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Utilities Commission

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July 12, 2021

Sent via email/eFile

BC HYDRO PUBLIC EV FAST CHARGING RATE APPLICATION
EXHIBIT A-13

Mr. Chris Sandve
Chief Regulatory Officer
British Columbia Hydro and Power Authority
16th Floor – 333 Dunsmuir Street
Vancouver, BC V6B 5R3
bchydroregulatorygroup@bchydro.com

Re: British Columbia Hydro and Power Authority (BC Hydro) – Public Electric Vehicle Fast Charging Rate Application – Project No. 1599190 – Questions in advance of the Streamlined Review Process (SRP)

Dear Mr. Sandve,

Further to your March 5, 2021 filing of the above-noted application, enclosed please find British Columbia Utilities Commission Questions in advance of the Streamlined Review Process (SRP) on BC Hydro's evidence for response at the SRP. In light of regulatory efficiency, BC Hydro is requested to provide written responses to the extent possible by Friday, July 23, 2021, prior to the commencement of the SRP.

Sincerely,

Original signed by:

Patrick Wruck
Commission Secretary

/jb
Enclosure

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British Columbia Hydro and Power Authority
Public Electric Vehicle Fast Charging Rate Application

QUESTIONS IN ADVANCE OF THE STREAMLINED REVIEW PROCESS (SRP)
ON BC HYDRO'S EVIDENCE FOR ITS RESPONSE AT THE SRP

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A. ENERGY-BASED RATES, RATE DESIGN ALTERNATIVES, AND SOFTWARE CAPABILITIES

1.0 Reference: Energy-Based Rates
Exhibit B-4, British Columbia Utilities Commission (BCUC) Information Request (IR) 5.11.1, 5.11.2; Exhibit C12-4, p. 1
AC Meter

In response to BCUC IR 5.11.1, British Columbia Hydro and Power Authority (BC Hydro) provided the following two primary reasons why it is not possible to use a Measurement Canada approved revenue meter currently installed at a fast charging station for the purposes of charging an energy-based rate:

- The revenue meter installed at a fast charging station measures the total energy delivered to the charging station(s) installed at a site. The total load includes auxiliary load associated with AC-to-DC [alternating current to direct current] transformation and lighting and heating loads in addition to the actual energy dispensed from the fast charging station to the electric vehicle. Thus, even though the installed revenue meter is Measurement Canada approved, the meter is measuring additional load that is incremental to the electric vehicle charging load; and

- The metering system currently used by BC Hydro is designed to register the value of the consumption on a daily basis (i.e., a centralized metering system), which then accumulates the daily registered data for the billing period of 30 or 60 days for our billing system. The revenue meter and the associated billing system that are used for billing is not currently designed to accumulate the kWh energy consumed or dispensed in every Charging Session to be synchronized with the start/stop times of electric vehicle charging activity at a fast charging station. To perform bill reconciliation at the metering point for multiple customers at each fast charging station would require a change to the

centralized metering system and upgrades to the meter hardware and also to telecommunication and information technology infrastructure to support such metering and also billing.

In response to BCUC IR 5.11.2, BC Hydro stated that for the reasons articulated in its response to BCUC IR 5.11.1, it "has not attempted to provide an estimate for implementing the changes and the upgrades potentially required and outlined in that response."

1.1 Considering the rate design principle of cost causation and given that the electric vehicle (EV) fast charging service is the cause of the incremental load described in the response to BCUC IR 5.11.1 (i.e. auxiliary load associated with AC-to-DC transformation and lighting and heating loads), please discuss whether or not the electricity for the incremental load should be paid for by the EV fast charging customer. Why or why not?

1.1.1 If the electricity for the incremental load is not paid for by the EV fast charging customer, then please discuss how those costs would be recovered and from which class of customers. As part of the response, please also provide the rate design principle(s) to support that approach.

1.1.2 If the electricity for the incremental load is paid for by the EV fast charging customer, please specify where and how this is included for each of the rates proposed in the Application.

1.2 As an alternative to the scenario posed in BCUC IR 5.11.1, please discuss whether a revenue meter could be installed immediately upstream of the charging equipment to measure the electricity delivered directly to the charging equipment (instead of measuring the electricity delivered to the charging station) for the purposes of charging an energy-based rate. Please include a diagram of this scenario.

1.2.1 Please provide an estimate of the time and cost to implement the mechanism in response to the question above. As part of the response, please provide a breakdown by major cost components (e.g. revenue meter, billing system, telecommunication and information technology infrastructure upgrades) and any assumptions used to determine the estimate.

1.2.2 Please explain whether a revenue meter installed would help resolve BC Hydro's difficulties as noted in the response to BCUC IR 5.11.1 regarding additional non-EV charging load and billing issues.

On page 1 of his intervener evidence, Mr. Flintoff states:

> If one assumes that the rate set must recover the cost of a prescribed undertaking then the losses due to the conversion of AC [alternating current] energy to DC [direct current] energy must be recovered in the rates. This being the case then AC metering (Smart Meters) could be used on the primary side of the charger with reasonable accuracy to satisfy the requirement and the other participants. I propose the Commission consider using AC primary metering for billing purposes.

1.3 Please discuss whether an AC meter could be installed on the primary side of the charger, as described by Mr. Flintoff, for the purposes of charging an energy-based rate.

1.3.1 If so, please provide a diagram showing where BC Hydro would place an AC meter to enable energy-based billing.

1.3.2 If so, please provide an estimate of the time and cost to implement the mechanism described by Mr. Flintoff. As part of the response, please provide a breakdown by major cost components (e.g. revenue meter, billing system, telecommunication and

information technology infrastructure upgrades) and any assumptions used to determine the estimate.

1.4 Please explain whether installing an AC meter on the primary side of the charger, as described by Mr. Flintoff, would help resolve BC Hydro's difficulties as noted in the response to BCUC IR 5.11.1 regarding additional non-EV charging load and billing issues.

2.0 Reference: Energy-Based Rates
Exhibit B-4, BCUC IR 5.9
***Electricity and Gas Inspection Act* (EGIA)**

In response to BCUC IR 5.9, BC Hydro stated:

> Thus, in BC Hydro's view, implementing an electricity-based rate for electric vehicle fast charging service without a Measurement Canada verified and sealed meter could be a violation of [section 9(1) of the EGIA], unless a temporary or permanent dispensation is granted. BC Hydro does not have such dispensation. BC Hydro does not believe seeking such dispensation is appropriate in this instance considering that the Measurement Canada is developing performance-based requirements that would allow EV owners to purchase a charge based on the amount of electricity consumed. However, a dispensation remains an option in future based on further discussion with Measurement Canada.

2.1 Please discuss whether violating section 9(1) of the EGIA would result in penalties or sanctions against BC Hydro to sell electricity to its customers.

2.2 To the best of BC Hydro's knowledge, please provide the criteria for the Ministry responsible for the EGIA to grant a dispensation or exemption from section 9(1) of the EGIA. As part of the response, please outline the process and the estimated time required to obtain the dispensation.

2.3 If the BCUC were to direct BC Hydro to request a dispensation from section 9(1) of the EGIA, please provide an estimate of the cost and time required to obtain the dispensation.

2.4 Please discuss whether BC Hydro is aware of any cases where an EV fast charging service provider in Canada sought a dispensation from section 9(1) of the EGIA. If so, please discuss whether the exemption was granted.

2.5 Please discuss whether BC Hydro is aware of any BCUC regulated utilities that have sought a dispensation from the EGIA. If so, please describe the dispensation sought and whether or not it was granted.

2.6 Please discuss under what circumstances BC Hydro would consider requesting a dispensation from section 9(1) of the EGIA.

3.0 Reference: Exhibit B-4, BCUC IR 5.1, BCUC IR 5.12, BCUC IR 9.0 series; Exhibit B-1, Section 4.4, Table 4, p. 35
Alternative rate designs – tiered rate structure

In response to BCUC IR 5.12, BC Hydro stated:

> BC Hydro believes that the BCUC should defer to Measurement Canada's sole jurisdiction over the accuracy of measuring the quantity of electricity…
>
> The time-based rates proposed in the Application are currently a valid alternative for charging

the customers taking the electric vehicle fast charging service.

3.1 Please provide supporting evidence to substantiate that time-based rates are a "valid alternative" for EV fast charging service. For example, is time-based rates metering approved by Measurement Canada or another Federal agency in Canada?

In response to BCUC IR 9.1, BC Hydro stated:

> BC Hydro has not considered introducing the tiered rate described in the question. The tiered rate described appears to be a combination of an electricity and time-based rate.

In response to BCUC IR 9.1.1, BC Hydro added:

> The rate described in the question of BCUC IR 1.9.1 is not feasible for BC Hydro to implement at this time as it would require metering and billing based on the electricity dispensed to the vehicle, which is not currently available to BC Hydro as described in section 2.2 of the Application.

3.2 Please clarify why BC Hydro would need a Measurement Canada-approved meter for this type of rate design considering that the bill would entirely be based on the charging session duration.

3.2.1 Does BC Hydro view that implementing a tiered rate structure, as described in BCUC IR 9.1, would violate section 9 of the *Electricity and Gas Inspection Act*? If so, why?

In response to BCUC IR 5.1, BC Hydro stated:

> BC Hydro acknowledges that an electricity-based rate would improve fairness across customers with different battery sizes, relative to a time-based rate. BC Hydro considered an electricity-based rate (i.e., $/kWh and/or per kW) for the service; however, as described in section 2.2 of the Application, such rates are not feasible at this time due to metering limitations.

In response to BCUC IR 9.2, BC Hydro stated:

> As BC Hydro has not considered the rate design described in the question of BCUC IR 1.9.1, we are unable to complete a Bonbright assessment of it. To complete a Bonbright assessment, we would need to understand how the pricing and rate design relates to factors such as BC Hydro's costs of service and customer expectations.
>
> Directionally, this rate design appears to have lower performance on the Bonbright criteria of rate stability, and practical and cost effective to implement relative to a time-base rate. It may have better performance in fair allocation of costs then a time-based rate.

3.3 Considering the fairness concerns of time-based rates, as described in Table 4 of the Application, and that a tiered rate design may perform better than a time-based rate in fairly allocating costs, please discuss whether the advantage related to fairness of costs allocation could outweigh the disadvantages related to rate stability, practicality and cost-effectiveness of implementation.

3.4 To implement a two-tier rate structure, i.e., charging a higher per-minute rate when the power is delivered to the car above a certain kW threshold, and a lower per-minute rate when the power is delivered to the car below or equal to the kW threshold, please describe the data that BC Hydro would need to determine the levels of the tiered rates and the cost recovery scenarios by utilization rate.

3.4.1 Does BC Hydro currently collect this type of data? If not, why not? How feasible would it be to start collecting such data? Please discuss.

4.0 Reference: Exhibit B-4, BCUC IR 10.3 and BCUC IR 10.3.2; Exhibit B-1, Section 4.4, Table 4, p. 35
Alternative rate design

In BCUC IR 10.3, BC Hydro was asked if it had considered introducing a rate similar to Electrify Canada's pricing structure where the EV communicates to the charger the maximum charging power that it can take, which then determines the per-minute rate for the entire charging session.

In response to BCUC IR 10.3, BC Hydro stated:

> BC Hydro has not considered the rate design described in the question of BCUC IR 1.10.3, as we cannot implement it at this time due to billing and metering constraints.

4.1 Please explain why BC Hydro would need a Measurement Canada-approved meter for this type of rate design considering that the bill would be entirely based on the charging session duration.

In response to BCUC IR 10.3.2, BC Hydro stated:

> Directionally, this rate design appears to have better performance on Bonbright criteria related to fair apportionment of costs relative to a time only based rate.

4.2 Considering the fairness concerns of time-based rates, as described in Table 4 of the Application, and that this alternative rate design appears to perform better than a time-based rate in fairly allocating costs, please discuss whether the advantage related to fairness of costs allocation could outweigh potential disadvantages.

4.3 To implement such an alternative rate structure, i.e., where the EV communicates to the charger the maximum charging power that it can take, which then determines the per-minute rate for the entire session, please describe the data that BC Hydro would need in order to determine the levels of the rates and the cost recovery scenarios by utilization rate.

4.3.1 Does BC Hydro currently collect this type of data? If not, why not? How feasible would it be to start collecting such data? Please discuss.

5.0 Reference: Exhibit B-4, BCUC IR 5.10, BCUC IR 9.3, BCUC IR 10.3.3 and BCUC IR 18.7
BC Hydro's EV network billing platform

In response to BCUC IR 5.7, BC Hydro stated:

> Besides the costs expected for potential hardware and software upgrades to the currently deployed fast charging stations to support the new standard, BC Hydro currently does not have any information or data to know or assess any potential issues associated with implementing an electricity-based rate under a new standard for metering.

In response to BCUC IR 5.10, BC Hydro stated:

> The BC Hydro EV network billing platform software developed by AddEnergie Technologies is currently not able to bill by kWh or combination of kWh + time for a fast charging station (i.e., a station capable of charging electric vehicle using a direct current). AddEnergie Technologies is targeting to have this capability available in the EV network billing platform by April 2022, subject to a Measurement Canada standard specification;

In response to BCUC IR 9.3 and BCUC IR 10.3.3 regarding a tiered rate structure like Tesla's or the alternative rate design used by Electrify Canada, BC Hydro stated:

> At this time, BC Hydro's EV network billing platform, built by AddEnergie Technologies, is not capable of accommodating a tiered, dynamic rate structure for an individual fast charging station. For example, it is not currently capable of billing a 25 kW rate at a 100 kW fast charging station if the maximum power the vehicle can accept does not exceed 25 kW. The single 100 kW per-minute rate would apply at a 100 kW charging station.

In response to BCUC IR 18.7, BC Hydro stated:

> BC Hydro is unable to design and implement an idle fee as it is not currently technically feasible to charge an idle fee or have a grace period in BC Hydro's EV network billing platform that was developed by AddEnergie Technologies. The charging session "clock" stops when either the vehicle reaches 100 per cent or when the customer presses the stop button on the charging station.

5.1 Please discuss whether BC Hydro is aware of any billing software developers (in Canada or otherwise) who can provide billing software to enable billing by kWh or combination of kWh + time for its fast charging stations now.

5.1.1 If so, please provide an estimate of when this software could be acquired and installed. As part of the response, please provide any assumptions used in determining the estimates.

5.2 Please explain how BC Hydro chose AddEnergie Technologies (AddEnergie) to build its EV network billing platform. If there was a competitive bidding process, please state when such a process took place. How many vendors did BC Hydro consider, and why was AddEnergie chosen? If there was no competitive bidding process, please explain why.

5.3 Please provide the term and expiry date of BC Hydro's service agreement with AddEnergie.

5.4 Please discuss whether BC Hydro can amend the terms of service now with AddEnergie to enable or build a billing platform that could handle per-kWh billing, idle fees or more complex rate design such as a tiered, dynamic rate structure.

5.5 What is the order of magnitude for BC Hydro's fees to AddEnergie in development of the capability to bill per kWh or a combination of kWh + time by April 2022? Please provide a cost breakdown of this estimate.

5.6 Are these upgrade costs already included in the cost recovery scenarios of Table 3 in the Application? If so, are they included under capital or maintenance costs?

5.6.1 If not, why not? And how would inclusion of these costs impact the cost recovery scenarios presented in Table 3 of the Application for the 50 kW station or the cost recovery scenarios presented in similar tables for the 25 kW and 100 kW stations presented in response to BCUC IRs.

5.7 Does BC Hydro anticipate the need for potential hardware upgrades to the currently deployed stations to support an electricity-based rate under a new Measurement Canada standard for metering?

5.7.1 If so, please provide a cost estimate for these hardware upgrades.

5.7.2 Are these hardware upgrade costs already included in the cost recovery scenarios of Table 3 in the Application? If so, please confirm, or otherwise explain, that they are included under capital costs.

5.7.2.1 If not, why not? And how would inclusion of these costs impact the cost

recovery scenarios presented in Table 3 of the Application for the 50 kW station or the cost recovery scenarios presented in similar tables for the 25 kW and 100 kW stations presented in response to BCUC IRs.

In response to BCUC IR 9.3.1, BC Hydro stated:

> BC Hydro currently does not have a cost estimate from our technology vendor to implement a tiered rate structure for an individual fast charging station, based on the kW output to the vehicle during a Charging Session.

5.8 Would the capability that AddEnergie targets to have available in the EV network billing platform by April 2022 also permit the implementation of alternative rate designs like the tiered approach employed by Tesla or Electrify Canada?

5.8.1 If not, please obtain and provide a cost estimate from AddEnergie to develop such functionality, along with the required timeframe to develop such functionality.

B. EV FAST CHARGING MARKET

6.0 Reference: Exhibit C4-3, p. 3; BCUC EV Inquiry Phase Two Report Executive Summary[1], p. 4 Interconnection services

On page 3 of its intervener evidence, ChargePoint states:

> On average, 20% of the CoV's capital costs [footnote omitted], are directly attributable to utility interconnections fees, and on average 60% of monthly driver revenue is attributed to demand charges (see Tables 1-3 below).

Table 1: Capital and Operating Costs

	Capital Costs			Operating Costs			
Site #	BC Hydro Connection Fee	Construction, Other Capital	Total Capital	Electricity Consumption (monthly)	Demand Charge (monthly)	Other Opex	Total Opex (excl maintenance)
1	$193,468	$198,846	$392,314	$322	$464	$150	$936
2	$2,818	$305,731	$308,549	$295	$428	$150	$873
3	$31,888	$262,921	$294,809	$235	$451	$150	$836
4	n/a	$301,764	$301,764	$522	$448*	$150	$1,119

* Demand charge estimated based on average of other DCFCs - not available through sub-metering; Consumption cost estimated from energy use (not billed directly)

On page 4 of the Phase Two Report Executive Summary, one of the key recommendations is:

> Exempt utilities should be provided access to timely and efficient interconnection services on the same terms and conditions as non-exempt utility projects

6.1 Please discuss how BC Hydro currently provides exempt utilities with access to timely and efficient interconnections services on the same terms and conditions as non-exempt utility projects.

6.2 Based on City of Vancouver data provided in ChargePoint's evidence, please explain why there can be a large range in BC Hydro connection fees for each site (i.e., from $2,818 to $193,468). Is such range typical for all exempt utilities' sites for EV fast charging stations? Please explain why

[1] https://www.bcuc.com/Documents/Proceedings/2019/DOC_54347_BCUCEV-InquiryExecutive-Summary-Phase2-WEB.pdf

or why not.

7.0 Reference: Exhibit C20-4, Section II, p. 4; Exhibit B-1, Section 4.1, p. 27; Exhibit B-4, BCUC IR 7.1 and BCUC IR 15.3; Exhibit C4-3, p. 3; Exhibit C-20-3, pp. 1–2
Fair market rates based on commercially reasonable cost assumptions

On page 4 of its intervener evidence, Suncor states:

> Notwithstanding this direction, the rates proposed by BC Hydro – at 21 cents per minute for 50kW charging stations, and 27 cents per minute for 100kW charging stations – do not maintain a level playing field for fast charging service operators. BC Hydro's own evidence indicates that these rates will not allow them to recover their costs or earn a return on investment.[footnote omitted] In fact, the Rate Proposal would not allow private sector operators like Suncor to even recover the basic electricity charges billed to them by BC Hydro, without even contemplating recovery of other operational and maintenance expenses, capital or any return on investment.
>
> … fair market rates based on commercially reasonable cost assumptions expected from any prudent private investor are necessary to achieve the ambitions of the CleanBC climate plan [footnote omitted] for greater EV adoption.

On pages 6–7, Suncor adds:

> Based on current demand charges that fall into BC Hydro's "Large General Service" category, the Rate Proposal would be crippling to the profitability of private EV charging stations that, if forced to adopt a competitive charging rate to that proposed by BC Hydro, would not even be able to recoup their BC Hydro utility charges, before considering maintenance, software, support, and capital recovery. Consequently, there would no longer be any incentive for private investment in EV charging infrastructure in BC.

On page 27 of the Application, BC Hydro states:

> Other fast charging operators (i.e., exempt utilities) in BC Hydro's service territory take General Service and are charged under the applicable General Service Rate Schedule based on their electricity Demand. Adopting General Service rates as the basis for the Proposed Rates in the Application ensures that BC Hydro's rate for fast charging service is not lower than the Energy and Demand rates BC Hydro charges to other fast charging station operators.

In response to BCUC IR 7.1, BC Hydro stated:

> To encourage station utilization while maintaining a level playing field with other fast charging station operators in BC Hydro's service territory, <u>the Proposed Rates considered the prices of other operators</u>, the range of prices that research indicates customers are willing to pay, while to collect sufficient revenue to recover at least the cost of electricity based on BC Hydro's General Service Rate Schedules. [Emphasis added]

In response to BCUC IR 15.3, BC Hydro stated:

> As shown in Table 2 of the Application, BC Hydro's Proposed Rates fall within the range of other fast charging operators in our service territory and therefore there is limited risk that BC Hydro's investment drive out private investment over time.

7.1 Based on Suncor and BC Hydro's evidence, does BC Hydro believe that its Proposed Rates and the rates charged by other direct current fast charging (DCFC) network operators are representative of fair market rates based on commercially reasonable cost assumptions, i.e., rates that are able to recover the basic capital and operating expenditures? Please discuss.

7.1.1 If so, please explain how BC Hydro arrived at this conclusion in light of Suncor's statement that "BC Hydro's own evidence indicates that these rates will not allow them to recover their costs or earn a return on investment".

7.2 If BC Hydro is not privy to other companies' financial data, does BC Hydro expect that capital and operating expenditures of other DCFC network operators would be less than the total costs faced by BC Hydro? If so, please explain why.

On page 3 of Exhibit C4-3, ChargePoint states:

> Given the current rate of station utilization, the CoV's fee to drivers cover, on average, 81% of its operating costs; this data point does not include amortized capital cost.

On pages 1–2 of Exhibit C-20-3, Suncor states:

> … BC Hydro's rates have a disproportionately negative impact on private EV charging operators. BC Hydro's early offering of free charging at its EV chargers at a period of time when the EV market was nascent put downward pressure on the price that privately owned EV charging operators like Petro-Canada could reasonably post. In BC Hydro's rate application, comparisons are made with private operators such as Petro-Canada to determine proposed new rates for BC Hydro chargers. By implication, this assumes that Petro-Canada EV charging stations are currently operating in a financially sustainable manner, which they are not. In fact, we have had to lower rates for Petro-Canada EV chargers in BC compared to what is charged in other provinces in order to remain competitive, which is not financially sustainable." [Emphasis added]

7.3 Based on ChargePoint and Suncor's evidence, please discuss whether BC Hydro believes that by proposing rates that it submits will fall within the range of other fast charging operators, there is limited risk that BC Hydro's investment will not drive out private investment over time.

8.0 Reference: Exhibit B-1, Table 2, p. 24, Appendix B, pp. 4, 8 and 12
Exhibit B-4, BCUC IR 6.1, BCUC IR 6.3.1, BCUC IR 8.5.1, BCUC IR 9.4, BCUC IR 9.5 and BCUC IR 11.3
Exhibit E-141
Rates comparisons – Petro-Canada, City of North Vancouver, and Tesla SuperCharger

In Appendix B of the Application, BC Hydro in the proposed rate schedules (RS) 1360, 1560, and 1561 states:

Taxes	The rate set out in this Rate Schedule is exclusive of goods and services and provincial sales taxes.
Rate Rider	The Deferral Account Rate Rider as set out in Rate Schedule 1901 applies to all charges payable under these Rate Schedules, before taxes and levies.

In response to BCUC IR 6.1, BC Hydro stated that "to the best of BC Hydro's knowledge, most of these rates included in Table 2 of the Application do not include sales tax."

In Table 2 of the Application, BC Hydro indicates that the Petro-Canada rate is $0.27/minute and the City of North Vancouver rate is $0.20/minute.

Below are actual bills from BCUC staff at Petro-Canada and City of North Vancouver fast-charging stations. For Tesla Superchargers, the first at the Richmond, British Columbia (BC) charging location (V2 - 150 kW), the second at the Abbotsford, BC charging location (V3 – 250 kW) and the third at the North Vancouver, BC charging location (V3 – 250 kW)

BCUC staff bill sample – Petro-Canada

PETRO-CANADA

Petro Canada
1270 Lynn Valley Road
North Vancouver,BC V7J 2A3

F-GST: 83658 1322 RT0002

P-PST: PST-1001-8353

EV Charging Session ID: 83313
Charger: 91203-02
Connector: 2
Price (including applicable taxes): $0.27/min
[redacted]

Type: PURCHASE

[redacted]

01 - THANK YOU 027

* F-GST INCL $0.49
* P-PST INCL $0.78

NO SIGNATURE TRANSACTION
- IMPORTANT -
Retain this copy for your records

CUSTOMER COPY

BCUC staff bill sample – City of North Vancouver

flo

This is an automated email sent by the FLO® service to inform you that:

Your Mobile Application card has been charged for the following usage session:

Card identification:	Mobile Application
Park name:	Brooksbank DC Fast Charger
Station name:	AAC-00287
Station address:	1347 East 3rd Street North Vancouver BC V7J 2C1 Canada
Session start date:	2021-07-04 13:04:21
Session end date:	2021-07-04 13:45:27
Energy used:	30.0641 kWh
Session duration:	40m 43s
Session cost:	$7.75 (CAD)
BC GST 5% 788723492RT0001	$0.39 (CAD)
Total cost:	$8.14 (CAD)
New card balance:	$15.34 (CAD)

BCUC staff bill sample – Tesla Station 1

Date of Event	Article	Description	Unit Price (CAD)	Quantity	Tax (%)	Total (CAD)
2021/05/21	Charging	Supercharging fee - High power (min)	0.457	19	5.00	8.69
2021/05/21	Charging	Supercharging fee - Low power (min)	0.228	20	5.00	4.57

Subtotal	13.26
Total Tax	0.66
Total Amount (CAD)	13.92

BCUC staff bill sample – Tesla Station 2

Date of Event	Article	Description	Unit Price (CAD)	Quantity	Tax (%)	Total (CAD)
2021/06/06	Charging	Supercharging fee - High power (min)	0.410	21	5.00	8.60
2021/06/06	Charging	Supercharging fee - Low power (min)	0.209	19	5.00	3.98

Subtotal	12.58
Total Tax	0.63
Total Amount (CAD)	13.21

BCUC staff bill sample – Tesla Station 3

Date of Event	Article	Description	Unit Price (CAD)	Quantity	Tax (%)	Total (CAD)
2021/06/25	Charging	Supercharging fee - High power (min)	0.476	25	5.00	11.90
2021/06/25	Charging	Supercharging fee - Low power (min)	0.237	3	5.00	0.71

Subtotal	12.61
Total Tax	0.64
Total Amount (CAD)	13.25

8.1 Please clarify why BC Hydro proposes to exclude GST and PST in its proposed rates. Would it be possible for BC Hydro in its billing systems to include GST and PST?

8.2 Please confirm that, as stated on the above Petro-Canada bill, the price of $0.27/min includes applicable taxes, which are listed as being both GST and PST.

8.2.1 If applicable, please revise Table 2 of the Application to clarify that the Petro-Canada rate of $0.27 per minute, is inclusive of GST and PST. Please add the pre-tax rate per minute in a new column by removing the GST and PST.

8.3 Please confirm that, as stated on the above FLO bill for the City of North Vancouver, the price per minute can be calculated by dividing the total costs of $8.14 by the session duration of 40 minutes and 43 seconds to obtain a rate of $0.20 per minute, inclusive of taxes, which in this case is GST only.

8.3.1 If applicable, please revise Table 2 of the Application to clarify that the City of North Vancouver rate of $0.20 per minute, is inclusive of GST. Please add the pre-tax per

minute rate in the appropriate column by removing the GST, in accordance with the FLO bill above.

8.4 Please revise Table 2 of the Application to reflect Tesla's pre-tax per minute rates for its fast-charging stations ranges from $0.41 to $0.476 per minute when charging above 60 kW (high power) and from $0.209 to $0.237 per minute when charging below 60 kW (low power), in accordance with the above bills.

8.4.1 Please add the post-tax rates in the appropriate column by adding GST (5%) only, in accordance with the Tesla bills above.

8.5 Please provide an updated Table 2 by consolidating revisions made to Table 2 in responses to BCUC IR 6.3.1, BCUC IR 8.5.1, BCUC IR 9.4, BCUC IR 9.5 and to the questions above as well as the City of Vancouver rate[2], the pre and post-tax per minute rate of all providers included in Table 2, as well as information on the number of existing and planned Tesla fast chargers in accordance with Exhibit E-141.

9.0 Reference: Exhibit B-4, BCUC IR 11.3
Bill comparisons

In response to BCUC IR 11.3, BC Hydro stated:

> BC Hydro utilized BC Hydro's fiscal 2020 average charging session data to calculate possible charging costs at Tesla or Petro-Canada fast charging station.
>
> For Petro-Canada fast charging stations, BC Hydro assumed that similar to BC Hydro fast charging stations, customers with a wide range of electric vehicle models from various manufacturers would utilize their service. As such, in absence of actual data from Petro-Canada, BC Hydro assumed that BC Hydro's average charging session data described on page 29 of the Application would be reasonable to be used in this calculation.
>
> The calculated charging rate at Petro-Canada fast charging station is then rounded to $8 from $7.72, using the following formula:
>
> = (Average charging session length) X (Petro-Canada fast charging rate)
>
> = (26.8 minutes) x (27 cents per minutes)
>
> = $7.72
>
> For Tesla fast charging stations, BC Hydro assumed that an average charging session length of 28.6 minutes per BC Hydro's average charging session data is reasonable for the purpose of this fast charging service cost comparison as it is less than stated Tesla's "average Supercharging session lasting around 45 to 50 minutes in city centers". Unlike BC Hydro and Petro-Canada fast charging station rates, Tesla supercharging rate has a tiered structure. To address this and in absence of actual data from Tesla, BC Hydro proportioned one-quarter of the charging session taking place at the higher tier two of 44 cents per minute (while the vehicles would be charging above 60 kW) and three-quarter of the charging session at tier one of 22 cents per minute (while the vehicles would be charging at or below 60 kW or would be sharing Supercharging power) for more conservative estimated cost to charge.
>
> The calculated charging at a Tesla supercharging station is then rounded to $8, from $7.87, using the following formula:

[2] When available in response to BCUC IR 3.0 to ChargePoint in Exhibit A-9.

= [(Average Charging Session Length) X (25%) X (Tesla tier 2 supercharger rate)] + [(Average Charging Session Length) X (75%) X (Tesla tier 1 supercharger rate)]

= [(28.6 minutes) X (25%) X (44 cents per minute)] + [(28.6 minutes) X (75%) X (22 cents per minute)]

= $7.87

9.1 Please confirm, or otherwise explain, that even though EV customers are charged in $ per minute charging, they are ultimately buying electricity delivered to their EVs.

9.1.1 If confirmed, please discuss the implications from a customer's perspective when bill comparisons do not account for the electricity delivered to the EV and the difference in power level of the station.

9.2 Please clarify why BC Hydro used the average charging session data obtained from its 50 kW stations in the calculation of a comparative Petro-Canada bill without first adjusting it to reflect the difference in maximum power levels between the BC Hydro 50 kW station and the Petro-Canada station (up to 350 kW), which affects the kWh delivered to the car, and thus the range (km).

9.2.1 Without this adjustment, does BC Hydro believe that its calculation of an $8 Petro-Canada bill is comparable to the BC Hydro bill of $6? If so, please explain why.

9.3 The Tesla sample bills shown above indicate that two of the bills had about half of the charging session taking place at the higher power level and half at the lower power level while the third bill had 25 out of 28 minutes being charged at the higher tier and 3 minutes charged at the lower tier. Please confirm, or otherwise explain, that many potential scenarios can occur other than BC Hydro's sample calculation of a Tesla session of 28.6 minutes based on one-quarter at the higher tier and three-quarters at the lower tier.

9.4 Please clarify why BC Hydro used the average charging session data obtained from its 50 kW stations in the calculation of a comparative Tesla bill without first adjusting it to reflect the difference in maximum power levels between the BC Hydro 50 kW station and a Tesla station rated 72 kW, 150 kW or 250 kW, which affects the kWh delivered to the car, and thus the range (km).

9.4.1 Without this adjustment, does BC Hydro believe that its calculation of an $8 Tesla bill is comparable to the BC Hydro bill of $6? If so, please explain why.

9.5 Based on BC Hydro's knowledge, for EVs capable of being charged at 100 kW or more, could it be less expensive for customers to charge at a Petro-Canada 100+ kW station at $0.27 per minute (inclusive of tax) or a Tesla Supercharger at the Tesla tiered rates than a BC Hydro 50 kW station at $0.21 per minute (plus tax)? Please discuss.

9.6 If per minute rates across fast charging providers cannot be readily compared unless the maximum power level of the station is the same, please discuss which other metrics should be considered by the BCUC to ensure that EV fast charging rates are comparable.

C. BC HYDRO PROPOSED RATE ASSUMPTIONS AND COST OF SERVICE

10.0 Reference: Exhibit B-1, Section 4.2, Table 3, p. 31
Financial model

In Table 3, BC Hydro presents the 50 kW charging station rate by utilization and cost recovery scenario.

10.1 For each of the 25 kW, 50 kW and 100 kW charging station, please provide BC Hydro's financial

model in fully functional spreadsheet format with forecast revenues, at the expected utilization rate, and full cost of service, for fiscal 2022, fiscal 2023 and fiscal 2024. Please include the cost of electricity component, operation and maintenance (labour and non-labour costs) and depreciation in your model.

11.0 Reference: Exhibit B-1, p. 30; Exhibit B-4, BCUC IR 2.7, 2.8, 7.5, 7.5.2; Exhibit B-5, BCSEA-VEVA IR 1.1.1, Attachment 1, pp. 5, 9 and 27; BC Hydro Fiscal 2022 Revenue Requirements Application (RRA) Proceeding, Exhibit B-4, BCUC IR 1.3
Cost of service calculations

On page 30 of the Application, BC Hydro states:

> Maintenance costs are those costs associated with metering, repair and other station maintenance work and are approximately $8,000 per year per station. Not included are labour costs associated with electric vehicle infrastructure which are approximately $800,000 per year.
>
> Capital costs are approximately $85,000 per dual station site, amortized over ten years net of contributions by third parties such as NRCan are included. This figure includes costs such as site selection, properties, legal, design, engineering, lighting, signage, line construction, civil construction and capital cost investments by BC Hydro. Gross capital costs are approximately $235,000 per dual station site when contributions, which are not guaranteed, by third parties such as NRCan are not included.

In response to BCUC IR 1.3 in the fiscal 2022 RRA proceeding, BC Hydro provided the following breakdown of its fiscal 2022 costs for its EV fast charging stations.

Electric Vehicle Infrastructure Costs $ million	Fiscal 2022 Forecast	Appendix A Reference
Operating & Maintenance Costs		
Labour	0.8	Schedule 1, Line 2
Contract Services	1.0	Schedule 1, Line 2
Total Operating & Maintenance	1.8	
Depreciation	0.5	Schedule 1, Line 5
Cost of Energy	0.4	Schedule 1, Line 1
Total EV Infrastructure Costs	**2.7**	

11.1 Please reconcile the costs related to BC Hydro's EV fast charging stations provided in its fiscal 2022 RRA and the costs that make up BC Hydro's full cost of service to provide EV fast charging services in the Application.

11.2 Please discuss whether BC Hydro incurs any land lease costs with respect to providing EV fast charging services. If so, please quantify and confirm, or explain otherwise, that these costs have been included in the full cost of service calculation to provide EV fast charging services in the Application.

In response to BCUC IR 7.5, BC Hydro explained why annual labour costs of $800,000 were not included in its full cost of service. BC Hydro stated:

> The Application only included costs that could be solely attributed to station metering, repair and maintenance costs and did not include any labour costs that were not solely attributable to electric vehicle fast charging stations.

> The labour costs […] represent a team of staff in the Customer Service Key Business Unit who lead the development of transportation electrification strategies within BC Hydro, including electric vehicles adoption and promotion. Supporting electric vehicle fast charging infrastructure implementation is only a portion of their responsibilities. […] as these costs were not solely attributable to electric vehicle fast charging stations, they were not included in the full cost of service calculation.

11.3 Please provide the portion of the annual labour costs of $800,000 that could be attributable to supporting BC Hydro's EV fast charging infrastructure implementation and service. As part of the response, please provide any assumptions used.

In response to BCUC IR 7.5.2, BC Hydro stated:

> BC Hydro did not include any overhead costs in its calculation of the full cost of service. The net capital cost per dual station site of $85,000, noted on page 30 of the Application, did not include any capital overhead. BC Hydro did not include any other overhead in the cost of service calculation.
>
> BC Hydro notes that effective October 2020, we have commenced charging capital overhead to EV infrastructure implementation projects after reviewing its applicability to EV charging stations.

11.4 Please provide the annual capital overhead that BC Hydro has begun charging to its EV infrastructure implementation projects and discuss how the capital overhead was determined.

11.5 Please recalculate the annual full cost of service to provide EV fast charging services that includes the annual labour costs and the annual capital overhead in response to the preceding two questions.

11.6 Please discuss whether BC Hydro has incurred or plans to incur any costs related to amenities that are not directly related to providing EV fast charging services (e.g. washrooms, concession stands, vacuums, air inflators, garbage bins).

11.6.1 If so, please provide a breakdown of these costs and discuss whether they have been included in BC Hydro's full cost of providing EV fast charging services in the Application. If these costs have not been included in the cost of service calculation, please explain why not and explain how BC Hydro plans to recover these costs.

In response to BCUC IR 2.7, BC Hydro stated:

> The Proposed Rates are designed to collect sufficient revenue to recover at least the cost of electricity based on BC Hydro's General Service rate schedules and as such they reflect the general rate increase of 1.16 per cent as set out in BC Hydro's fiscal 2022 rates […] and approved on an interim basis by BCUC Order No. G-1-21 […]

In response to BCUC IR 2.8, BC Hydro stated:

> BC Hydro does not expect that any subsequent changes to the general rate increase of 1.16 per cent requested in the Fiscal 2022 Revenue Requirements Application would impact the Proposed Rates.
>
> As shown in Rate Schedules 1360, 1560 and 1561 included in Appendix B, BC Hydro proposes that:
>
> The rate increases/decreases approved through the revenue requirements applications for a particular fiscal year will apply from fiscal 2023 onward.

11.7 Please clarify why it is not necessary to adjust the proposed rates for any changes to the 1.16 percent general rate increase that is approved on a permanent basis for fiscal 2022 by the BCUC. As part of the response, please discuss whether this would result in any under or over recovery of the cost of electricity based on BC Hydro's General Service rate schedules.

In response to BCSEA-VEVA IR 1.1.1, BC Hydro provided in the Attachment 1 the EV Fast Charging Design & Operational Guidelines for public DCFC stations in BC dated March 2021. On page 9 of these Guidelines, BC Hydro provides the following regarding design and operational guidelines:

Potential costs		Potential contribution & revenue sources
Fixed ○ Hardware (fast charger, kiosk) ○ Fixtures (lighting, signage) ○ Installation costs ○ Electrical distribution system upgrades or extensions ○ Paving & stall painting ○ Design elements (branding, weather protection, seating, etc.) ○ Adequate insurance coverage	**Variable** ○ Energy costs (kWh and demand) ○ Customer support costs ○ Ongoing maintenance and repairs ○ Network management costs ○ Operations & issue management ○ Inventory & spare parts ○ Write-offs and replacement of equipment damaged or beyond repair	○ Federal (NRCan) & Provincial (Clean BC Go Electric) DCFC incentive programs ○ Price per charge (time-based)* ○ Parking fees ○ Branding & marketing ○ Utilization * Subject to Measurement Canada approval, kWh-based pricing may be an option in the future

Further, regarding customer support, BC Hydro in the Guidelines on page 27 provides the following "Minimum service levels" in the middle column and "Recommended service levels" in the righthand column.

Customer support		
Contact centre hours and capabilities ○ Toll-free number ○ Able to remotely initiate charging session ○ Able to provide member/ payment support	6 am – midnight, 7 days a week ○ Repair triage by next business day ○ Immediate emergency support	24/7, 365 days a year ○ Repair triage same business day ○ Immediate emergency support

On page 5 of the Guidelines, BC Hydro states:

These guidelines will be useful to any organization considering installing one or a network of fast chargers, such as:

- Municipalities or other local government entities
- Businesses wanting to operate their own stations or act as a site host
- Health authorities
- Post-secondary institutions
- Indigenous communities
- Airports
- Other government entities in B.C.

11.8 Please clarify whether BC Hydro adheres to the Guidelines for its own network of fast chargers. If not, please explain why not and provide BC Hydro's own guidelines.

11.9 Please explain whether the customer support contact centre is operated in-house or outsourced

to another vendor for BC Hydro's network of fast chargers. If there had been any changes since 2013 from in-house to outsourced, or vice versa, please explain.

11.10 Please provide the customer support contact centre's hours of operation for BC Hydro's network of fast chargers. If there had been any significant changes to the hours of operation since 2013, please explain.

11.10.1 If the support contact centre's hours of operation are not 24/7, 365 days a year, please clarify whether the stations would meet the prescribed undertaking definition of "eligible charging station" under Section 5 of the Greenhouse Gas Reduction Regulation (GGRR) in that the fast charging station must be "… available for use 24 hours a day by any member of the public."

11.11 Please confirm, or other explain, that customer support costs are included in BC Hydro's calculation of its Proposed Rates. If so, please specify the reference. If not, please explain why not.

12.0 Reference: FULL OR PARTIAL COST OF SERVICE
Exhibit B-1, p. 30; British Columbia Public Light-Duty Zero-Emission Vehicle Infrastructure Study[3], dated May 2021; Exhibit A2-3, EV growing pains: The evolution of electric vehicles and their growing impact on the electric grid[4], by Geotab Energy, dated April 22, 2020
EV charging technology

On page 30 of the Application, BC Hydro states:

> Capital costs are approximately $85,000 per dual station site, amortized over ten years net of contributions by third parties such as NRCan are included.

In the BC Public Light-Duty Zero-Emission Vehicle Infrastructure Study dated May 2021, the BC Government provides the following assumption regarding fast charging power output by year:

> Historically, fast charging deployments have largely used chargers with 50 kW of output power (although some 25 kW chargers have been installed in the province, as indicated in Appendix A), aside from Tesla beginning with 90 kW chargers in 2014 and increasing since then.
>
> *Table 2. Assumed fast charging power output by year*

	2020	2025	2030	2035	2040
Assumed Fast Charging Output Power (kW)	75*	100	150	250	300

> ** While much of the public charging infrastructure deployment currently planned for 2020/2021 still focuses on 50 kW units, the power levels in this table represent the average of all ports deployed within the province, including those deployed by industry at power levels much higher than 75 kW.*
>
> If the typical output power of fast charging infrastructure were to exceed these assumptions, that could drive a decrease in the total number of ports needed and vice versa.

On page 14 of the April 2020 Geotab Energy Report (Exhibit A2-3), it states:

> The impact EVs have on the grid, particularly this risk they pose to damaging distribution assets,

[3] Retrieved from https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/electricity-alternative-energy/transportation/bc_public_ld_zev_infrastructure_study_final_20210505.pdf
[4] Retrieved from https://image.info.fleetcarma.com/lib/fe321171716404797c1674/m/1/002159cb-9dd1-42d9-bb22-620882710895.pdf

has changed dramatically over the last 5 years. Long-range BEVs are very different from older electric vehicles: they are driven more, they consume more energy, they draw power at a higher level and they are less predictable. As the fastest-growing vehicle type, long-range BEVs continue to represent a larger proportion of new EV sales.

12.1 Considering that EV technology is expected to rapidly change and the EV industry will likely produce EVs requiring higher battery charging output, please discuss whether BC Hydro's EV fast charging stations should be depreciated faster than the 10 years currently used by BC Hydro. Why or why not?

12.1.1 If not, please discuss how BC Hydro plans to keep its EV charging station technology current and competitive with other service providers. As part of the response, please discuss how BC Hydro would address the disposal and retirement of its EV charging equipment and the recovery of those costs if it becomes obsolete sooner than the 10-year useful life used to calculate depreciation.

12.2 Please provide the annual depreciation expense if BC Hydro's EV fast charging stations are depreciated over 1, 3 and 5 years, respectively, and recalculate the annual full cost of service to provide EV fast charging services.

13.0 Reference: Exhibit B-4, BCUC IR 13.4 and BCUC IR 14.5
Rate setting mechanism linked with utilization rate

In response to BCUC IR 13.4, BC Hydro stated:

> BC Hydro notes that utilization has the biggest impact on the rates as the rate goes down as utilization increases and fixed costs such as the station capital costs, and the Demand Charge are spread across more station users.

In response to BCUC IR 14.5, BC Hydro stated:

> BC Hydro confirms that the level of cross-subsidization (that is, the revenue difference between the amount collected under the Proposed Rates and the remaining amount to be collected from all ratepayers as allowed under section 18 of the *Clean Energy Act*) will depend on the utilization rate of the stations, the average electricity usage per session and the average length of a charging session.

13.1 Considering that the level of cross-subsidization is dependent on station utilization, which has the biggest impact on rates, please discuss the feasibility of implementing a mechanism to adjust the proposed rate once or twice a year based on actual utilization rate of the stations.

14.0 Reference: Exhibit B-1, p. 27; Exhibit B-4, BCUC IR 7.2, Attachment 1; Exhibit B-5, BCOAPO IR 10.2
General Service's Basic Charge

On page 27 of the Application, BC Hydro states:

> Other fast charging operators (i.e., exempt utilities) in BC Hydro's service territory take General Service and are charged under the applicable General Service Rate Schedule based on their electricity Demand.

In Attachment 1 of BCUC IR 7.2, BC Hydro did not include the Basic Charge of the Small General Service or the Medium General Service in its calculations of electricity costs.

In response to BCOAPO IR 10.2, BC Hydro stated:

Medium General Service (MGS) Rate Schedules have Basic Charge, Energy Charge and Demand Charge as shown in those rate schedules.

BC Hydro has not included the Basic Charge in the calculation for electricity cost recovery for simplicity and due to the fact that the amount is small and difficult to allocate to an unknown number of station customers each month.

14.1 Please clarify what BC Hydro means by "it is difficult to allocate [the General Service Basic Charge] to an unknown number of station customers each month".

14.2 Please confirm, or otherwise explain, that the Basic Charge is an integral component of electricity costs of exempt and non-exempt utilities alike.

14.2.1 If confirmed, please clarify why BC Hydro chose not to include the Basic Charge in its calculations of electricity costs.

14.3 Please revise the calculations provided in Attachment 1 of BCUC IR 7.1 to include the Basic Charge for the Small General Service and Medium General Service.

15.0 Reference: Exhibit B-1, Section 2.1, p. 10
Rate design assumptions

On page 10 of the Application, BC Hydro states:

> The time required to charge an electric vehicle will also be dependent on what the vehicle can accept, and in many cases, a similar amount of electricity is dispensed from a 25 kW, 50 kW or 100 kW charging station <u>once the vehicle battery exceeds 90 per cent capacity</u>. [Emphasis added]

15.1 Please confirm, or otherwise explain, that if the State of Charge (SOC) of the battery is lower than 90 percent, the amount of electricity dispensed from a 25 kW station is expected to be less than from a 50 kW station *in the same amount of time spent charging*, holding all else equal.

15.2 Please confirm, or otherwise explain, that if the State of Charge (SOC) of the battery is lower than 90 percent, the amount of electricity dispensed from a 100 kW station is expected to be more than from a 50 kW station *in the same amount of time spent charging*, holding all else equal.

16.0 Reference: Exhibit B-1, Section 2.1, p. 10
Charging speed assumptions for 25 kW, 50 kW and 100 kW stations

On page 10, BC Hydro states:

> A 25 kW charging station can take up to twice as long to charge as a 50 kW station, depending on the starting state of charge and the electric vehicle make and model.

16.1 Please confirm, or otherwise explain that the above statement could be revised by adding the underlined portions below:

"A 25 kW charging station can take up twice as long to charge as a 50 kW station <u>to obtain the same amount of electricity</u> depending on the starting state of charge and the electric vehicle make and model."

On page 10, BC Hydro also states:

> A 100 kW fast charging station may not double the charging speed of a 50 kW station unless the vehicle is capable of being charged at this higher power level.

16.2 Please confirm, or otherwise explain that the above statement could be revised by adding the underlined portions below:

"A 100 kW fast charging station may not double the charging speed of a 50 kW station <u>to obtain the same amount of electricity</u> unless the vehicle is capable of being charged at this higher power level."

16.3 Please confirm, or otherwise explain, that a corollary to the above statement is:

"A 100 kW fast charging station may double the charging speed of a 50 kW station to obtain the same amount of electricity if the vehicle is capable of being charged at this higher power level."

17.0 Reference: Exhibit B-4, BCUC IR 7.1, BCUC IR 7.2, Attachment 1
Rate design assumptions to determine the electricity costs for a 100 kW station

BCUC IR 7.1 asked BC Hydro to explain how, with no usage data on the 100 kW station, it determined that $0.27/min is just, fair and reasonable for the 100 kW station. BC Hydro responded that:

> In the instance, such as 100 kW stations, <u>where there is lack of or no usage data available, 50 kW data was used as proxy</u>. A key difference to be noted between the 50 kW and 100 kW station rate design, as described in section 4.2 of the Application, is that the station utilization needed for electricity cost recovery is higher for the 100 kW station than it is for the 50 kW station because the Peak Demand is higher. BC Hydro expects that utilization will be higher at the 100 kW stations because they are expected to be used primarily at locations near primary travel corridors or where higher demand for charging has been demonstrated. [Emphasis added]

In the attachment to BCUC IR 7.2, BC Hydro provided the supporting calculations to show how the $0.27/min was derived:

100 kW		
Fiscal 2022 Medium General Service Rate	Value	Units
Demand Charge	5.39	$ per kW
Energy Charge	9.63	cents per kWh
Fiscal 2020 BC Hydro EV Fast Charging Station Data	Value	Units
Peak Demand	100	kW
Average Electricity Consumption per Charging Session	13.10	kWh
Average Charging Session Length	28.60	minutes

100 kW		
Utilization Rate (%)	Average Number of Charging Sessions per Station per month	Electricity Costs
3.0%	46	$ 0.45
3.7%	57	$ 0.38
5.0%	77	$ 0.29
5.5%	**84**	**$ 0.27**
10.0%	153	$ 0.17
15.0%	230	$ 0.13
20.0%	307	$ 0.11

17.1 Please confirm, or otherwise explain, that BC Hydro can generally expect to deliver more electricity to an EV connected to a 100 kW station for 28.60 minutes than if it were connected to a 50 kW station (i.e., more than 13.10 kWh).

17.2 Please confirm, or otherwise explain, that at one end of the spectrum, if an EV is capable of being charged at the 100 kW power level, and that a 100 kW fast charging station may double the charging speed of a 50 kW station, means that a 28.6 minutes charging session to obtain 13.1 kWh at a 50 kW station could be reduced to 14.3 minutes at a 100 kW station.

17.2.1 If confirmed, please also confirm, or otherwise explain, that the electricity costs per minute would increase to $0.31/min at a 5.5% utilization rate, as shown in the calculations below:

100 kW		
Fiscal 2022 Medium General Service Rate	Value	Units
Demand Charge	5.39	$ per kW
Energy Charge	9.63	cents per kWh
Fiscal 2020 BC Hydro EV Fast Charging Station Data	Value	Units
Peak Demand	100	kW
Average Electricity Consumption per Charging Session	13.10	kWh
Average Charging Session Length	14.30	minutes

100 kW		
Utilization Rate (%)	Average Number of Charging Sessions per Station per month	Electricity Costs
3.0%	92	$ 0.50
3.7%	113	$ 0.42
5.0%	153	$ 0.33
5.5%	**169**	**$ 0.31**
10.0%	307	$ 0.21
15.0%	460	$ 0.17
20.0%	613	$ 0.15

17.3 Please confirm, or otherwise explain, that as long as an EV is able to charge at a faster speed at a 100 kW station than at a 50 kW station, which means obtaining the 13.1 kWh in less than 28.6 minutes, the electricity costs per minute would be higher than the proposed rate of $0.27/min.

17.4 Since BC Hydro's objective is to recover its electricity costs, please confirm, or otherwise explain, that a rate higher than $0.27/min and up to $0.31/min should be charged to EV drivers connecting to 100 kW station (assuming a 5.5% utilization rate), in recognition of the need to adjust the data related to the 50 kW station to take into account the impact of the higher-power level station on the charging session.

17.4.1 Please add the Basic Charge of the MGS in the calculations.

17.4.2 If confirmed, should the proposed rate for the 100 kW stations be revised based on the calculations above?

17.5 Please provide evidence to support BC Hydro's expectation that the utilization rate of the 100 kW stations will be higher (5.5 percent instead of 3.7 percent). Is it based on data that BC Hydro has collected, on a research, or other?

18.0 Reference: Exhibit B-4, BCUC IR 14.2
100 kW charging station rate by utilization and cost recovery scenarios

In response to BCUC IR 14.2, BC Hydro provided the following table for a 100 kW station using the same assumption for average electricity usage per session and average length charging session used for a 50 kW station.

Utilization Rate		Scenario 1	Scenario 2	Scenario 3
(%)	Average Number of Charging Sessions per Station per Month	Electricity Costs (RS 1500 Equivalent) ($/min)	Electricity + Station Maintenance Costs ($/min)	Full Cost of Service: Electricity + Maintenance + Capital Costs ($/min)
3.0	46	0.45	0.96	1.69
3.7	57	0.38	0.79	1.38
5.0	77	0.29	0.59	1.03
5.5	84	0.27	0.54	0.94
10.0	153	0.17	0.32	0.54
15.0	230	0.13	0.23	0.37
20.0	307	0.11	0.18	0.29

18.1 Please re-state the above table to reflect a scenario where the charging speed at a 100 kW station is double that of a 50 kW station. In the re-stated table, please add a line with a

utilization rate of 7.5 percent and 12.5 percent.

18.2 Please provide the supporting calculations, in a fully functional spreadsheet format, for all three scenarios of the above table (i.e., electricity costs, electricity + station maintenance costs, full cost of service).

19.0 Reference: Exhibit B-1, Section 2.1, p. 10; Exhibit B-4, BCUC IR 7.2, Attachment 1
Rate design assumptions to determine the electricity costs for a 25 kW station

On page 10 of the Application, BC Hydro states that "a 25 kW charging station can take up twice as long to charge as a 50 kW station, depending on the starting state of charge and the electric vehicle make and model."

In the attachment to BCUC IR 7.2, BC Hydro provided the supporting calculations to show how the electricity costs were derived for a 25 kW station:

25 kW		
Fiscal 2022 Small General Service Rate	Value	Units
Demand Charge	-	$ per kW
Energy Charge	12.47	cents per kWh
Fiscal 2020 BC Hydro EV Fast Charging Station Data	Value	Units
Peak Demand	25	kW
Average Electricity Consumption per Charging Session	13.10	kWh
Average Charging Session Length	28.60	minutes

25 kW		
Utilization Rate (%)	Average Number of Charging Sessions per Station per month	Electricity Costs
3.0%	46	$ 0.06
3.7%	**57**	**$ 0.06**
5.0%	77	$ 0.06
5.5%	84	$ 0.06
10.0%	153	$ 0.06
15.0%	230	$ 0.06
20.0%	307	$ 0.06

19.1 Please confirm, or otherwise explain, that BC Hydro can generally expect to deliver less electricity to an electric vehicle connected to a 25 kW station for 28.60 minutes than if it were connected to a 50 kW station (i.e., less than 13.10 kWh).

19.2 Please confirm, or otherwise explain, that BC Hydro's statement that "a 25 kW charging station can take up to twice as long to charge as a 50 kW station" means that a 28.6 minutes charging session to obtain 13.1 kWh at a 50 kW station could become a 57.2 minutes session at a 25 kW station.

19.2.1 If confirmed, please also confirm, or otherwise explain, that the electricity costs per minute would decrease to $0.03/min at a 3.7% utilization rate, as shown in the calculations below:

25 kW		
Fiscal 2022 Small General Service Rate	Value	Units
Demand Charge	-	$ per kW
Energy Charge	12.47	cents per kWh
Fiscal 2020 BC Hydro EV Fast Charging Station Data	Value	Units
Peak Demand	25	kW
Average Electricity Consumption per Charging Session	13.10	kWh
Average Charging Session Length	57.20	minutes

25 kW		
Utilization Rate (%)	Average Number of Charging Sessions per Station per month	Electricity Costs
3.0%	23	$ 0.03
3.7%	**28**	**$ 0.03**
5.0%	38	$ 0.03
5.5%	42	$ 0.03
10.0%	77	$ 0.03
15.0%	115	$ 0.03
20.0%	153	$ 0.03

19.3 Please confirm, or otherwise explain, that since BC Hydro's objective is to recover its electricity costs, a rate lower than $0.12/min and as low as to $0.03/min could be charged to EV customers connecting to 25 kW station (at any utilization rate), in recognition of the need to adjust the data related to the 50 kW station to take into account the impact of the lower-power level station on the charging session.

19.3.1 Please add the Basic Charge of the Small General Service(SGS) in the calculations.

19.3.2 If confirmed, should the proposed rate for the 25 kW stations be revised based on the calculations above?

20.0 Reference: Exhibit B-5, BCOAPO IR 1.1, Attachment 1
BC Hydro's 25 kW stations

BC Hydro provided information on the number of stations, the location and the in-service date of its fast charging stations, amongst other indicators. The following 25 kW stations are included in the Attachment 1 to BCOAPO IR 1.1:

- 1 station in Hope operational since October 30, 2015;
- 1 station in Squamish in operation since November 1, 2016; and
- 1 station in Hope in operation since November 9, 2019.

20.1 Since BC Hydro meters the fast charging service at the site level, please provide the average electricity consumption per charging session, the average number of charging session per 25 kW station per month and the average charging session length specific to the 25 kW stations from the data that BC Hydro collected from April 1, 2019 to March 31, 2020 and from the data collected from April 1, 2020 to March 31, 2021.

20.2 Please revise the electricity costs calculations provided in Attachment 7.2 of BCUC IR 7.2 based on actual usage data of the 25 kW stations.

21.0 Reference: Exhibit B-1, Section 4.1, p. 25; Exhibit B-4, BCUC IR 7.2, Attachment 1; BCUC IR 14.1
Proposed rate for a 25-kW station and demand charges

On page 25, BC Hydro states:

> The proposed RS 1360, which is applicable to public fast charging service at 25 kW stations, is considered a Small General Service (SGS) rate and is proposed at 12 cents per minute…

In attachment to BCUC IR 7.2, BC Hydro showed the following tables related to the 25 kW station:

25 kW		
Fiscal 2022 Small General Service Rate	Value	Units
Demand Charge	-	$ per kW
Energy Charge	12.47	cents per kWh
Fiscal 2020 BC Hydro EV Fast Charging Station Data	Value	Units
Peak Demand	25	kW
Average Electricity Consumption per Charging Session	13.10	kWh
Average Charging Session Length	28.60	minutes

25 kW		
Utilization Rate (%)	Average Number of Charging Sessions per Station per month	Electricity Costs
3.0%	46	$ 0.06
3.7%	**57**	**$ 0.06**
5.0%	77	$ 0.06
5.5%	84	$ 0.06
10.0%	153	$ 0.06
15.0%	230	$ 0.06
20.0%	307	$ 0.06

25 kW		
Utilization Rate (%)	Average Number of Charging Sessions per Station per month	Electricity Costs with Demand Charge Recovery
3.0%	46	$ 0.14
3.7%	**57**	**$ 0.12**
5.0%	77	$ 0.10
5.5%	84	$ 0.09
10.0%	153	$ 0.06
15.0%	230	$ 0.06
20.0%	307	$ 0.06

In response to BCUC IR 14.1, BC Hydro stated:

> As discussed in BC Hydro's response to BCUC IR 1.7.2, as the Proposed Rate for 25 kW station is based on Small General Service (SGS) and does not contain a demand charge component, this may result in under recovery of demand related costs if the Proposed Rate is based on the SGS rate alone. BC Hydro has therefore set the rate at 12 cents per minute, about 60 per cent of the Proposed Rate for 50 kW.

21.1 Please clarify why a proposed rate based on the SGS rate alone would result in under recovery of demand-related costs if the Small General Service Rate Schedule does not contain a demand charge component.

21.1.1 Please clarify how BC Hydro quantifies the demand-related costs that would be under recovered if the proposed rate for the 25 kW station did not include a demand charge component.

21.2 Please clarify how BC Hydro has determined that the proposed rate for the 25 kW station should be 60 percent of the proposed rate for the 50 kW station.

21.3 If electricity costs were as low as $0.03 per minute to account for the lower power of the 25 kW station, please update this rate scenario for the 25 kW station with a demand charge recovery.

22.0 Reference: Exhibit B-4, BCUC IR 5.8
Per-kWh rate equivalent to the proposed rates for the 25, 50 and 100 kW stations

In response to BCUC IR 5.8, BC Hydro stated:

> **All other things being equal, the per-minute Proposed Rates would translate to the following per-kWh bases rates, utilizing the formula:**
>
> **[(proposed rate) x (average charging session length)] / average electricity consumption per charging session**

Fast Charging Station (kW)	Proposed Rate (Cents per Minute)	Average Charging Session Length[1] (Minutes)	Average Electricity Consumption per Charging Session[1] (kWh)	Translated energy-based rate[1] (Cents per kWh)
50	21	28.6	13.1	46
100	27			59
25	12			26

1. Energy-based rate is determined based on 50 kW station data collected from BC Hydro's fast charging stations from April 1, 2019 to March 31, 2020 as shown in Exhibit B-1 (Page 29). Data is extrapolated to calculate 100 kW and 25 kW values.

22.1 Please revise the "translated energy-based rates (Cents per kWh)" for the 25 and 100 kW stations, taking into account the need to adjust the data related to the 50 kW station to recognize the impact of the lower- or higher-power level station on the charging session and the inclusion of the Basic Charge in the General Service Rate Schedules. Please ensure the response is consistent with BC Hydro's responses in the scenario testing questions in this section.

23.0 Reference: Exhibit B-4, BCUC IR 14.1
25 kW charging station rate by utilization and cost recovery scenarios

In response to BCUC IR 14.1, BC Hydro provided the following table for a 25 kW station using the same assumption for average electricity usage per session and average length charging session used for the 50 kW station.

Utilization Rate		Scenario 1	Scenario 2	Scenario 3
(%)	Average Number of Charging Sessions per Station per Month	Electricity Costs (RS 1300 Equivalent with Demand Charge Recovery) ($/min)	Electricity + Station Maintenance Costs ($/min)	Full Cost of Service: Electricity + Maintenance + Capital Costs ($/min)
3.0	46	0.14	0.65	1.44
3.7	57	0.12	0.53	1.17
5.0	77	0.10	0.40	0.88
5.5	84	0.09	0.37	0.80
10.0	153	0.06	0.21	0.45
15.0	230	0.06	0.16	0.32
20.0	307	0.06	0.13	0.25

23.1 Please re-state the above table to reflect a scenario where the charging speed at a 25 kW station is twice as slow as that of a 50 kW station. In the re-stated table, please add a column that displays electricity cost without the demand charge recovery and a line with a utilization rate of 7.5 percent and 12.5 percent.

23.2 Please provide the supporting calculations, in a fully functional spreadsheet format, for all three scenarios of the above table (i.e., electricity costs with demand charge recovery, electricity + station maintenance costs, full cost of service) as well as the electricity costs without a demand charge recovery.

24.0 Reference: Exhibit B-5, BCUC IR 1.1, Attachment 1; Exhibit B-4, BCUC IR 8.4; BC Hydro Electric Tariff, Medium General Service and Large General Service Classification to General Service Rate Schedules

In response to BCUC IR 1.1, Attachment 1, BC Hydro indicated that a number of sites have dual stations.

In response to BCUC IR 8.4, BC Hydro stated that "at sites with dual charging stations, each station can be utilized to its full capacity concurrently."

In BC Hydro's Electric Tariff, Medium General Service Rate Schedules are available "for customers who qualify for General Service and whose Billing Demand is equal to or greater than 35 kW but less than 150 kW, and whose Energy consumption in any 12-month period is equal to or less than 550,000 kWh" and Large General Service Rate Schedules are available "for Customers who qualify for General Service and whose Billing Demand is equal to or greater than 150 kW, or whose Energy consumption in any 12-month period is greater than 550,000 kWh."

24.1 If BC Hydro were to install two 25 kW stations on a site, and if the two stations were used at full capacity concurrently, would this setup qualify for the Medium General Service Rate, provided the annual consumption of electricity over a 12-month period was equal or less than 550,000 kWh? Please explain.

24.2 If BC Hydro were to install three 50 kW stations on a site, and if all three stations were used at full capacity concurrently, would this set up qualify for the Large General Service Rate provided the annual consumption of electricity over a 12-month period was greater than 550,000 kWh? Please explain.

25.0 Reference: Exhibit B-4, BCUC IR 13.4
Sensitivity analysis

In response to BCUC IR 13.4, BC Hydro stated:

> The tables below show the cost that a 50 kW station's rate will recover under different utilization and cost recovery scenarios which include average electricity usage and average session length per session increased and decreased by 25 per cent at three utilization rate scenarios of 15 per cent, 7.5 per cent and 5 per cent. BC Hydro notes that utilization has the biggest impact on the rates as the rate goes down as utilization increases and fixed costs such as the station capital costs, and the Demand Charge are spread across more station users.

The following table is the one related to holding the utilization rate at 15 percent but BC Hydro also presented a similar table where the utilization rate is held at 7.5 percent and a third one at 5 percent.

Utilization Rate		Proportional Increase or Decrease Factor		Scenario 1	Scenario 2	Scenario 3
(%)	Average Number of Charging Sessions per Station per month	Average electricity usage per charging session (%)	Average session length per charging session (%)	Electricity Costs (RS 1500 Equivalent) ($/min)	Electricity + Station Maintenance Costs ($/min)	Full Cost of Service: Electricity + Maintenance + Capital Costs ($/min)
15.0	307	0	-25	0.10	0.20	0.31
15.0	230	-25	0	0.07	0.18	0.28
15.0	307	-25	-25	0.09	0.19	0.29
15.0	230	0	0	0.09	0.19	0.29
15.0	184	25	25	0.09	0.19	0.29
15.0	230	25	0	0.10	0.20	0.31
15.0	184	0	25	0.08	0.18	0.29

25.1 Please clarify why BC Hydro presented scenarios where the average session length per charging session was either decreased or increased by 25 percent while the average electricity usage remained unchanged and vice versa.

25.1.1 Would BC Hydro agree that, in practice, if the session length is 25 percent longer or shorter, the amount of electricity delivered to the EV would not remain constant and that if the electricity delivered to the car is reduced or increased by 25 percent, the charging session length would not remain constant?

25.2 Please discuss whether the scenarios where the average session length per charging session were either decreased or increased by 25 percent <u>and</u> the average electricity usage also increased or decreased by 25 percent can be representative of real-world situations. In other words, does BC Hydro believe that the relationship between these two variables is linear?

25.2.1 If the relationship is not linear, please re-do the analysis using plausible scenarios where, when the electricity usage is higher, it corresponds to a longer session and vice versa by completing the following table. For this analysis, can BC Hydro anchor this analysis in the data it collected since April 1, 2019?

Utilization Rate		Increase or decrease factor		Scenario 1	Scenario 2	Scenario 3
(%)	Average Number of Charging Sessions per Station per month	Average electricity usage per charging sessions (%)	Average session length per charging session (%)	Electricity Costs (RS 1500 Equivalent) ($/min)	Electricity + Station Maintenance Costs ($/min)	Full Cost of Service: Electricity + Maintenance + Capital Costs ($/min)
15.0		- a%	- b%			
15.0	230	0	0	0.09	0.19	0.29
15.0		+ c%	+ d%			
7.5		- e%	- f%			
7.5	115	0	0	0.13	0.33	0.54
7.5		+ g%	+ h%			
5.0		- i%	- j%			
5.0	77	0	0	0.17	0.47	0.79
5.0		+ k%	+ l%			

26.0 Reference: Exhibit B-4, BCUC IR 7.7
Natural Resources Canada (NRCan) funding

In response to BCUC IR 7.7, BC Hydro stated:

> BC Hydro used capital costs net of contributions for the purposes of the cost recovery calculations.
>
> While future third-party contributions are not guaranteed, they were included in the capital cost recovery calculation as BC Hydro expects to continue partnering with NRCan for funding of electric vehicle fast charging stations and excluding them would result in rates that would over-recover the costs of installed stations that have received or are on track to receive contributions.

26.1 Please clarify the basis of BC Hydro's expectation that it will continue to partner with NRCan for funding of EV fast charging stations. In your response, please indicate the overall budget that NRCan earmarked for EV fast charging infrastructure until 2024, the process through which BC Hydro access those funds, and whether BC Hydro competes for those funds against other EV fast charging network operators.

26.2 How many new stations does BC Hydro plan to install over the next three years? Is BC Hydro expecting to receive contributions for each of them?

27.0 Reference: Exhibit B-4, BCUC IR 7.2.1; Exhibit B-5, BCSEA-VEVA IR 1.1.1, Attachment 1, p. 9; BC Hydro F2022 Revenue Requirements Application (RRA) Decision and Order G-187-21 dated June 17, 2021
Low Carbon Fuel Credits

In response to BCUC IR 7.2.1, BC Hydro stated:

> BC Hydro has considered credit revenues from the sale of credits it receives as a result of electricity sold through its fleet of EV fast charging stations under the Renewable & Low Carbon Fuel Requirements Regulation.

> The value of any credits depends on the ongoing demand for, and supply of, credits. Future revenues are uncertain as supply and demand may fluctuate year-to-year, and there may be changes in the low carbon fuels program. Because of these uncertainties, BC Hydro has not included any related revenues in the rate analyses presented in the Application.

In response to BCSEA-VEVA IR 1.1.1, BC Hydro provided in the Attachment 1 the EV Fast Charging Design & Operational Guidelines for public DCFC stations in BC dated March 2021. On page 9 of these Guidelines, BC Hydro provides the following regarding design and operational guidelines:

Potential costs		Potential contribution & revenue sources
Fixed	**Variable**	
Hardware (fast charger, kiosk) Fixtures (lighting, signage) Installation costs Electrical distribution system upgrades or extensions Paving & stall painting Design elements (branding, weather protection, seating, etc.) Adequate insurance coverage	Energy costs (kWh and demand) Customer support costs Ongoing maintenance and repairs Network management costs Operations & issue management Inventory & spare parts Write-offs and replacement of equipment damaged or beyond repair	Federal (NRCan) & Provincial (Clean BC Go Electric) DCFC incentive programs Price per charge (time-based)* Parking fees Branding & marketing Utilization * Subject to Measurement Canada approval, kWh-based pricing may be an option in the future

In the BC Hydro F2022 RRA Decision via Order G-187-21 dated June 17, 2021, the BCUC noted:

> BC Hydro received 137 low carbon fuel credits related to the ownership and operation of its EV charging stations for the 2018 calendar year. BC Hydro has transferred these carbon credits to Powerex to monetize. The monetized credits were included in Powerex's F2020 net income, which is flowed back to BC Hydro's ratepayers via Trade Income and the Trade Income Deferral Account.

The F2022 RRA Panel directed BC Hydro to record in all future RRAs the forecast revenue based on an estimate of the value of the low carbon fuel credits that it plans to transfer to other parties.

27.1 Please confirm, or otherwise explain, that any public DCFC stations owner/operator in BC can be eligible to receive low carbon fuel credits.

27.1.1 If confirmed, then please explain why the monetization of the low carbon fuel credits is not included in the list of potential contribution and revenue sources in BC Hydro's Guidelines.

27.2 Please provide the quantity of BC Hydro's low carbon fuel credits by calendar year since 2013, and if available, the expected quantity of low carbon fuel credits in each calendar year for the period from 2021 to 2025.

27.2.1 Please discuss whether a monetary penalty of $200 per outstanding debit, as set out in section 13 (1.1) of the Renewable and Low Carbon Fuel Requirements Regulation, would be a reasonable per unit price to consider the value of low carbon fuel credits related revenues in the rate analysis presented in the Application.

27.2.2 Please restate the proposed rates should the BCUC direct BC Hydro to include low carbon fuel credit related revenues in its rate analyses. Specify the assumptions.

27.2.3 Please discuss whether BC Hydro is amenable to provide, in BC Hydro's evaluation report or future RRAs, the quantity of low carbon fuel credits and/or related revenues

monetized from low carbon fuel credits.

D. DEFERRAL ACCOUNT AND VARIANCE TREATMENT

28.0 Reference: DEFERRAL ACCOUNT AND ACCOUNTING TREATMENT
Exhibit B-4, BCUC IR 2.2, 2.4.2, 2.6, 15.4; Exhibit B-5, CEC IR 1.1; FortisBC Inc. Rate Design and Rates for Electric Vehicle Direct Current Fast Charging Service Application Proceeding, Exhibit B-5, pp. 17–18
Cross-subsidization

In response to BCUC IR 2.2, BC Hydro clarified that fiscal 2022 revenues collected for public EV fast charging service would be captured in the Load Variance Regulatory Account.

28.1 Please confirm, or explain otherwise, that, in the absence of further BCUC direction, any variances between forecast and actual revenues for EV fast charging service would be captured in BC Hydro's Load Variance Regulatory Account on an ongoing basis.

In response to BCUC IR 2.4.2, BC Hydro stated that it may be possible to charge a rate rider applicable only to those rate schedules for EV fast charging services to, over time, collect the $4.9 million of costs incurred in fiscal 2020 and fiscal 2021 related to providing EV fast charging services. BC Hydro also stated:

> [T]he revenue expected from EV fast charging services in fiscal 2022 is estimated to be approximately $0.6 million. Using a rate rider to collect another $4.9 million (even if done over a number of years) would represent a very significant increase in the effective rates for EV fast charging services. BC Hydro notes that this would likely result in even lower station utilization (and thus even lower revenues).

28.2 Please clarify whether the rate rider mechanism described in response to BCUC IR 2.4.2 could, in addition to collecting the costs incurred in fiscal years 2020 and 2021, be used to collect from BC Hydro's EV fast charging service customers the costs related to providing EV fast charging services for fiscal 2022 and onwards that have been recovered from BC Hydro's general ratepayers (i.e. the costs related to providing EV fast charging services for fiscal 2022 and onwards that have not been recovered through the EV fast charging rates).

28.3 If, in the future once the station utilization (or EV adoption) has increased to a sufficient level, and the BCUC were to direct a rate rider mechanism as described in the preceding questions be established, please discuss whether this would conform to section 18(2) of the *Clean Energy Act* (CEA) or be considered retroactive rate setting.

In response to BCUC IR 15.4, BC Hydro stated:

> BC Hydro does not believe that a full cost recovery is feasible for BC Hydro at this time at the anticipated utilization level at BC Hydro's fast charging stations, and has therefore proposed rates in the Application to recover the electricity supply cost based on applicable general service rates and also at a level to not discourage station utilization. In the longer term, BC Hydro expects that utilization rates will increase, and the rates will recover more of the cost of fast charging service.

28.4 Please discuss whether the same result as described in the second question above (i.e. collect past costs related to providing EV fast charging services that have not been recovered through the EV fast charging rate) could be achieved without the use of a rate rider. For example, if the BCUC were to direct rates for EV fast charging services that over recover the cost of providing the services in later years to offset the under recovery of costs in the earlier years until the

variance (i.e. the subsidization from general ratepayers) reaches zero, would this conform to section 18(2) of the CEA or be considered retroactive rate setting?

Further, in response to BCUC IR 15.4, BC Hydro stated:

> BC Hydro notes that the FortisBC approach is set to recover costs on a levelized basis and that there are periods when their forecast station utilization is low and other ratepayers will bear some of the cost of the fast charging service.

In FortisBC Inc.'s (FBC) Rate Design and Rates for Electric Vehicle Direct Current Fast Charging Service Application, FBC proposed rates for EV fast charging service based on a levelized cost of service. On pages 17 to 18 of that application, FBC stated:

> FBC's proposed rate is calculated based on the levelized cost of service incorporating the assumptions and cost-of-service inputs described in the previous sections. Using a levelized approach allows FBC to set an EV charging rate that remains flat over the analysis period and collects the cost of service associated with the EV stations over that period. The levelized cost of service is determined using FBC's weighted average cost of capital as the discount rate and is the present value of the annual cost of service over the analysis period.

28.5 Please discuss whether BC Hydro considered an approach similar to what FBC proposed (i.e. a rate calculated based on a levelized cost of service) to provide EV fast charging service that would recover BC Hydro's full costs associated with its EV fast charging stations from BC Hydro's EV fast charging customers over a given period. Why or why not?

28.5.1 If so, please discuss whether BC Hydro would consider rates calculated based on BC Hydro's levelized cost of service of providing EV fast charging service. Why or why not?

28.6 BC Hydro EV fast charging service was free prior to May 1, 2021. Has BC Hydro considered rate smoothing to gradually increase its EV fast charging rates to recover its full cost of service or gradually increase rates to what BC Hydro believes the market can bear? Please discuss the time horizon for this option and the pros and cons to BC Hydro, BC Hydro's EV customers, all ratepayers, and other EV fast charging service providers.

In response to BCUC IR 2.6, BC Hydro stated:

> BC Hydro has the ability to track and collect the data and conduct the analysis of revenue collected and costs for the fast charging service. We can include this analysis in the evaluation report described in section 5 of the Application, which we propose to file with the BCUC by March 31, 2024.
>
> The completion of cost of service and cross subsidization analysis is a resource and data intensive task requiring at least eighteen months of lead time for data collection and several months of dedicated specialist staff time. For this reason, ongoing tracking and reporting of cross subsidization is not practical, and the analysis should be planned in advanced and conducted at a set date in future […]

28.7 Please elaborate on why the completion of cost of service and cross-subsidization analysis is a resource and data-intensive task that requires at least 18 months of lead time. As part of the response, please identify the types of data that would need to be collected.

In response to CEC IR 1.1, BC Hydro stated:

> BC Hydro deployed the first demonstration fast charging station at a site at Powertech Labs Inc. in Surrey on July 13, 2013. BC Hydro has been providing fast charging service

free of charge since then to May 1, 2021 when the interim rate was implemented.

BC Hydro notes that between 2013 and 2020, there were 13 sites where the municipal site host leased the fast charging equipment from BC Hydro, collected the revenue from end-users and paid BC Hydro all electricity charges (including demand changes) incurred at the sites and owing to BC Hydro pursuant to BC Hydro's Electric Tariff in accordance with the applicable terms and conditions thereof.

28.8 In a table, please provide a breakdown of the revenue and costs incurred by BC Hydro by fiscal year since 2013 to provide EV fast charging services. As an additional line on the table, please provide by fiscal year the amounts that have been recovered from (or refunded to) BC Hydro's ratepayers since 2013 for EV fast charging services. If there were amounts not recovered from (or refunded to) ratepayers, please explain how and who these amounts were recovered from/refunded to. An example of a table is provided below:

	F2013	F2014	F2015	F2016	F2017	F2018	F2019	F2020	F2021
Revenue									
Costs:									
O&M									
Depreciation									
Cost of energy									
Interest									
Net									
Amount recovered from (refunded to) ratepayers									

E. TECHNOLOGY AND CAPITAL

29.0 Reference: Exhibit B-1, Section 3.3, p. 22 and Table 2, p. 24; Exhibit B-4, BCUC IR 9.4; Exhibit E-141, p. 2
Appropriate level of risk for BC Hydro ratepayers to bear

On page 22 of its Application, BC Hydro states:

> BC Hydro has conducted a review of the rates for electric vehicle fast charging service provided by other operators both inside and outside B.C. The rates are as of February 2, 2021, based on publicly available information on PlugShare.com. <u>From this review, BC Hydro notes</u>:
>
> […]
>
> • <u>The most common fast charging service is provided through 50 kW charging stations</u>, although some operators also offer service through higher-powered stations, for instance stations up to 350 kW power level in the case of Petro Canada; [Emphasis added]

In Letter E-141, Tesla states that "[t]oday, Tesla operates 188 Superchargers at 18 stations in British Columbia. We plan to open more than 20 stations with upwards of an additional 200 connectors in the province over the next year."

In response to BCUC IR 9.4, BC Hydro updated Table 2 with the following footnote regarding the Tesla

Superchargers:

2. **The tiered rate structure applies to all Superchargers stations (72 kW, 150 kW and 250 kW) and is a dynamic pricing structure which changes as the power level decreases during a charging session.**

On June 21, 2021, Parkland announced the launch of BC-Alberta ultrafast 150 kW EV charging network. Parkland says 100 connectors will be installed over 25 locations between Nanaimo and Calgary to form British Columbia's largest ultrafast electric vehicle charging network.[5]

29.1 Based on BC Hydro's Table 2 in the Application, updated with the above information regarding the Tesla chargers, please confirm, or otherwise explain, that the review shows that 30 chargers are at the 50 kW power level (1 from the City of North Vancouver, 9 from the City of Vancouver and 20 from FortisBC) whereas 223 chargers are at power levels up to 350 kW (12 from Electrify Canada (with 20 more under construction), 23 from Petro-Canada and 188 from Tesla (with 200 more under construction within the year)).

29.1.1 Please clarify whether BC Hydro's statement that the most common fast charging service is provided through 50 kW charging stations is only referring to the infrastructure surveyed as of February 2, 2021.

30.0 Reference: Exhibit B-1, Section 3.3, p. 22 and Table 2, p. 24; Exhibit B-4, BCUC IR 9.4; Exhibit C20-4, Section II, p. 5 and Section V, pp. 10–15
Appropriate level of risk for BC Hydro ratepayers to bear

On page 5 of its evidence, Suncor states:

> As further directed by the BCUC in the Phase Two Report, BC Hydro has not put forward evidence to demonstrate that this is an appropriate level of risk for ratepayers to bear.[footnote omitted] BC Hydro has articulated through its responses to information requests that it does not have a sense for expected share of market for on-the-go charging, utilization expectations, or an expectation of profitability from EV charging stations. [16] BC Hydro's expectation is to have ratepayers subsidize their unrecovered costs (including capital, maintenance, utility, software, support) related to EV charging investments. This does not create a "level playing field" where all public and privately funded EV charging station operators compete for customers through compelling and competitively priced service offerings. <u>This risk to ratepayers is also exacerbated by BC Hydro's proposal to use outdated 50kW charging units, as discussed in greater detail below.</u> [Emphasis added]

On page 10 of its evidence, Suncor states:

> The proposed deployment of single 50 kW charging stations based on BC Hydro's proposed rate is an ineffective and inefficient use of ratepayer capital. Suncor believes that these chargers will prematurely require additional future investment for upgrades and re-assessment of power requirements well before the end of the charging station's useful life.
>
> For several years now, automotive manufacturers have moved away from the limitations of first generation EV's which could only support 50kW charging (if they were able to at all). Newer vehicles can accept a charge rate as high as 270kW while still supporting legacy first generation EVs. Battery size has increased significantly since EVs

[5] https://electricautonomy.ca/2021/06/21/parkland-bc-ev-charging-network/

were first introduced to the market and fast EV charging station operators have been progressively innovating to deliver higher outputs to match. Some EVs are now capable of charged rates up to 350kW. This highlights the consumer's desire for increasingly faster charging capability in the public on-the-go EV charging marketplace in order to reach the same level of convenience and time as compared with refueling an internal combustion engine vehicle. [Emphasis added]

30.1 Considering the rate of EV adoption in BC, the increased battery size in newer makes and models, and consumers' desire for increasingly faster charge, does BC Hydro agree with Suncor that its 50 kW charging units are already outdated and represent an ineffective and inefficient use of ratepayer capital? If not, please explain why not.

30.2 If BC Hydro's 50 kW stations became obsolete sooner than the expected 10-year useful life due to rapid technological change, please explain why BC Hydro's investment in such infrastructure would represent an appropriate level of risk for BC Hydro's ratepayers to bear.

30.3 Please indicate whether a 50 kW charging station can be upgraded to become a 100 kW or higher power-level charging station? If so, at what cost? If not, would they become stranded assets? Could these stations have a residual value in other markets?

30.4 Please discuss BC Hydro's short-term and long-term technology renewal plans to keep current with other EV charging service providers as they appear to be already investing in chargers with at least 150 kW power levels.

31.0 Reference: BCUC EV Inquiry Phase Two Report, p. 39; Exhibit B-5, BCSEA-VEVA IR 5.2 EV Charging Service Resource Plan

On page 39 of the Phase Two Report, the BCUC stated:

> We consider such a plan to be essential – before any further investment is made. **Accordingly, we recommend that non-exempt public utilities be required to develop an "EVCS Resource Plan" for review by the BCUC.**
>
> The plan should be filed by any non-exempt public utility that intends to participate in the EV charging market. It should be persuasive that the non-exempt public utility's investment(s) are not reasonably expected to interfere with the private competitive market (similar to the California directions). The non-exempt public utility should also demonstrate that it has consulted with potentially affected exempt utilities. The BCUC should review the plan in an open and transparent process.
>
> This EVCS Resource Plan filing would take place in lieu of CPCN or capital expenditure approvals for individual projects. Approval of the plan (in part or in whole) facilitates an expedited buildout process for the non-exempt utility. Rates approval can be applied for during the buildout process. Any substantive changes to an already approved plan may necessitate an update to and review by the BCUC. [Bold in the original, emphasis added]

In response to BCSEA-VEVA IR 5.2, BC Hydro stated:

> For highway corridor locations, BC Hydro develops its EV fast charging deployment plans with reference to the following two studies which were funded by the Government of B.C:
>
> 1. A Gap Analysis for B.C.'s Electric Vehicle Direct Current Fast Charging Network (2015); and
>
> 2. British Columbia Direct Current Fast Charging (DCFC) Network Study: Core Network

for Geographic Connectivity (2018);

[…]

BC Hydro develops its deployment plans in consultation with representatives from the Ministry of Energy, Mines and Low Carbon Innovation and the Ministry of Transportation and Infrastructure. [Emphasis added]

31.1 Please provide BC Hydro's most recent deployment plan that was done in consultation with the Ministry of Energy, Mines and Low Carbon Innovation or the Ministry of Transportation and Infrastructure.

31.1.1 Please discuss how often BC Hydro updates its EV charging network deployment plans.

31.2 Please clarify whether BC Hydro has consulted with potentially affected exempt utilities in the development of its deployment plans referenced in the response to BCSEA-VEVA IR 5.2. If so, please provide a summary of the consultations undertaken to date and list the exempt utilities it has consulted with. If not, please explain why not.

F. CUSTOMER SERVICE

32.0 Reference: Exhibit B-1, Appendix B; Exhibit B-4, BCUC IR 17.1; BC Hydro Electric Tariff, section 9.5 Special Condition 1

In Appendix B, Rate Schedules 1360, 1560 and 1561, Special Condition 1 stipulates that:

1. BC Hydro does not guarantee charging speeds at a Fast Charging Station.

In response to BCUC IR 17.1, BC Hydro stated:

> BC Hydro did not seek specific feedback on Special Condition 1 and 2 prior to the public engagement on December 7, 2020, because they are similar to the terms and conditions of BC Hydro's Electric Tariff. More specially, Special Condition 1 is similar to section 9.5 of the Electric Tariff (Liability of BC Hydro). BC Hydro discussed this concept during the public engagement session as shown in page 39 of Appendix E.

Section 9.5 of the Electric Tariff states, in part:

> BC Hydro will endeavour to provide a regular and uninterrupted supply of Electricity but does not guarantee a constant supply of Electricity…

32.1 Considering that BC Hydro is proposing to bill customers by the time they spend charging, please clarify why BC Hydro did not specifically consult customers it was not guaranteeing charging speeds.

32.2 Does BC Hydro agree that one difference between Section 9.5 of the Electric Tariff and Special Condition 1 is that customers do not pay for the kWh if BC Hydro's supply of electricity is interrupted, whereas customers will still pay by the minute, even if the charging speed is not guaranteed?

33.0 Reference: Exhibit B-4, BCUC IR 17.2.5 Special Condition 6

In response to BCUC IR 17.2.5, BC Hydro stated:

BC Hydro uses the word "waive" to reflect the fact that may be situations where the customers will be allowed to charge an electric vehicle without any payment, due to, for instance, technical issues to connect to local cellular networks for payment.

33.1 Please clarify how, if a customer has technical issues to connect to local cellular networks for payment, that customer would have been able to activate the charging session. Or if the customer was able to activate the charging session (and has a minimum dollar amount in the account), how could the customer fail to pay?

G. FUTURE EVALUATION

34.0 Reference: Future Evaluation
Exhibit B-1, Appendix E, p. 8; Exhibit B-4, BCUC IR 1.3, 1.3.1
Separate Class of Service

In response to BCUC IR 1.3.1, BC Hydro stated:

> BC Hydro does not support the creation of a new rate class at this time. The creation of a new rate class requires a cost of service justification, and the appropriate cost studies have not and cannot be completed at this time. The service is still new and has been offered free of charge up until recently. Usage and load characteristics, which are key determinants in cost of service analysis, will change with the introduction of the rate as proposed in this Application. The completion of a reliable cost of service analysis needs to consider data collected after a rate is approved and introduced.
>
> The appropriate time to consider whether or not the creation of a new rate class is justified is upon the completion of the evaluation proposed in section 5 of the Application, the scope of which will include consideration of whether a new rate class should be developed.

On page 8 of the Public Engagement Presentation, BC Hydro states that it had started to pilot EV fast charging stations in 2013.

34.1 Given that BC Hydro has been providing EV fast charging service since 2013, please discuss whether the data collected to date with respect to the stations' costs could be used to complete a cost of service analysis. Why or why not?

34.2 Please discuss whether the stations' costs are expected to significantly change with an introduction of the proposed rate. Why or why not?

34.3 Please elaborate on the types of data that need to be collected to determine whether a new rate class should be developed for BC Hydro's EV fast charging stations that meet the definition of a prescribed undertaking.

34.4 Please clarify whether BC Hydro plans to prepare a Cost of Service Allocation (COSA) study as part of its analysis of whether a new rate class should be developed for its EV fast charging stations that meet the definition of a prescribed undertaking. Why or why not?

34.4.1 If not, then please explain how BC Hydro plans to determine if there is a cost of service justification for a new rate class.

34.5 If BC Hydro was directed to perform and file a COSA study for review, what is a reasonable time frame to have this completed?

In response to BCUC IR 1.3, BC Hydro stated:

In future Fully Allocated Cost of Service Studies, Rate Schedule 1360 Public Fast Charging Service 25 KW will be included in the analysis of the Small General Service rate class, and Rate Schedules 1560 and 1561 for Public Fast Charging Service at 50 kW and 100 kW respectively will be included in the analysis of the Medium General Service rate class.

[…]

The Fiscal 2022 revenue for fast charging services is estimated to be approximately $0.6 million based on the assumed station utilization and the Proposed Rate in the Application. In contrast, the annual revenue from the Medium General Service rate class of which Rate Schedule 1560 will be part for the purposes of the Fully Allocated Cost of Service Study was $394 million in fiscal 2020. The fast charging service under Rate Schedule 1560 will represent less than 0.16 per cent.

34.6 Please provide the annual cost of providing EV fast charging services relative to the annual cost of service of the Medium General Service rate class. Please provide this information in both dollars and in percentage and provide the supporting calculations.

34.7 Please provide annual revenue and cost of providing EV fast charging services under Rate Schedule 1360 relative to the annual revenue and cost of service of the Small General Service rate class.

35.0 Reference: BCUC Inquiry into the Regulation of EV Charging Service Phase 1, Exhibit C19-2, p. 12; Exhibit B-4, BCUC IR 15.3; Transcript Volume 8, p. 373
Exhibit A2-4, E3's New Economic Model Report, slides 6 and 28
Induced Effect

In response to BCUC IR 15.3, BC Hydro stated:

> BC Hydro's investment in fast charging service is expected to support electric vehicle adoption, which should help increase the size of the fast charging market overall. BC Hydro encourages investment by others in public electric vehicle fast charging services as such services reduce a barrier to electric vehicle adoption. Electric vehicle adoption, in turn, is expected to benefit all BC Hydro's ratepayers in the form of increased electricity sales and revenues. [Emphasis added]

At the Vancouver Community Input Session on April 16, 2018, Toronto Hydro stated:

> … EV charging decreases --and I emphasize, decreases -- the rates for all utility customers. The utility bills of EV customers more than offset the costs incurred by the utility to deliver the electricity to charge the vehicles… E3 also found that managed charging increases the grid benefits, and accelerating EV adoption does require infrastructure investment.

On page 12 of Exhibit C19-2, the Ministry of Energy, Mines and Petroleum Resources (MEMPR) stated:

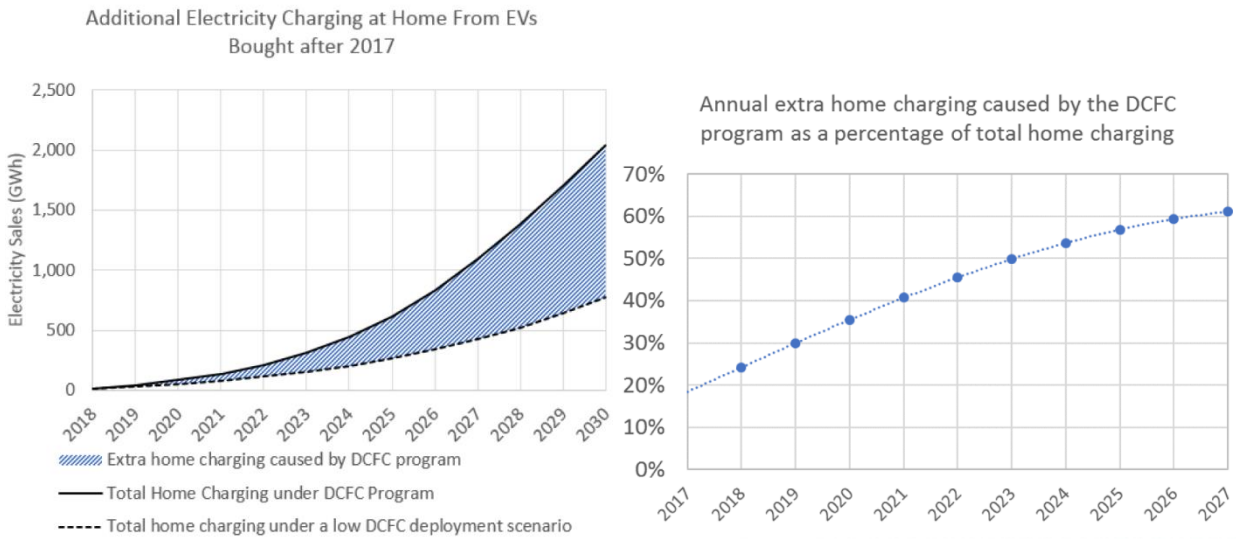
> a public utility may be able to demonstrate that the cost of public EV charging infrastructure can appropriately be recovered from revenue obtained through electricity sales at all EV charging stations within their service territories (i.e., through both public and private Level 1, 2 and 3 charging stations combined).

On slide 6 of E3's Report done for Hydro-Quebec, it states:

- The overall objective of the model is to calculate the additional kWh of home charging that occurs because Hydro-Quebec's proposed public DCFC deployment program.

- To established this, the "Induced Effect" needs to be modelled showing how HQs DCFC program impact the cumulative stock of EVs in Quebec."

On slide 28 of E3's Report, it states:



Description	Cumulative Totals	Units
Cumulative Sales in the Reference Scenario	1,753	GWh
Cumulative Sales in the HQ Scenario	3,859	GWh
Difference in Scenarios	2,106	GWh
% of new Home Charging due to HQ program	55%	

The "Difference in Scenarios" represents the added value HQ program has in Quebec instead of an alternative scenario involving Circuit Électrique and/or private sector 3rd parties

28

35.1 Please comment on whether BC Hydro agrees with the statements made by Toronto Hydro and MEMPR.

35.2 Please clarify whether BC Hydro has done any economic modelling of the type provided by E3 to Hydro-Quebec to support its statements above that its investment in fast charging service is expected to support EV adoption, which in turn is expected to benefit all BC Hydro's ratepayers in the form of increased electricity sales and revenues. If not, please explain why not. If so, please provide it.

35.2.1 If BC Hydro has not yet undertaken such a study, would BC Hydro be amenable to provide it as part of its Evaluation Report filed no later than March 31, 2024? If not, please explain why not?

35.3 If BC Hydro were to undertake a study of the type performed by E3 for Hydro-Quebec, does BC Hydro expect that it could demonstrate that the cost of public EV charging infrastructure can appropriately be recovered from revenue obtained through electricity sales at all EV charging stations within their service territories (i.e., through both public and private Level 1, 2 and 3 charging stations combined), as stated by MEMPR? Why or why not?

36.0 Reference: Exhibit A2-1: Excerpt from the Government of Canada Budget 2021: A Recovery Plan for Jobs, Growth and Resilience 2021; Exhibit B-4, BCUC IR 12.2 Measurement Canada timeframe for approving kWh-based billing

On page 12 of the Application, BC Hydro states:

> In addition to the standards development process, BC Hydro will also participate in the Measurement Canada initiated public consultation process that will start in early 2021. This process is expected to develop performance-based standards that would allow existing and new electric vehicle charging stations that meet established technical standards to charge based on kilowatt-hours (kWh) consumed. The expected timeline for this public consultation process is over the next 18 months.

On page 164 of the Federal Budget 2021, it states:

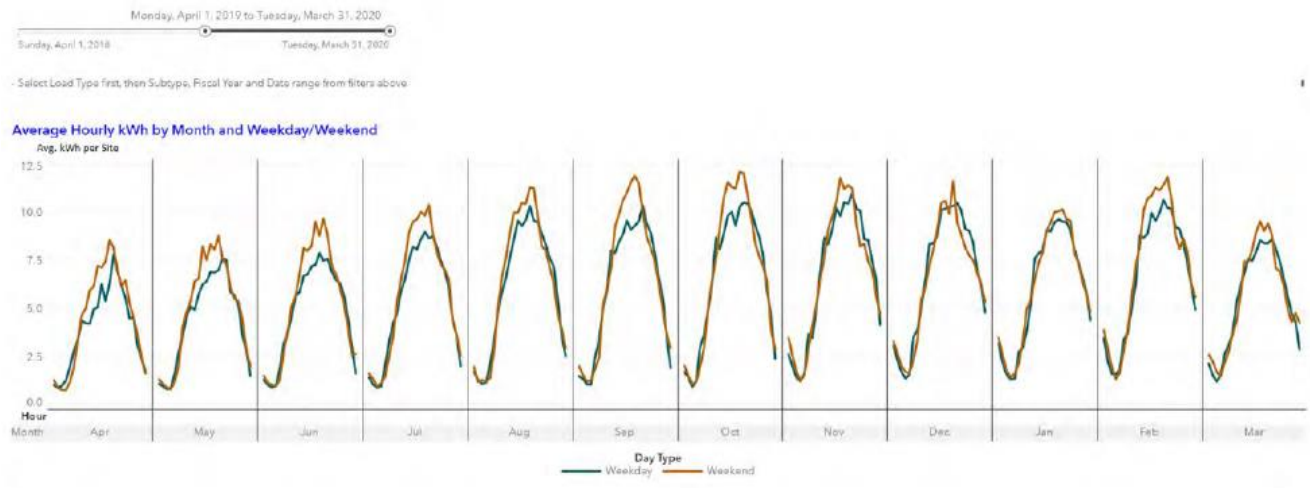
> Budget 2021 proposes to provide $56.1 million over five years, starting in 2021-22, with $16.3 million in remaining amortization and $13 million per year ongoing, to Measurement Canada to develop and implement, in coordination with international partners such as the United States, a set of codes and standards for retail ZEV [zero-emission vehicles] charging and fueling stations. This would include accreditation and inspection frameworks needed to ensure the standards are adhered to at Canada's vast network of charging and refueling stations. This measure would provide regulatory certainty to providers of charging services and facilitate the development of the charging network. It would also give more Canadians confidence to purchase and drive ZEVs. [Emphasis added]

36.1 Considering that Measurement Canada received federal funding in Budget 2021 for the next five years to develop and implement a set of codes and standards for retail ZEV charging and fueling stations, based on BC Hydro's participation in the consultation process, please discuss the likelihood that Measurement Canada may take up to five years to approve a DC measuring device that would allow per-kWh billing.

36.2 Considering customers' strong preference for kWh-based billing, if Measurement Canada does not have an approved DC-measuring device by the time BC Hydro files its Evaluation Report, would BC Hydro be amenable to introduce alternative rate structures such as those currently in effect at Tesla or Electrify Canada fast chargers, which BC Hydro submits may perform better in fairly allocating costs than a time-based billing? Please explain why or why not.

In response to BCUC IR 12.2, BC Hydro stated:

> For the period between April 1, 2019 and March 31, 2020, based on the site-level metering information for the average hourly kWh information is provided in a graphic form below. In terms of aggregate peak hourly kWh, the peak occurred on October 20, 2019 at 4 p.m. at 915 kW.



36.3 Please expand the graph above to clearly display the information and describe what the graph shows.

36.4 Does BC Hydro plan to record data from each individual charging session at each fast charging station to gather data on how the charging power rate varies during a charging session as the battery gets recharged? Could this data potentially inform alternative time-based pricing structures in three years if Measurement Canada has not yet approved a measuring device to bill per kWh? Please discuss.

37.0 Reference: Exhibit B-4, BCUC IR 18.3, 18.6.1; Exhibit B-5, BCSEA-VEVA IR 5.2
Idles fees

In response to BCUC IR 18.3, BC Hydro stated:

> However, as described in BC Hydro's response to BCUC IR 1.18.7, it is not currently technically feasible to have an idle fee in BC Hydro's EV network billing platform. BC Hydro also does not have sufficient data or customer input regarding charging idle fees at this time. BC Hydro will collect data where possible and practical and will monitor customer behaviour with respect to idle time.

37.1 Please clarify how BC Hydro plans to gather data and monitor customer behaviour with respect to idle time.

37.2 Is BC Hydro planning to report on this issue as part of its Evaluation Report to be filed no later than March 31, 2024?

In response to BCUC IR 18.6.1, BC Hydro stated:

> Please refer to BC Hydro's response to BCUC IR 1.18.3 where BC Hydro states that the idle fees could dissuade users of a fast charging station from occupying the station longer than necessary, thereby potentially as a means to maximize availability of fast charging stations for all users. Thus, if an idle fee were to be set, it could increase station utilization. However, we do not have sufficient information to provide a quantitative estimate any resulting increase in utilization or cost recovery.
>
> BC Hydro notes that an idle fee could reduce overall customer satisfaction.

In response to BCSEA-VEVA 5.2, BC Hydro stated:

> The decision to expand an existing site beyond two EV fast charging stations will be dependent on station utilization and the incidence of station congestion. Excessive

queuing can lead to a poor customer experience and may inhibit the adoption of electric vehicles.

37.3 In BC Hydro's view, is it preferable to increase customer satisfaction with strategies designed to avoid excessive queuing such as adding stations on sites and introducing idle fees or increase customer satisfaction by not introducing idle fees for those who continue to occupy a station after the charging session is complete? Please discuss.