual and forecast F2021 LGS Rate will have on the pricing of the proposed Demand Transition Rate, effective April 1, 2020.

5.3.1 For clarity, is BC Hydro seeking approval for the specific amounts of the Demand Transition Rate as shown in Appendix B of the Application, or the pricing of the Demand Transition Rate in relation to BC Hydro’s prevailing LGS Rate as described on page 10 of the Application. If it is the latter, please clarify how the energy charge will be determined.

**6.0 Reference: INTRODUCTION**  
**Exhibit B-1, Section 1.6, pp. 14–15, 48**  
**Timing and approval of Optional Rates**

On page 14 of the Application, BC Hydro requests approval for new optional rates by February 2020 for the implementation of the Demand Transition Rate by April 1, 2020 and the Overnight Rate by April 1, 2021.

On page 48 of the Application, BC Hydro states:

The implementation of the Demand Transition Rate is relatively simple and BC Hydro expects minimal cost due to implementation. No new metering or billing changes are required to implement this rate except for configuring new rate schedules in the SAP billing system. It will take approximately two months to implement the billing system change and complete the required testing.

6.1 Please discuss the significance of the April 1, 2020 effective date for the Demand Transition Rate.

6.1.1 What are the potential risks and disadvantages to BC Hydro and customers if approval is not granted by February 2020 or if the Demand Transition Rate is not made effective April 1, 2020.

6.2 Please provide a breakdown of the estimated cost and resources (e.g. Full-Time Equivalent/contractors) required to implement the Demand Transition Rate.

On page 15 of the Application, BC Hydro states: “The additional year proposed for Overnight Rate implementation is to allow for changes required in BC Hydro’s metering and billing systems to measure and bill time varying demand charges.”

6.3 Please discuss the significance of the April 1, 2021 effective date for the new Overnight Rate.

6.3.1 Please discuss the potential risks and disadvantages to BC Hydro and customers if approval is not granted by February 2020 or if the Overnight Rate is not made effective April 1, 2021.

6.4 Please provide the cost (Admin, IT, training, other) for BC Hydro to implement the proposed Overnight Rate.

6.4.1 Please confirm, or explain otherwise, that the estimated cost of the changes is included in: i) the ratepayer economic analysis (Appendix E); and ii) cost of service analysis (Appendix F).

**7.0 Reference: INTRODUCTION  
Exhibit B-1, Section 1.1, p. 1; BCUC Inquiry into the Regulation of EV Charging Service, Phase Two Report dated June 24, 2019, pp. ii, 40, 43  
Recommendations of the BCUC EV Inquiry**

BC Hydro states on page 1 of the Application:

BC Hydro proposes the availability as described in this Application, because any rate application for third party fast charging services to passenger vehicles should be informed by the B.C Government’s response to the BCUC recommendations contained in its Phase Two Report of the Inquiry into the Regulation of Electric Vehicle Charging Service (Inquiry) which deals largely with the regulatory considerations arising in the public fast charging market. The outcome of this Inquiry will directly affect the types and scope of the rates BC Hydro may put forward for approval in respect of public fast charging.

In Phase 2 of the BCUC Inquiry into the Regulation of EV Charging Service (EV Inquiry), with regards to the competitiveness of the EV charging services market, the BCUC stated:

Non-exempt utilities that participate in this market should be required to develop a tariff, for approval by the BCUC, for provision of electricity to exempt utilities which lays

out the terms of access to the utility’s distribution system to ensure a level playing field.<sup>4</sup>

and

Non-exempt utilities that participate in this market should be required to develop a tariff, for approval by the BCUC, for provision of electricity to exempt utilities which lays out the terms of access to the utility’s distribution system.

This step is to ensure a level playing field, including equal access to grid connection, to facilitate a faster build out of EVCS in BC, which aligns with the Government’s policy objectives.<sup>5</sup>

With regard to a potential wholesale rate for EV charging, the BCUC stated:<sup>6</sup>

The Panel therefore finds that it is in the public interest for non-exempt public utilities to provide a transparent wholesale pricing mechanism that applies to all operators of EV charging facilities other than Level 1 and Level 2, including the non-exempt public utility itself. Wholesale pricing tariffs should be submitted to the BCUC for review, and if appropriate, approval.

- 7.1 Please explain why BC Hydro has submitted the application for fleet electrification ahead of the BC Government’s response to the BCUC EV Inquiry, rather than implementing an electrification rate for all customers after the BC Government’s response is available?
- 7.2 Hypothetically if there will be a wholesale rate in the future, please explain whether customers on the proposed Overnight Rate and the Demand Transition Rate, if approved, will be eligible to migrate to the possible EV wholesale rate.
  - 7.2.1 Conversely, please explain whether customers that are already enrolled in the Overnight Rate and the Demand Transition Rate, if approved, will be “grandfathered” to stay in these rates.
- 7.3 With respect to the BCUC’s findings to ensure a level playing field between non-exempt public utilities (e.g. BC Hydro) and third party EV charging service providers, please discuss how the proposed Overnight Rate and Demand Transition Rate will ensure a level playing field. Are there any risks associated with the proposed rates that may lead to an uneven playing field?

## **B. BACKGROUND**

### **8.0 Reference: BACKGROUND Exhibit B-1, Section 2.2.2, pp. 17–18 Jurisdiction review**

On page 17 of the Application, BC Hydro states it reviewed several jurisdictions where electric vehicle rates for fleet charging are being offered or are being reviewed for approval and provides case study summaries of the rates related to fleet electrification from a sample of American utilities.

- 8.1 Please provide case studies for rates related to fleet electrification in Canadian jurisdictions, if any.

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<sup>4</sup> British Columbia Utilities Commission (BCUC) Inquiry into the Regulation of Electric Vehicle Charging Service (EV Inquiry) Phase Two Report dated June 24, 2019, p. ii.

<sup>5</sup> BCUC EV Inquiry, Phase Two Report, pp. ii, 40.

<sup>6</sup> BCUC EV Inquiry, Phase Two Report, p. 43.

- 8.2 Please clarify which rates are: i) being offered; or ii) being reviewed for approval, from the sample of American utilities provided. For each of the approved rates, please provide the effective date.
- 8.2.1 Please explain and provide the experience to-date for utilities offering a fleet electrification rate. For example, actual versus expected uptake with respect to number of customers, charging loads and load profiles. How has the experience of these utilities impacted BC Hydro’s proposals for the Overnight Rate and Demand Transition Rate, if at all?

On page 18 of the Application, BC Hydro states “PG&E’s proposed commercial EV rate schedule eliminates demand charges and instead uses a monthly subscription pricing model which may offer more affordable charging, simpler pricing structure and improved certainty and budgeting.”

- 8.3 Given the stated advantages of a monthly subscription pricing model, please explain why BC Hydro does not propose such a model.
- 8.4 Please discuss the pros and cons of the monthly subscription pricing model.

**9.0 Reference: BACKGROUND  
Exhibit B-1, Section 2.3.2, p. 24  
Stakeholder workshop**

BC Hydro states in its Application:

Invitations to the workshop were sent to stakeholder groups and Commission staff who have been involved in previous rate design proceedings. Invitations were also sent to existing customers who may qualify for the rates, i.e., those providing public transportation or those believed to have large fleets of vehicles, and to groups with an interest in electric vehicles. The workshop was attended in-person by 16 participants, including customers, stakeholder groups and Commission staff, and another 19 people registered to participate via webcast.

- 9.1 Please provide a complete listing of the parties who were: a) invited to; or b) attended in-person or via webcast, BC Hydro’s May 28, 2019 stakeholder workshop.
- 9.1.1 Please discuss whether there were any key stakeholder groups who were not available to attend (in-person or via webcast) BC Hydro’s May 28, 2019 stakeholder workshop.
- 9.1.1.1 Please explain how BC Hydro obtained and incorporated feedback from these stakeholder groups.

**C. CHARACTERISTICS OF PROSPECTIVE CHARGING LOADS**

**10.0 Reference: CHARACTERISTICS OF PROSPECTIVE CHARGING LOADS  
Exhibit B-1, Section 3.2, 5.2, pp. 27, 28, 30, 31, 45  
Charging load characteristics**

On page 27 of the Application, BC Hydro states:

Figure 6 provides illustrative comparison of monthly electricity bills for two transit buses with depot charging load characteristics billed under the LGS Rate and Overnight Rate in fiscal 2021. The analysis is based on two buses and travel distance of 375 kilometers a day.

On page 28 of the Application, BC Hydro states:

The maximum potential bill savings [under the proposed Overnight Rate] relative to the LGS Rate is estimated to be approximately 60 per cent, under the scenario where 100 per cent of load occurs between the hours of 10:00 p.m. and 6:00 a.m.

On page 30 of the Application, BC Hydro states:

Figure 8 provides illustrative comparison of monthly electricity costs for two transit buses with in-route charging load characteristics billed under the LGS Rate or Demand Transit Rate in fiscal 2022. The analysis is based on an average of two buses and travel distance of 246 kilometers a day.

BC Hydro includes Table 3 on page 31 of the Application, which is replicated below:

**Table 3** Illustrative Bill Savings by Year and Load Factor for In Route Charging under Demand Transition Rate, Relative to LGS

Year	F2026 (%)	F2031 (%)
Load Factor in the year	30	52
Participant Bill Savings in the Year	22	nil

BC Hydro further states on page 45 that:

The extent to which revenues from the Demand Transition Rate recover BC Hydro's embedded cost of service is sensitive to the load factor of the new load served under this rate, which in turn depends on the schedule and configuration [of] fleet conversion.

- 10.1 Please provide the: i) maximum; and ii) expected potential bill savings (in dollars and in percentage terms) under the proposed Demand Transition Rate relative to the LGS Rate in F2022, including the rationale for all assumptions.
  - 10.1.1 Please provide above maximum and expected potential bill savings calculations in a working excel model.
- 10.2 Please provide the: i) maximum; and ii) expected potential bill savings (in dollars and in percentage terms) of the proposed Overnight Rate relative to the LGS Rate in F2022, including the rationale for all assumptions.
  - 10.2.1 Please provide above maximum and expected potential bill savings calculations in a working excel model.
- 10.3 Please explain all factors that could impact the bill savings estimate for each of the Overnight Rate and Demand Transition Rate relative to the LGS Rate, including but not limited to: load factor assumption; travel distance a day per bus; number of buses; and the schedule and configuration of fleet conversion.
- 10.4 Please explain why the assumption for the distance traveled differs between the illustrative comparison of monthly electricity costs in Figures 6 and 8 (i.e. 375 kilometers a day compared to 275 kilometers). As part of the response, please explain why the travel distance per day for transit buses requiring in route charging is less than the travel distance per day for depot charging.
- 10.5 Please explain the assumptions and methodology to produce the load factor forecast of in route charging and depot charging stations, respectively, up to F2031.

- 10.6 Please explain whether the load and load factor are expected to be similar among other eligible electric fleet vehicle or vessels for the Overnight Rate and Demand Transition Rate.
- 10.6.1 If the load factor is expected to differ among all eligible customers, please explain how BC Hydro has factored in the expected load and load factor of other eligible customers in its bill savings, cost of service analysis and ratepayer impact analysis. If not reflected, please explain why not.
- 10.6.1.1 If the load and load factor of other eligible customers is not reflected, please discuss the impact to the bill savings, cost of service analysis and ratepayer impact analysis included in the application for each of the proposed rates.
- 10.7 Please explain whether BC Hydro has conducted any sensitivity analysis on the cost of service analysis (see tables 2 through 5), including incorporating a range of energy and capacity forecasts, as well as load factor assumptions. If yes, please provide the sensitivity calculations in a working excel model.

**11.0 Reference: CHARACTERISTICS OF PROSPECTIVE CHARGING LOAD  
Exhibit B-1, pp. 27, 29; Appendix E, p. 1;  
Government of BC, CleanBC report,<sup>7</sup> updated March 2019, p. 10  
BC Hydro’s load resource balance outlook**

BC Hydro states on page 27 of its Application that prospective depot charging annual energy usage may reach 100,000 MWh annually by F2029, and demand may reach 100 MW. BC Hydro further states on page 29 that for in route charging, the prospective annual energy usage may reach 23,000 MWh annually by 2029, and demand may reach 8 MW.

BC Hydro states in Appendix E that “BC Hydro’s energy load resource balance shows we will not need to acquire new energy resources for many years to come. When our power system is in a state of energy surplus (energy supply is greater than demand), energy marginal cost is market price.”

The CleanBC report 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.”

- 11.1 Please provide the most recent load resource balance in terms of energy and capacity, respectively, for the next 20 years, using the 20-year load forecast to be presented on October 3 as part of the BC Hydro F2020 to F2021 Revenue Requirements Application proceeding in a graph and in a data table in excel format. Please include the expected capacity and energy needs from the Overnight Rate and Demand Transition Rate as separate line items.
- 11.1.1 Please confirm the load resource balance provided above includes anticipated load from the strategies as described in the CleanBC report. If not confirmed, please provide a revised load resource balance that includes the load addition anticipated from the electrification strategies outlined in the CleanBC report.
- 11.2 Please explain in detail the assumptions and forecast methodology to produce the energy and capacity forecasts arising from the Overnight Rate and Demand Transition Rate, respectively. Please include a discussion of the following considerations:
- How the forecast considers the predictability of the load from the “optional” proposed rates;
  - Any customer load migration from the LGS Rate;

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<sup>7</sup> Retrieved from: [https://blog.gov.bc.ca/app/uploads/sites/436/2019/02/CleanBC\\_Full\\_Report\\_Updated\\_Mar2019.pdf](https://blog.gov.bc.ca/app/uploads/sites/436/2019/02/CleanBC_Full_Report_Updated_Mar2019.pdf).

- Customer charging behaviour (e.g. capacity of the charger used, maximum energy demand per charge, timing of customer charging and their needs in aggregate);
- The expected load growth attracted by the financial incentives offered under the proposed rates by way of bill savings relative to the LGS Rate;
- Any sensitivity analysis on the energy and capacity forecasts; and
- Any uncertainty with the Overnight Rate and Demand Transition Rate forecasts.

11.2.1 Please explain whether BC Hydro includes any customer load migration from the LGS rates to the proposed rates under this Application in its load forecast. If yes, please explain how much of the expected capacity and energy needs from the Overnight Rate and Demand Transition Rate as included in the load resource balance provided above are net additions. If not, please explain why not.

11.2.2 Please discuss how much of the expected additional energy and capacity requirement is assumed to occur during the “overnight” period as defined in the tariff for the Overnight Rate.

11.3 With reference to the 20-year load resource balance outlook provided in response to BCUC IR 11.1 above, please discuss any anticipated changes in BC Hydro’s peak and off-peak periods in the next 20 years.

11.4 Based on the load resource balance that incorporates the anticipate load from the strategies laid out in the CleanBC report, please discuss when does BC Hydro anticipate a need for additional supply side resource to meet capacity and energy needs, respectively.

**12.0 Reference: CHARACTERISTICS OF PROSPECTIVE CHARGING LOAD  
Exhibit B-1, pp. 3–4;  
Translink 2019 Business Plan - Operating and Capital Budget Summary,<sup>8</sup> p. 19  
Interconnection and system capabilities**

BC Hydro states in the Application that each charger for depot charging is expected to have a rated capacity of between 50kW and 150kW, and chargers for in route charging is expected to be equipped with chargers with rated capacity of up to 450kW.

Page 19 of Translink’s 2019 Business Plan states:

In 2019, CMBC will undertake the following initiatives to ensure safe and secure operations and keep the transit infrastructure in a state of good repair: ...

- Participate in CUTRIC’s [Canadian Urban Transit Research & Innovation Consortium] Pan-Canadian Electric Bus Demonstration and Integration Trial where TransLink will be the first transit agency in this trial with the deployment of four quick charge battery electric buses and two overhead chargers; ...

12.1 Please explain whether BC Hydro has conducted any studies on the maximum capacity on chargers in order to limit the impact on BC Hydro’s system and limit the cost of any required system upgrade to accommodate these chargers.

12.1.1 If yes, please provide a summary report of the study.

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<sup>8</sup> Retrieved from: [https://www.translink.ca/-/media/Documents/about\\_translink/corporate\\_overview/corporate\\_reports/business\\_plan/2019\\_Business\\_Plan\\_Operating\\_and\\_Capital\\_Budget\\_Summary.pdf?la=en&hash=52365BA640E4818BC7CB54A97F9868B3BF142D71](https://www.translink.ca/-/media/Documents/about_translink/corporate_overview/corporate_reports/business_plan/2019_Business_Plan_Operating_and_Capital_Budget_Summary.pdf?la=en&hash=52365BA640E4818BC7CB54A97F9868B3BF142D71).

- 12.1.2 If no, please explain why not.
- 12.2 Given that the proposed availability of the new rates is “Maximum Demand equal to or greater than 150kW,” please explain whether there is a maximum threshold on how much demand a customer draws. If yes, please specify and explain the rationale for the threshold. If not, please explain why not.
- 12.3 Please provide the interconnection policy and interconnection requirement applicable to the chargers for use under the Overnight Rate and Demand Transition Rate.
- 12.3.1 Please explain whether a different interconnection requirement applies for chargers of a larger capacity. If yes, please elaborate on the difference in the interconnection policies applicable to various charging capacities. If no, please explain why not.
- 12.4 In the event a system upgrade is required to serve the fleet charging load, please explain how the required costs for a system upgrade will be recovered.
- 12.5 Please provide the capacity of the two overhead chargers deployed as part of the CUTRIC Pan-Canadian Electric Bus Demonstration and Integration Trial and explain whether those chargers are for in route charging or depot charging.
- 12.5.1 Please discuss whether the two chargers described above is reflective of a typical charger expected to require service under the Overnight Rate and Demand Transition Rate.
- 12.6 Please discuss, and provide supporting data and research if available, the expected capacity of chargers for other eligible electrical vehicle or vessels besides Translink under the Overnight Rate and Demand Transition Rate.
- 12.7 Please explain whether BC Hydro’s interconnection policy for fleet charging contemplates the above mentioned charging capacity required by eligible electrical vehicle or vessels under the Overnight Rate and Demand Transition Rate. If yes, please elaborate. If no, please explain why not.
- 12.8 Please explain who is eligible to: i) pay for the construction; ii) maintain ownership; and iii) be responsible for operation and maintenance of the fleet charging infrastructure, respectively (e.g. BC Hydro, customer, third-party, others).
- 12.8.1 Based on the information currently available, please discuss which party is most likely to: i) pay for the construction; ii) maintain ownership; and iii) be responsible for operation and maintenance of the fleet charging infrastructure, respectively.
- 12.9 Please explain where the chargers will be located and discuss whether there are concerns regarding right of way and land use.
- 12.10 Please explain BC Hydro’s plans and efforts to manage an efficient energy system in light of the additional load from fleet charging, e.g. coordination with charger owners and operators, hiring additional BC Hydro personnel required, etc.

**D. OVERNIGHT RATE AND DEMAND TRANSITION RATE PROPOSALS**

- 13.0 Reference: OVERNIGHT RATE AND DEMAND TRANSITION RATE PROPOSALS  
Exhibit B-1, Section 3.1, 4.2, pp. 27, 35  
Overnight Rate proposal**

On page 27 of the Application, BC Hydro states that Figure 5 shows the prospective 24-hour load shape of depot charging “once transit bus fleet conversion is substantially complete[,] which is expected no earlier than fiscal 2029.”

BC Hydro states on page 35 of the Application:

The Overnight Rate is intended to reflect the costs to serve this new overnight charging load, while meeting customer needs for demand charge relief. The design applies the LGS Rate Demand Charge between 6:00 a.m. and 10:00 p.m. and no demand charge overnight.

BC Hydro further states that “... depot charging load is expected to occur overnight and not be coincident with BC Hydro’s peak demand periods. It is therefore reasonable to design a rate for new load that reflects the fact that its cost of service is lower than the cost to serve a typical Large General Service load.”

- 13.1 Please provide BC Hydro’s system monthly average 24-hour demand and load shape in each of the past 12 months, respectively, in a graph and in a data table in excel format.
  - 13.1.1 Based on BC Hydro’s system load shape provided above, please discuss when BC Hydro typically experiences a peak demand period, and whether the peak demand period exhibits any changes (e.g. magnitude, timing) throughout the year.
- 13.2 Please explain how BC Hydro determined the “overnight” period under the Overnight Rate to be hours other than 6:00 a.m. to 10:00 p.m.
  - 13.2.1 Please provide a sensitivity analysis of customer bills using alternative hours of Billing Demand (i.e. +/- 1 hour from 06:00, +/- 2 hours from 06:00, etc.).
- 13.3 Please discuss the nature of the load shape of depot charging and explain whether the load shape is expected to exhibit any seasonality throughout the year.
- 13.4 Please explain BC Hydro’s proposal to waive the demand charge rather than charge a reduced demand charge during the overnight period. If any analysis was done, please provide a copy of the summary report if available.
- 13.5 The CleanBC report describes various strategies for cleaner transportation including certain mandates for zero-emission vehicles mandates and investments in charging stations.<sup>9</sup> Please explain how BC Hydro’s load shape and pricing of service under the proposed Overnight Rate consider the strategies outlined in the CleanBC report?
- 13.6 Based on the expected additional energy and capacity from the Overnight Rate during the “overnight” period in the next 20 years, please discuss whether, and if so at what time in the future, would the demand from the Overnight Rate require additional system capacity.

**14.0 Reference: OVERNIGHT RATE AND DEMAND TRANSITION RATE PROPOSALS  
Exhibit B-1, Section 1.3, 1.4, 4.1, 5.1, pp. 8–11, 34, 43, 44;  
Appendix B, pp. 1–9; BC Hydro Electric Tariff  
Tariff Terms and Conditions**

BC Hydro’s Electric Tariff includes, among other things, the Terms and Conditions.

- 14.1 Please confirm the Terms and Conditions included in BC Hydro’s Electric Tariff applies to the proposed Overnight Rate and Demand Transition Rate.

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<sup>9</sup> Retrieved from: [https://blog.gov.bc.ca/app/uploads/sites/436/2019/02/CleanBC\\_Full\\_Report\\_Updated\\_Mar2019.pdf](https://blog.gov.bc.ca/app/uploads/sites/436/2019/02/CleanBC_Full_Report_Updated_Mar2019.pdf), pp. 19–21, 41, 64.

On pages 8 to 11 of the Application, BC Hydro provides an overview of the proposed Overnight Rate and Demand Transition Rate. BC Hydro states that these rates “would be available to BC Hydro customers that are businesses, government agencies or other organization that own, or lease, and operate electric fleet vehicles or vessels, for separately metered charging with maximum demand equal to or greater than 150 kW.”<sup>10</sup>

14.1.1 With reference to the Terms and Conditions included in BC Hydro’s Electric Tariff, as applicable, please explain and provide the proposed terms and conditions for metering and service connection charges for the proposed Overnight Rate and Demand Transition Rate.

In Sections 4.1 and 5.1 of the Application, BC Hydro explains the proposed key terms and conditions of the proposed Overnight Rate and Demand Transition Rate. The proposed rate schedules are included in Appendix B of the Application.

On pages 33 and 43 of the Application, BC Hydro includes the following special condition on migration for each of the Overnight Rate and Demand Transition Rate:

Customers taking service under these rate schedules will not be migrated to Rate Schedules 1300, 1301, 1310, or 1311 (Small General Service) or Rate Schedules 1500, 1501, 1510 or 1511 (Medium General Service) due to changes in load size. BC Hydro will review this Special Condition in its evaluation report planned for the third year after which the rate commences.

BC Hydro explains on pages 34 and 44 that the special condition above on migration is “intended to allow a period of time to establish the normal operating patterns of this new Service, without the potential instability of migration to another rate schedule.”

On page 43 of the Application, BC Hydro explains that no demand charge applies for the first six years that the Demand Transition Rate is proposed to be offered (from F2021 to F2026), and then it will transition to the LGS demand charge over six years (starting in F2027 and ending in F2032) as shown in Appendix B:

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<sup>10</sup> Emphasis added.

Effective Date	Fiscal Year	Demand Charge	Energy Charge
April 1, 2020	F2021	\$0	9.24 ¢ per kWh
April 1, 2021	F2022	\$0	F2021 Energy Charge x RRA increase
April 1, 2022	F2023	\$0	F2022 Energy Charge x RRA increase
April 1, 2023	F2024	\$0	F2023 Energy Charge x RRA increase
April 1, 2024	F2025	\$0	F2024 Energy Charge x RRA increase
April 1, 2025	F2026	\$0	F2025 Energy Charge x RRA increase
April 1, 2026	F2027	F2026 Demand Charge + [F2032 LGS Demand Charge-F2026 Demand Charge] ÷ 6	F2026 Energy Charge + [F2032 LGS Energy Charge-F2026 Energy Charge] ÷ 6
April 1, 2027	F2028	F2027 Demand Charge + [F2032 LGS Demand Charge-F2026 Demand Charge] ÷ 6	F2027 Energy Charge + [F2032 LGS Energy Charge-F2026 Energy Charge] ÷ 6
April 1, 2028	F2029	F2028 Demand Charge + [F2032 LGS Demand Charge-F2026 Demand Charge] ÷ 6	F2028 Energy Charge + [F2032 LGS Energy Charge-F2026 Energy Charge] ÷ 6
April 1, 2029	F2030	F2029 Demand Charge + [F2032 LGS Demand Charge-F2026 Demand Charge] ÷ 6	F2029 Energy Charge + [F2032 LGS Energy Charge-F2026 Energy Charge] ÷ 6
April 1, 2030	F2031	F2030 Demand Charge + [F2032 LGS Demand Charge-F2026 Demand Charge] ÷ 6	F2030 Energy Charge + [F2032 LGS Energy Charge-F2026 Energy Charge] ÷ 6
April 1, 2031	F2032	F2032 LGS Demand Charge	F2032 LGS Energy Charge

14.2 Please explain why BC Hydro proposes that the Overnight Rate and Demand Transition Rate are only available to customers in Rate Zone 1, and not Zone 1B and Zone II.

14.2.1 Did BC Hydro consider expanding the Overnight Rate and Demand Transition Rate to customers in Zone 1B and Zone II prior to this Application? If yes, what analysis was done and what were the findings?

14.3 Please elaborate on the proposed definition of an “Electric Fleet Vehicle or Vessel.” Specifically, what constitutes “a group” (i.e. what is the minimum number) of similar vehicles of vessels and “use for similar purposes”?

14.3.1 Please explain who (e.g. customers or BC Hydro) will decide whether the definition of a fleet has been met.

14.3.2 Please discuss BC Hydro’s proposed mechanism to address any disagreement with this definition.

14.4 Please confirm, or explain otherwise, that businesses, government agencies or other organization that own, or lease, and operate electric fleet aircraft would not be eligible for the proposed new optional rates.

14.4.1 If confirmed, please discuss whether BC Hydro considered expanding the Overnight Rate and Demand Transition Rate electric fleet aircraft. If yes, what analysis was done and what were the findings? If no, why not?

- 14.5 In the event that the special condition on migration is not approved, please provide a sample calculation comparing a customer bill using each of the optional rates and the:
- a. Small General Service rates (Rate Schedules 1300, 1301, 1310 or 1311); and
  - b. Medium General Service rates (Rate Schedules 1500, 1501, 1510 or 1511).
- 14.6 Please explain what is meant “without the potential instability of migration to another rate schedule” in the preamble above. What is/are the potential instabilities that BC Hydro has identified and what is/are the impact(s)?
- 14.7 Please provide a sample calculation of the demand change for the Demand Transition Rate starting in F2027 and ending in F2032.
- 14.7.1 Given that the F2032 LGS demand charge is an input in the calculation of the Demand Transition Rate demand charge from F2027 to F2032, please explain how BC Hydro proposes to revise rates for differences between the actual F2032 LGS demand charge when it is made permanent and the forecast rates used in F2027 to F2032 Demand Transition Rate demand charge calculations.

**15.0 Reference: OVERNIGHT RATE AND DEMAND TRANSITION RATE PROPOSALS  
Exhibit B-1, Section 4.4, 5.4, pp. 37–38, 47–48  
Bonbright assessment**

BC Hydro’s assessment of how the Overnight Rate performs against the Bonbright Rate Design Criteria is provided in Table 5 on page 37 of the Application, and its assessment of the Demand Transition Rate is on pages 47 to 48.

- 15.1 Please describe the process undertaken by BC Hydro to assess the Overnight Rate and Demand Transition Rate against the Bonbright Design Criteria, including, but not limited to:
- The range of potential performance rating levels (i.e. what ratings were available other than “Good” and “Fair”);
  - The criteria used to evaluate performance into the potential rating levels (e.g. what is defined as “Good,” “Fair,” etc.); and
  - How the assessment was reviewed and evaluated.

BC Hydro states on page 48 that the proposed Demand Transition Rate received a rating of “Fair” or “Good/Fair” on three out of the seven Bonbright criteria as follows:

- Price signals encourage efficient use and discourage inefficient use;
  - Fair apportionment of costs among customers; and
  - Revenue stability.
- 15.2 Please explain and provide BC Hydro’s assessment of the proposed Demand Transition Rate against the eighth Bonbright criteria – rate stability.
- 15.3 Given that certain criteria received only a “Fair” or “Good/Fair” rating, please explain why the proposed new rates for services represent a reasonable balance of all Bonbright criteria.
- 15.4 Please provide BC Hydro’s view as to how much weight the Panel should give to one Bonbright criteria over another and explain why (i.e. which of the eight Bonbright criteria should the Panel assign the most weight and why)?

**E. COST OF SERVICE AND RATEPAYER ECONOMIC ANALYSIS**

**16.0 Reference: COST OF SERVICE AND RATEPAYER ECONOMIC ANALYSIS  
Exhibit B-1, Section 1.4, p. 11; Section 4.1, 4.2, pp. 34–37; Section 5.2, 5.3, pp. 45–47  
Definitions and descriptions**

In the Application, BC Hydro in Sections 4.2 and 4.3, respectively, provides the proposed Overnight Rate cost of service and economic justifications. Similarly, Sections 5.2 and 5.3, respectively, provide the proposed Demand Transition Rate cost of service and economic justifications.

In various places, BC Hydro uses the term “marginal cost” and “incremental cost” in the economic justification sections. BC Hydro also uses the terms “embedded cost of service,” “full embedded cost of service,” and “residual embedded cost of service” to explain the cost of service justifications.

16.1 Please clarify why BC Hydro provided both economic and cost of service justifications. Please compare and contrast these two types of justifications.

16.1.1 What are the pros and cons of each test? Is one test more applicable than the other in the context of the rates as proposed in this application? Please explain.

16.2 Please provide a description of each of the terms noted above and explain how they do or do not apply to each test.

**17.0 Reference: COST OF SERVICE AND RATEPAYER ECONOMIC ANALYSIS  
Exhibit B-1, Appendix E, pp. 1–8; BC Hydro 2015 Rate Design Application Decision and Order G-5-17 dated January 20, 2017 (2015 RDA Decision), p. 35  
Ratepayer economic assessment**

In Appendix E of the Application, BC Hydro states that it “used an economic assessment framework to estimate the impact on electricity rates for all ratepayers due to marginal changes in utility revenues and costs.” BC Hydro states for each proposed rate, the net present value of benefits and costs were estimated based on forecast consumption over 5, 10 and 15-year periods. Table 1 on page 1 of Appendix E shows the economic assessment of the benefits and costs as follows:

<b>Benefit</b>	<b>Cost</b>
Increase in utility revenue	Marginal cost of energy
	Marginal cost of generation capacity
	Marginal cost of transmission and distribution capacity
	Incremental BC Hydro cost e.g., billing and metering

17.1 With regards to benefit, please clarify what BC Hydro means by “increase in utility revenue.” Given that the proposed demand charge is free during overnight hours (10:00 p.m. to 5:59 a.m. daily) for the proposed Overnight Rate, is the benefit provided in Tables 3, 4 and 5 based on the revenue generated by the Basic charge (per day) and the energy charge (per kwh)? If not, please specify BC Hydro’s assumptions.

17.1.1 Please clarify the same for Tables 6 and 7 with respect to the proposed Demand Transition Rate.

Demand charge is related to the maximum amount of power a customer needs during a billing period, measured in kilowatts. Energy is power multiplied by time, commonly measured in kilowatt-hours.

Total demand across BC Hydro's service area is what determines the amount of generating capacity and electrical infrastructure that is required. When customers help reduce their “peak load” by shifting some usage to low-demand periods of the day, less electrical infrastructure is needed.<sup>11</sup>

In the BC Hydro 2015 RDA Decision, the BCUC approved, among other matters, an increase in the demand charge recovery of demand-related costs from approximately 50 percent to 65 percent, effective April 1, 2017.

17.2 Please confirm, or explain otherwise, that the demand charge is designed to recover (in whole or in part) the marginal cost of generation capacity and marginal cost of transmission and distribution capacity.

17.2.1 Under the proposed terms and conditions for the proposed rates, please explain in detail whether BC Hydro has any information or influence on the customer EV charging level for their fleet, the depot hardware used (e.g. type of EV charging stations), software to optimize or manage load, and potential site expansions that might have an impact on BC Hydro's grid. If so, please specify. If not, why not and describe the risks that BC Hydro may encounter in terms of higher costs than the costs the demand charge is currently designed to cover.

On page 1 of Appendix E, BC Hydro states that its power system is in a state of energy surplus and that the energy marginal cost is the market price, and that BC Hydro recently adopted the use of Mid-C market price of energy as the energy marginal cost.

17.3 Please explain why, in light of BC Hydro's load resource balance outlook, it is appropriate to adopt the Mid-C market price of energy as the marginal cost. What alternative indices for marginal costs were considered by BC Hydro but rejected and why?

In Table 2, BC Hydro indicates that the Mid-C market price of energy ranges from \$23/MWh in F2020 to \$23-34/MWh in F2034.

17.3.1 Please discuss the volatility and trends of the Mid-C market price of energy over the past 5 years and whether BC Hydro has considered these sensitivities when using Mid-C market price in its ratepayer economic assessment.

On page 2 of Appendix E, BC Hydro states that marginal costs related to non-bulk transmission can be broadly categorized into costs related to area (or regional) transmission wires and area substations.

17.4 Please provide BC Hydro's analysis that “overnight charging is expected to have negligible impact on area transmission wires” as stated on page 2 of Appendix E.

17.4.1 Has BC Hydro conducted any analysis with regards to the threshold of how many EVs, or at what charging rates and times, overnight charging would have an impact on area transmission wires in the proposed Overnight Rate? If yes, please summarize and explain BC Hydro's analysis. If no, please explain why not.

On page 5 of Appendix E, BC Hydro states with respect to the Demand Transition Rate that “non-bulk transmission capacity and distribution capacity marginal cost are applied to the amount of demand that is expected to occur at BC system peak.”

17.5 Please specify the expected impacts on non-bulk transmission capacity and distribution capacity marginal cost from EV fleet charging that were incorporated in the proposed Demand Transition Rates.

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<sup>11</sup> Retrieved from: <https://www.bchydro.com/news/conservation/2013/demand-charge.html>.

- 17.5.1 Has BC Hydro conducted any analysis regarding the threshold of how many EVs, or at what charging rates and times, non-bulk transmission capacity would have an impact on area transmission wires in the proposed Demand Transition Rate? If yes, please summarize and explain BC Hydro's analysis. If no, please explain why not.

In Table 2 of Appendix E, BC Hydro submits that the non-bulk transmission capacity assumption costs are based on its current transmission capital plan and load forecast, inflated by the Consumer Price Index (CPI).

- 17.5.2 Please clarify whether BC Hydro's non-bulk transmission capacity assumption costs have already been approved by the BCUC or are under review in a separate process.

With respect to the distribution capacity marginal cost, BC Hydro discussed on pages 2 to 3 of Appendix E its Electric Tariff distribution extension policy, including customers' contribution to System Improvement Costs and System Reinforcement Costs.

- 17.6 Please confirm whether customers' contributions were included in BC Hydro's ratepayer benefit to cost ratios calculations.

- 17.6.1 If confirmed, what were BC Hydro's assumptions around how much a typical transit fleet customer would contribute towards System Improvement Costs and System Reinforcement Costs, if these costs must be incurred?

- 17.6.1.1 Please provide the same assessment applicable to an electric vessel fleet customer and other customers that operate fleets (e.g. waste collection, delivery, taxis).

- 17.7 Has BC Hydro conducted any analysis regarding distribution capacity marginal cost in areas where EV charging depots may be clustered together? For example, depots for a transit fleet may be in the same area as a waste collection fleet. If yes, please summarize and explain the findings. If no, please explain why not.

In Table 2 of Appendix E, BC Hydro submits that the distribution capacity costs are based on its current distribution capital plan and load forecast, inflated by CPI.

- 17.8 Please clarify whether these costs have already been approved by the BCUC or are under review in a separate process.

On page 3 of Appendix E, BC Hydro notes that the distribution capacity marginal costs were estimated to be \$15 kW-year escalated by inflation which is the annualized value of \$200 /kW over 20 years.

- 17.9 Please clarify why 20 years is used whereas the net present value analysis as indicated on page 1 of Appendix E is based on a maximum of 15 years.

On page 6 of Appendix E, under scenario 1 for the proposed Overnight Rate, BC Hydro applied a 30 percent of the distribution capacity substation upgrade marginal cost (30% x \$35 /kW-year), which is based on analysis of spare distribution system and substation capacity in the overnight period and expected size of loads.

- 17.10 Please provide the analysis to support the 30 percent allocation. Does the analysis include any sensitivity analysis for different scenarios depending on the customer's depot site? Please explain.

On page 5 of Appendix E, BC Hydro provides a list of its additional assumptions. BC Hydro states that it assumes a six percent discount rate.

- 17.11 Please explain how BC Hydro arrived at this discount rate.

- 17.12 Please reference the source or explain the seven percent energy loss factor to the Lower Mainland for intra-regional transmission (3 percent) and distribution (4 percent) applied to both energy and capacity marginal cost.

In Tables 4 and 5 of Appendix E, the ratepayer benefit to cost ratio (R:C ratio) is lower than 1.0 in the five-year scenarios and gradually improve in the 10 and 15 year scenarios. As noted above, the proposed overnight demand charge is free.

- 17.13 Please provide an alternative demand charge for the Overnight Rate if BC Hydro were to calibrate the R:C ratio of the five-year scenario to 1.0.

17.13.1 Please provide a similar calculation for the demand charge for the Demand Transition Rate in any scenario where the R:C ratio is lower than 1.0 in Tables 6 and 7.

- 17.14 For periods where the R:C ratio is less than 1.0, does this mean that non-EV fleet customers are subsidizing these costs? Conversely, for periods where the R:C ratio is greater than 1.0, does this mean that non-EV fleet customers are receiving benefits from the surplus? Please explain and discuss.

- 17.15 Please explain and show how BC Hydro calculated the Participant Bill Savings (Percent %) in Tables 4, 5 and 7 in Appendix E.

**18.0 Reference: COST OF SERVICE AND RATEPAYER ECONOMIC ANALYSIS  
Exhibit B-1, Appendix F, pp. 1–7; Direction No. 8 to the BCUC, OIC 051/2019, Section 5  
Cost of service analysis**

In Appendix F of the Application, BC Hydro provides a cost of service analysis using its standard fully allocated cost of service methodology. BC Hydro submits that this methodology uses the industry standard and BCUC approved embedded cost methodology to allocate accounting costs to rate classes and examine the revenue to cost ratio of rates classes. The summary of costs by classification is based on its F2017 Fully Allocated Cost of Service (FACOS) Study filed with the BCUC on February 14, 2019.

- 18.1 Please confirm that the summary of costs presented as Figure 2 of Appendix F is expressed in millions of dollars. If not confirmed, please clarify.

- 18.2 With respect to Table 2 on page 3 of Appendix F estimating the R:C ratio of the proposed Overnight Rate using 2029 charges, please explain and provide the supporting analysis for BC Hydro’s estimate for “Total BCH Cost (\$M)” and “Allocator of Depot Charging (%)” in accordance with the various classified cost item.

18.2.1 Please explain and provide the same supporting analysis for Tables 3, 4 and 5 in Appendix F.

- 18.3 With respect to revenues in Table 2 on page 3 of Appendix F, BC Hydro assumes to have 26 accounts in the 2029 Charges scenario. Please clarify when BC Hydro expects to have 26 accounts under the proposed Overnight Rate tariff and the basis for this assumption.

18.3.1 Please explain the same customer account assumptions for the proposed Demand Transition Rate as shown in Tables 3 (i.e. 5 accounts), 4 (i.e. 100 accounts) and 5 (i.e. 100 accounts).

- 18.4 Please confirm whether BC Hydro has modeled the expected system upgrade requirements and costs in its cost of service analysis. If yes, please explain. If no, please explain why not.

- 18.5 The benefit to cost ratio is lower than 1.0 as shown in Appendix F, Table 3 at 43 percent and Table 4 at 84 percent. What is the alternative Demand Transition Rate if BC Hydro is to calibrate the R:C ratio of these scenarios to 1.0? Is this re-calculation a reasonable proposal? If not, why not?

- 18.5.1 For periods where the R:C ratio is less than 1.0, does this mean that non-EV fleet customers are paying for the shortfall? Conversely, for periods where the R:C ratio is greater than 1.0, does this mean that non-EV fleet customers are receiving benefits from the surplus? Please explain and discuss.

Section 5 in Direction No. 8 to the BCUC with regards to Rate Rebalancing states: “In setting rates for the authority for F2020 and F2021, the commission must not set rates for the purpose of changing the revenue-cost ratio for a class of customers.”

- 18.6 Please discuss how the above legislation may or may not impact the proposed rates in the Application. Would the proposed rates be considered a “class of customers”? Please discuss.

## F. PROPOSED MONITORING AND REPORTING

### 19.0 Reference: **PROPOSED MONITORING AND REPORTING Exhibit B-1, Section 7, pp. 52–53 Proposed monitoring and reporting**

On page 52 of the Application, BC Hydro states that it intends to monitor the following on an annual basis:

- Number and nature of fleet charging operations;
- New load (energy, demand, load shape and load factor);
- New Revenues;
- Incremental costs (e.g., metering, billing); and
- Customer feedback.

On page 53 of the Application, BC Hydro states:

Based on the implementation schedule proposed in this Application, the three year evaluation of the Demand Transition Rate would be completed by December 30, 2023, and the three year evaluation of the Overnight Rate would be completed by December 30, 2024. The scope of the three year evaluations is expected to include:

- Cost recovery;
- Economic impact on ratepayers;
- Greenhouse gas emission reductions and air pollutants to the extent practical;
- Customer feedback; and
- Participant electricity costs and bills savings relative to the LGS rate.

BC Hydro proposes to file these evaluation reports with the BCUC and may recommend changes to pricing, terms and conditions of the Overnight Rate and/or the Demand Transition Rate based on the outcomes of these evaluations.

- 19.1 Please confirm, or explain otherwise, that annual results for the above-listed information which BC Hydro intends to monitor on an annual basis will also be included in the proposed evaluation reports to be filed with the BCUC.

19.1.1 Please discuss whether BC Hydro would be amenable to also include the following information in the proposed evaluation reports. If not, please explain why not:

- Current or future plans to expand the availability of the new services (e.g. to providers of third-party fast charging services to electric passenger vehicles);

- Impact of new services on the electric vehicle/vessel charging market, including the impact on providers of third-party fast charging services to electric passenger vehicles; and
- Impact of new load on BC Hydro's system load.

- 19.2 Please clarify how BC Hydro intends to collect and seek customer feedback for each of the Overnight Rate and Demand Transition Rate. What types of customer feedback (i.e. on what topics) will be sought?
- 19.3 Please discuss the key success factors, including the criteria used to measure success, on which BC Hydro proposes to evaluate the proposed Demand Transition Rate and Overnight Rate. If there are different factors or criteria for each of the proposed rates, please provide separate responses for each.
- 19.4 Given that BC Hydro proposes a three-year evaluation of the new rates, please discuss whether BC Hydro considered offering the proposed Overnight Rate and Demand Transition Rate as pilot programs instead. Please explain what the pros and cons of a pilot program are compared to rate offerings on an ongoing basis.
- 19.5 Please describe the expected regulatory review process for each of the proposed evaluation reports.