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April 26, 2021

VIA ELECTRONIC MAIL

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**Attention: Patrick Wruck, Commission Secretary
and Manager, Regulatory Support**

Dear Sirs/Mesdames:

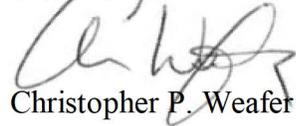
**Re: British Columbia Hydro and Power Authority ("BC Hydro") Public Electric Vehicle
("EV") Fast Charging Rate Application ~ Project No. 1599190**

We are counsel to the Commercial Energy Consumers Association of British Columbia (the "CEC"). Attached please find the CEC's first set of Information Requests with respect to the above-noted matter.

If you have any questions regarding the foregoing, please do not hesitate to contact the undersigned.

Yours truly,

OWEN BIRD LAW CORPORATION



Christopher P. Weafer

CPW/jj
cc: CEC
cc: BC Hydro
cc: Registered Interveners

REQUESTOR NAME: **Commercial Energy Consumers Association of British Columbia**

INFORMATION REQUEST ROUND NO: **1**

TO: **British Columbia Hydro and Power Authority**

DATE: **April 26, 2021**

PROJECT NO: **1599190**

APPLICATION NAME: **British Columbia Hydro and Power Authority – Public Electric Vehicle Fast Charging Rate Application**

1.0 Reference: Exhibit B-1, page 2 and 3

First, in absence of the approved Proposed Rates, BC Hydro cannot collect any revenue from users of the fast charging service as a BCUC approved rate is required in order for BC Hydro to charge for the fast charging service. This means that absent BCUC approved rates for fast charging service, the entire cost for providing the fast charging service is recovered from all ratepayers. Under section 18 of the *Clean Energy Act*, BC Hydro is allowed “to collect sufficient revenue in each fiscal year to enable it to recover its costs incurred with respect to

the prescribed undertaking.”³ The Proposed Rates, will allow BC Hydro to collect revenue to recover as much as practical of the cost of providing the fast charging service from users of the service, which will reduce costs that must be recovered from all ratepayers. How this is achieved is further described in section [4](#) below.

- 1.1 For how long has BC Hydro been providing fast charging and not collecting revenue from the users?
- 1.2 Please explain why BC Hydro did not bring an application forward prior to this in order to collect revenue.
- 1.3 Please explain what BC Hydro means above by ‘as much as practical’.

2.0 Reference: Exhibit B-1, page 5 and 6

Phase 2 focused on and clarified the role of “non-exempt public utilities” (e.g., BC Hydro and FortisBC Inc.) in providing the public electric vehicle charging service. Findings from the Phase 2 EV Inquiry⁷ that BC Hydro has considered in the design of the Proposed Rates include:

1. It is in the public interest to ensure that the playing field remains as level as possible. There is an opportunity for thoughtful regulation to ensure that non-exempt public utility investments do not crowd out exempt utility investments.
2. Regulatory oversight can help mitigate ratepayer risk and potential impact on exempt utilities.
3. Non-exempt public utilities should develop a separate rate and tariff (or a separate class of service) for any operators utilizing any level of charging, other than Level 1 or 2.
4. It is in the public interest for non-exempt public utilities to provide a transparent wholesale pricing mechanism that applies to all operators of EV charging

facilities other than Level 1⁸ and Level 2,⁹ including the non-exempt public utility itself.

- 2.1 Please explain how BC Hydro’s proposed rates ‘keep the playing field as level as possible’ and provide quantification of any differences in costs and opportunities to recover costs between BC Hydro’s EV charging rates and the competitive market.
 - 2.1.1 Can private sector EV charging investors compete effectively against BC Hydro on price or geographic location or other important metrics? Please explain.
 - 2.1.1.1 Please compare the BC Hydro proposed leveling of the playing field with the Commission approved process for TES competition.
 - 2.1.2 Please elaborate on how regulatory oversight can help mitigate ratepayer risk.
 - 2.1.2.1 What factors should the Commission consider in mitigating ratepayer risk?

- 2.1.2.2 How would BC Hydro define 'ratepayer risk'? Please provide quantification of what would be considered high, medium, and low risk.
- 2.1.2.3 How would BC Hydro characterize the risk arising from this application? Please explain and provide quantification of the risk.
- 2.1.2.4 Please explain why BC Hydro incorporated its EV charging rates into existing rate classes instead of developing an entirely separate rate class.
 - 2.1.2.4.1 Please explain how the incorporation of BC Hydro's EV charging rates would be expected to impact the Revenue to Cost ratios of the 3 rate classes which are including EV charging. Please provide range of estimates quantitatively assuming differing levels of EV uptake.
 - 2.1.2.4.1.1 How will BC Hydro handle the incorporation of EV charging into the 3 rate classes during its next Cost of Service analysis?
- 2.1.3 Please describe what is meant by a transparent, wholesale pricing mechanism.
 - 2.1.3.1 How does BC Hydro's application meet this objective?
- 2.1.4 Is this a complete list, the four items above, of findings, or are there any other findings that BC Hydro did not believe needed to be addressed in this application? Please explain.
 - 2.1.4.1 If there are other findings that were not addressed, please identify and explain why there were not considered to be relevant, and how they will be addressed in the future.

3.0 Reference: Exhibit B-1, page 7

In the F2022 RRA BC Hydro did not forecast any revenues from service related to electric vehicle stations because BC Hydro has no approved rates for providing the service. Only costs are included in BC Hydro's F2022 RRA. Accordingly, there were no revenue amounts recorded in the Electric Vehicle Costs Regulatory Account for fiscal 2020 and fiscal 2021.

Any revenues collected under the Proposed Rates for public electric vehicle fast charging service will be captured in BC Hydro's Cost of Energy Variance Accounts, (to the extent that they contribute to an overall variance compared to planned revenues in the year), such that ratepayers will get the benefit of these revenues in future periods.

- 3.1 Why does BC Hydro not capture revenue amounts in the EV Costs Regulatory Account or amend the terms of the account if necessary?
- 3.2 Please explain and quantify the different impacts that would occur if BC Hydro were to capture revenue in the Electric Vehicle Costs Regulatory Account instead of the Cost of Energy Variance Accounts.
- 3.3 Please explain whether or not the BC Hydro Cost of Energy Variance Account captures the cost of supplying energy through BC Hydro's EV charging stations and whether or not these energy costs from past delivery of EV charging would be recovered in future revenue.

4.0 Reference: Exhibit B-1, page 8

Section 18 does not specify from whom the revenue should be collected. For fast charging stations that qualify as prescribed undertakings, BC Hydro can recover costs from all ratepayers and not just from those who use the service. The Proposed Rates, if approved, would allow BC Hydro to collect revenues directly from those who use the fast charging service, which will reduce costs that need to be recovered from all ratepayers.

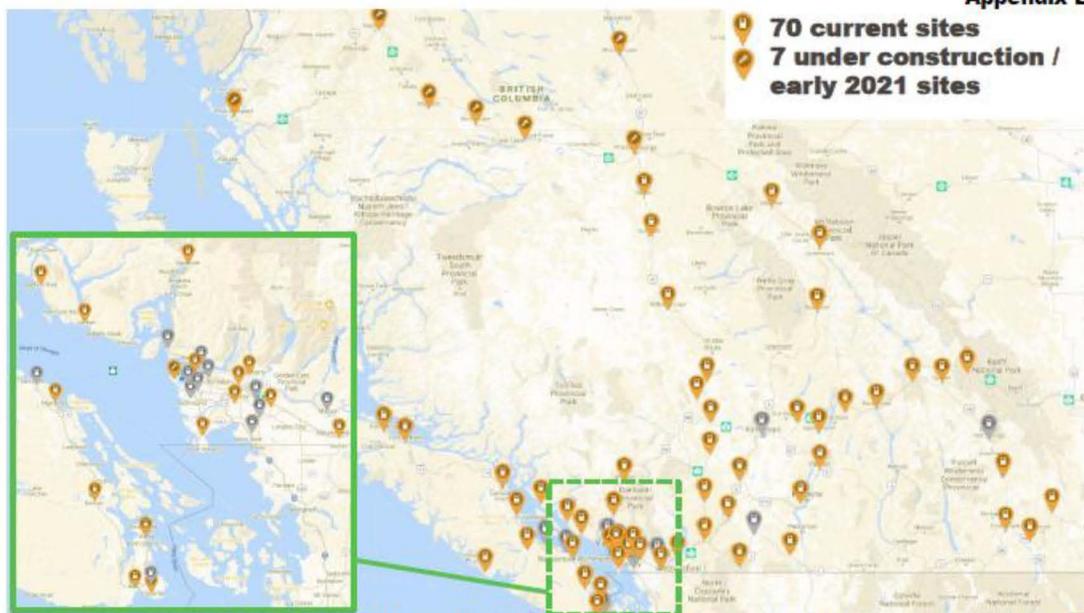
Additionally, the rate setting functions of the BCUC are governed by sections 58 to 61 of the UCA, and the BCUC has considerable discretion in setting rates pursuant to sections 59 and 60 of the UCA. Section 60(1)(b) provides that in setting a rate, the BCUC “must have due regard to the setting of a rate that: (i) is not unjust and unreasonable within the meaning of section 59; (ii) provides the public utility for which the rate is set a fair and reasonable return on any expenditure made by it to reduce energy demand; and (iii) encourages public utilities to increase efficiency, reduce costs and enhance performance”. When setting a rate, the BCUC must also “consider all matters that it considers proper and relevant affecting the rate”. BC Hydro respectfully request that the BCUC approve the Proposed Rates as just and reasonable.

- 4.1 Please confirm, or otherwise explain, that notwithstanding the lack of specification from whom the revenue should be collected, an important aspect of rate design includes the principle of cost causation, such that revenues are best recovered from those customers who cause the costs.

5.0 Reference: Exhibit B-1, page 10 and Appendix E page 10 of 44

2.1 BC Hydro’s Fast Charging Stations

The Federal and Provincial Government provided grants to build charging stations, which BC Hydro deployed strategically to meet the needs of potential electric vehicle charging service users. Fast charging stations along highway corridors make inter-city travel in an electric vehicle possible, and fast charging stations in urban and suburban locations provide alternatives for electric vehicle drivers who do not have access to charging stations at home or work. Fast charging service may also be needed if the electric vehicle is in heavy use and a sufficient charge cannot be achieved with the more widely available Level 2 charging. A Level 2 charger with charging capacity of 3.6 kW to 7.2 kW can take six to eight hours to charge an electric vehicle.



BC Hydro Public Electric Vehicle Fast Charging Rate Application Page 10 of 44

- 5.1 Please provide a map of BC Hydro's current and proposed charging stations, and identify the charging levels for each station.
- 5.2 Are any of BC Hydro's charging stations located in the FBC service area? Please explain.
 - 5.2.1 If yes, please identify any issues that arise as a result of this overlap and discuss how BC Hydro and FBC manage those issues.
- 5.3 Are any of FBC's charging stations located in the BC Hydro service area? Please explain.
 - 5.3.1 If yes, please identify any issues that arise as a result of this overlap and discuss how BC Hydro and FBC manage those issues.

6.0 Reference: Exhibit B-1, page 10

2.1 BC Hydro's Fast Charging Stations

The Federal and Provincial Government provided grants to build charging stations, which BC Hydro deployed strategically to meet the needs of potential electric vehicle charging service users. Fast charging stations along highway corridors make inter-city travel in an electric vehicle possible, and fast charging stations in urban and suburban locations provide alternatives for electric vehicle drivers who do not have access to charging stations at home or work. Fast charging service may also be needed if the electric vehicle is in heavy use and a sufficient charge cannot be achieved with the more widely available Level 2 charging. A Level 2 charger with charging capacity of 3.6 kW to 7.2 kW can take six to eight hours to charge an electric vehicle.

The time required to charge an electric vehicle is dependent on the vehicle battery size, battery charge level when fast charging commences, and the outdoor air temperature. A 50 kW fast charging station can charge an electric vehicle to 80 per cent within 30 to 40 minutes, depending on the size of the battery and how depleted the battery is when charging commences. 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. 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.

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 once the vehicle battery exceeds 90 per cent capacity.

- 6.1 Are the BC Hydro fast charging stations essentially the same as the FBC fast charging stations? Please identify and comment on any differences in the technology or performance of the fast charging stations.
 - 6.1.1 Please identify and quantify any capital cost differences that BC Hydro is aware of between BC Hydro's and FBC's fast charging stations.

- 6.1.2 Please identify and quantify any operational cost differences that BC Hydro is aware of between BC Hydro's and FBC's fast charging stations.

7.0 Reference: Exhibit B-1, page 11

The majority of BC Hydro's fast charging stations have a nameplate capacity of 50 kW, though BC Hydro will be providing 25 kW and 100 kW stations in some locations. BC Hydro maintains a number of 25 kW stations in inventory, mainly as temporary replacements of 50 kW stations undergoing maintenance and repair, when replacement parts for the 50 kW stations are not readily available or the stations cannot be repaired on-site. A 25 kW station may be temporarily installed to maintain fast charging availability at the site. The 25 kW stations are also useful in locations wherein only single-phase electricity is available or there are other electrical service constraints.

- 7.1 Please provide the number of 25kW, 50kW and 100kW stations that BC Hydro currently has in operation.
- 7.2 Please provide the number of 25kW, 50kW and 100kW stations that BC Hydro expects to have in operation by the end of 2021, the end of 2022, and the end of 2023.
- 7.3 How many 25kW stations does BC Hydro currently have available as back-up replacements for those stations undergoing maintenance and repair?
- 7.4 What is the capital cost of each 25kW, 50 kW and 100 kW station?

8.0 Reference: Exhibit B-1, page 11

BC Hydro currently has one 100 kW charging station, which is undergoing a period of testing before it is deployed to a site. Plans for deploying more 100 kW fast charging stations have not been finalized and will be subject to availability of government funding and suitability for potential sites.

- 8.1 When does BC Hydro expect to deploy the 100kW charging station?
- 8.2 When does BC Hydro expect to finalize its plans for the deploying more 100 kW fast charging stations?
- 8.3 Please quantify the levels of government funding that BC Hydro expects to have available, and discuss how varying levels of funding will affect BC Hydro's plans.

- 8.4 What factors does BC Hydro consider when assessing suitability of potential sites? Please discuss and provide quantification for items such as usage levels or cost of deployment.

9.0 Reference: Exhibit B-1, page 11 and 12

2.2 Metering for Fast Charging Station Service

The Proposed Rates are time based. Each charging station has a built-in timing device, which will measure the charging time by the second. The total time for each charging session will be displayed in minutes and seconds shown on the billing receipt at the end of each charging session.

Although customer and stakeholder support for an electricity-based or a combination electricity-and-time-based rate was expressed during BC Hydro's public and stakeholder consultations as discussed in section 3 below, only a time-based rate is possible at this time due to the lack of a Measurement Canada approved standard to measure direct current (DC) power. While the electricity provided to the fast charging station, including the charging equipment, lighting and ancillary equipment (e.g., heating and cooling), can be metered with current Measurement Canada approved revenue metering equipment, there is no Measurement Canada approved solution measuring the electricity dispensed from the station to the battery of the electric vehicle.

The American National Standards Institute (ANSI) metering working group is currently developing a DC metering standard (ANSI C12.32), which will establish acceptable performance criteria for revenue grade DC kWh energy and kW demand meters. BC Hydro has been monitoring the development of the new DC metering standard. The new standard is currently under review by various North American utilities and equipment manufactures for formal approval.

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.

- 9.1 Does BC Hydro anticipate changing to an electricity-based or electricity and time-based or other rate design if and when measuring equipment is available? Please explain.

10.0 Reference: Exhibit B-1, pages 12-13

3 Public Engagement, Market Research and Jurisdiction Review

3.1 Customer Research and Insights

BC Hydro conducted a series of personal interviews and an online survey to better understand the public's sentiment around potential rates for fast charging service.

Personal Interviews

From August 20, 2020 to September 15, 2020, BC Hydro conducted nine, one-hour interviews over-the-phone with electric vehicle drivers in B.C. to gather feedback. Interviewees were selected from a pool of electric vehicle drivers who have engaged with BC Hydro in the past, representing organizations such as Vancouver Electric

Vehicle Association, Victoria Electric Vehicle Club, Electric Vehicle Peer Network, Fraser Basin Council, BCIT Smart Microgrid Applied Research Team. Interviewees were also selected to be representative of demographics such as region, housing type, electric vehicle use and length of electric vehicle ownership. Interviewees were asked for their feedback on:

- Preferred charging rates for 50 kW fast charging service (20 cents per minutes, 25 cents per minute or 30 cents per minute);
- Whether rates should vary by station power levels (e.g., 25 kW and 100 kW); and
- Potential future pricing models.

Results

- Most interviewees supported a 20 cents per minute rate, indicating a preference for the lowest rate. They stated that the 30 cents per minute rate was too high, which would influence their decision to not use the fast charging service.
- There was consensus that the rate for fast charging station service should vary correspondingly with the power levels of a charging station. That is, the rate for using a 100 kW fast charging station should be higher than the rate for a 50 kW fast charging station.
- Regarding other potential pricing structures, interviewees overwhelmingly supported an electricity-based rate over a purely time-based rate. There was also support for a time-varying rate whereby the rate is lower overnight.

- 10.1 Why did BC Hydro decide to conduct nine phone interviews, as opposed to any other number such as 20 or 30?
- 10.2 Please explain why BC Hydro did not select a process with a sample size sufficient to represent the views of a specific population being interviewed.
- 10.3 Please confirm that EV users and EV user organizations do not necessarily represent the full breadth of 'public sentiment'.
- 10.4 Please confirm that EV drivers, and organizations representing EV drivers, have a vested interest in securing the lowest rates possible.
- 10.5 To the extent that non-EV users have or could potentially subsidize the cost of EV charging depending on circumstances, and BC Hydro, with BCUC approval, has discretion to propose which customers from whom it will recover its, has BC Hydro at any point conducted any surveys or used any other measures to specifically acquire information from non-EV users as to the appropriate rate and cost recovery levels?
- 10.5.1 If not, why not.
- 10.5.2 If yes, please describe the methodology, number of respondents, and results from such measures.
- 10.6 Has BC Hydro conducted phone interviews or used other means to solicit information from organizations that could represent potential competitors, either as independent EV stations providers, or ratepayers with commitments to the internal combustion engine such as gasoline station owners? Please explain and provide the results of any such surveys.

11.0 Reference: Exhibit B-1, page 14

Survey

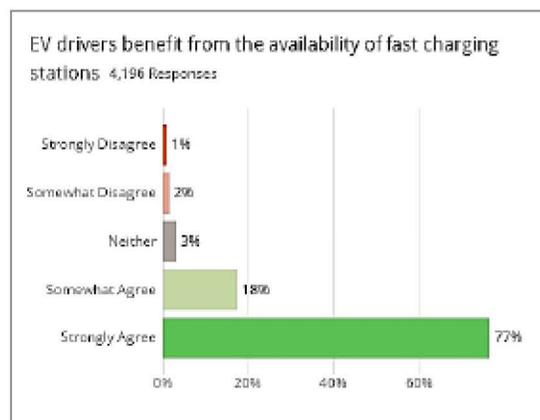
BC Hydro commissioned Leger¹¹ to conduct a web survey regarding electric vehicle fast charging service rates. The survey was conducted from August 26, 2020 to September 7, 2020. The survey, which returned 4,196 responses from 11,398 survey invitations, asked respondents for their opinion on paying to use fast charging station services and provided the opportunity to provide general feedback on rates and user experience. The response rate of 37 per cent provides confidence that the results reflect the sentiment of a broad population of potential fast charging station users. Appendix D to the Application provides further information on the survey and detailed results.

- 11.1 Please provide the number of EV vehicles in the province.
- 11.2 Please provide the approximate number of non-EV vehicles.
- 11.3 Please describe how BC Hydro/Leger selected the web-survey invitees.
- 11.4 Why did BC Hydro not offer the survey to all BC Hydro customers? Please explain.

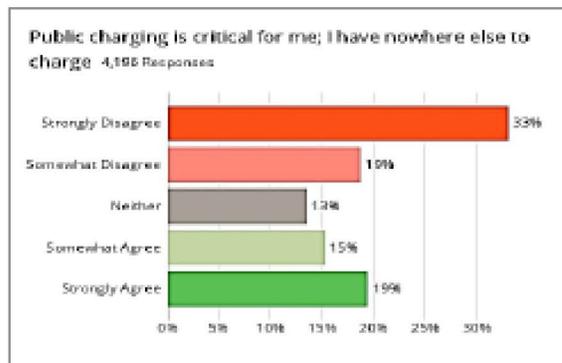
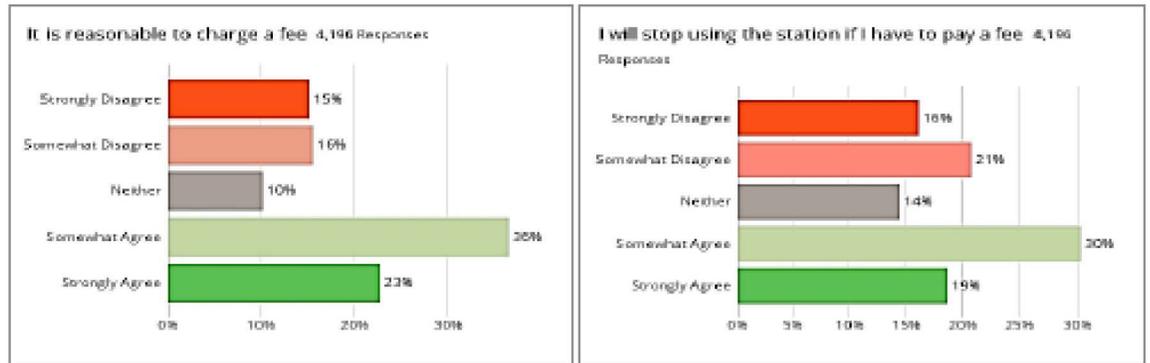
12.0 Reference: Exhibit B-1, pages 14-15

Quantitative Results

- *General:* Most (94 per cent) respondents agree that electric vehicle drivers benefit from the availability of public fast charging stations.



- Support for a fee:** While almost two-thirds (59 per cent) indicate it is reasonable to charge a rate for the use of a public fast charging station, about half (49 per cent) indicate they would stop using the service if a rate is introduced. One-third (34 per cent) indicate public charging service is critical to them and they have nowhere else to charge.



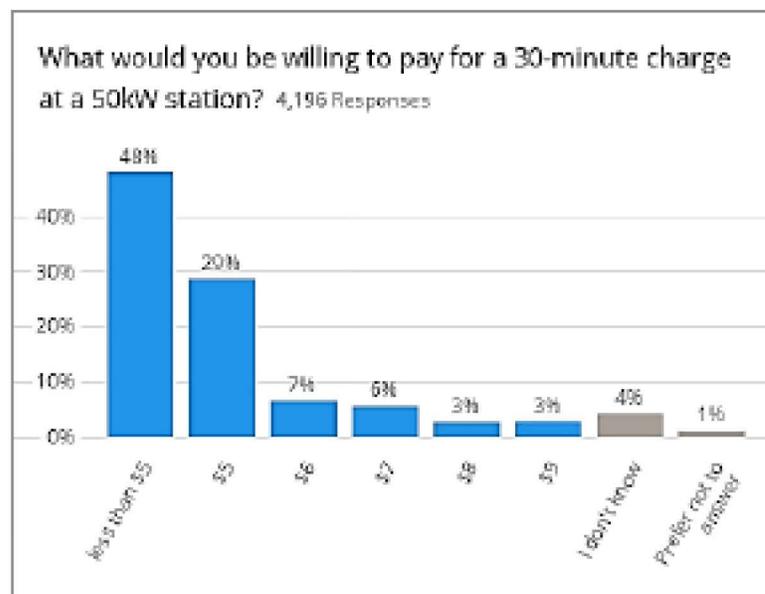
12.1 Please confirm or otherwise explain that it would be expected that those 49% of customers who would stop using the service if a fee were introduced would presumably charge at home, where they would potentially pay for incremental energy charges, or would charge at non-BC Hydro charging stations, where they may or may not pay for electricity charging.

12.1.1 Please identify how many free charging stations are in existence in BC that are not operated by BC Hydro.

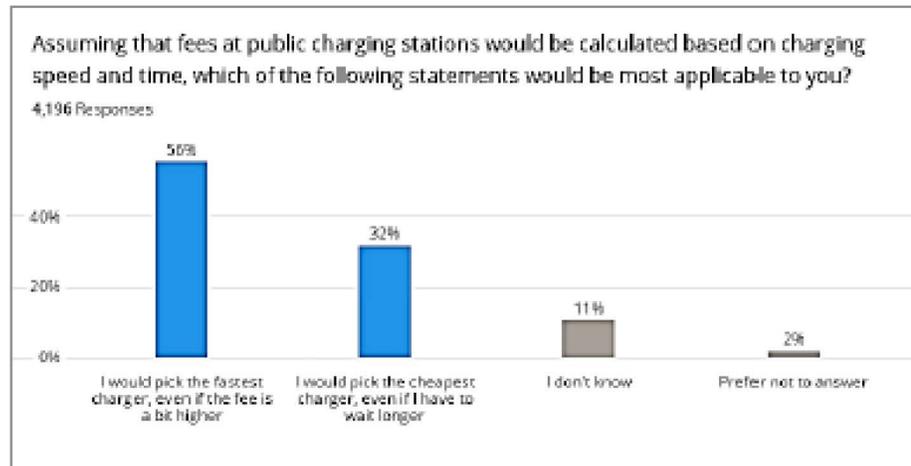
12.1.2 Please confirm or otherwise explain that BC Hydro has at no time made a public commitment to offering free EV charging on a permanent basis or for any other period of time.

13.0 Reference: Exhibit B-1, page 15 and 16

- *Price:* If a 50 kW charging station service includes most of the features important to them – such as multiple stations per site (to reduce waiting time) and easy-to-find and safe locations that are close to amenities – half (48 per cent) of respondents would be willing to pay less than \$5 for a 30-minute charging session and almost one-third (29 per cent) would be willing to pay \$5. This translates to most (77 per cent) willing to pay approximately 17 cents per minute or less.



- *Price and power levels:* More than one-half (56 per cent) would pick the fastest charging station even if the fee is a bit higher. One-third (32 per cent) would choose the least expensive charging station even if it means a longer wait time.



- 13.1 Recognizing that vehicles vary significantly in their economics, please provide a comparison of the cost per kilometer of running a high economy vehicle paying a rate of \$5/30 minutes of charging, vs a rate of \$1.00 per gallon of gasoline.
- 13.2 Approximately how far can an economy EV or hybrid vehicle travel on a highway on a 30-minute charge? Please provide a range of distances by EV vehicle efficiency.
- 13.3 Please confirm or otherwise explain that \$0.17/minute would equate to about \$5.10/30 minutes.
- 13.4 Of the 34% of customers who have nowhere else to charge other than public charging stations, please identify what percentage would support a price of \$5 for a 30 minute charging session.
- 13.5 Please confirm that a \$5 price for EV charging would not be a bright line for uptake of non-uptake of an EV charging service, but that price would have a curvilinear relationship to uptake.
- 13.6 Please provide BC Hydro's understanding of the curvilinear relationship of price to uptake with respect to EV charging, and whether or not BC Hydro has done any research on this topic.

14.0 Reference: Exhibit B-1, page 17

Qualitative Results

The survey also gave respondents the opportunity to provide any other feedback regarding potential fast charging service rates. 2,149 respondents provided such feedback, a high-level summary of which is provided below:

- *Keep it free:* Respondents who want to keep this service free mention the availability of free fast charging service as one of the factors they use to justify the expense of an electric vehicle purchase, and that a fee “punishes” drivers who are doing their part for the environment. Some would like to postpone the introduction of a rate until electric vehicle adoption reaches some critical mass. Others would like for BC Hydro to focus on improving station reliability and expanding the network before charging a rate for the service.

- 14.1 How did BC Hydro balance the self-interest of those surveyed with electric vehicles against the interests of those customers who do not have or cannot afford electric vehicles?

15.0 Reference: Exhibit B-1, pages 18 and 19

Key Takeaways from Customer Research

In analyzing the personal interviews and survey results, we observe the following key takeaways:

- A rate should be low enough to not discourage electric vehicle adoption;
- A rate could lead to higher expectations of user experience and station reliability;
- An electricity-based rate is overwhelmingly preferred to a time-based rate; and
- A rate may help free up fast charging stations for those who have nowhere else to charge.

- 15.1 Please note where it is included in the evidence of personal interviews and survey results that a rate should not be high enough to discourage EV adoption.

- 15.2 Please identify the rate which would be logically considered to discourage electric vehicle adoption, and provide the supporting evidence.

16.0 Reference: Exhibit B-1, page 19

3.2 Public Engagement Workshop

BC Hydro hosted a fast charging service rate design virtual workshop through WebEx on December 7, 2020. The workshop invitation was sent to electric vehicle drivers and individuals who responded to the survey discussed in section [3.1](#) above, as well as to other stakeholders and interested parties. In total, 2,970 invitations were sent and 320 registrants participated in the workshop. The workshop presentation is included as Appendix E.

Workshop participants were asked to complete a feedback form, which required responses to ten pre-determined questions, and 359 feedback forms were received. Replies to the feedback form were analyzed using the Qualtrics research tool. The final report is included as Appendix F. The following key results emerge from the feedback:

- Fifty-one per cent of respondents indicate that the rate for a 50 kW charger should be less than 20 cents per minute, with an additional 38 per cent indicating that it should be between 20 cents to 25 cents per minute.

- 16.1 Please provide an overview of the 'other stakeholders and interested parties' who participated including quantification of the stakeholders and their interest groupings.
- 16.2 Please identify the number of workshop participants who also participated in the survey.

17.0 Reference: Exhibit B-1, page 24

Table 2 Jurisdiction Review of Rates for Fast Charging Service as of February 2, 2021

Operator	Service	Rate (cents/min) @ Power Level	Number of Sites and Fast Chargers in B.C.
City of North Vancouver	<ul style="list-style-type: none"> Single 50 kW charger 	20¢ 50 kW	<ul style="list-style-type: none"> 1 site 1 charger
City of Vancouver	<ul style="list-style-type: none"> Single or 2x 50 kW chargers 	21¢ 50 kW	<ul style="list-style-type: none"> 5 sites 9 chargers
Electrify Canada	<ul style="list-style-type: none"> 4x chargers up to 350 kW Ample lighting, major retail parking lots 	27¢ <90kW* 57¢ >90kW* *20% member discount available for \$4/month	<ul style="list-style-type: none"> 3 sites (additional 5 sites under construction) 12 chargers
FortisBC	<ul style="list-style-type: none"> Single or 2x 50 kW chargers 	<u>Current:</u> 30¢ 50 kW <u>Proposed:</u> 27¢ 50 kW 54¢ 100 kW	<ul style="list-style-type: none"> 15 sites 20 chargers
Hydro Quebec Electric Circuit Network	<ul style="list-style-type: none"> Basic to high quality stations Single, 2x, 4x, 6x – 50 kW, and some 100 kW 	20.1¢ 50 kW 20.1¢ 100 kW* *interim rate	<ul style="list-style-type: none"> ~250 sites in Quebec
Petro-Canada	<ul style="list-style-type: none"> 2x chargers up to 350 kW Ample lighting, on-site amenities/staff 	27¢ up to 350 kW	<ul style="list-style-type: none"> 12 sites 23 chargers
Tesla	<ul style="list-style-type: none"> Proprietary stations (Tesla only) Many chargers per site 	22¢ <60kW 44¢ >60kW	<ul style="list-style-type: none"> 16 sites 172 chargers

BC Hydro's Proposed Rates are designed to align with prices of other fast charging operators.

- 17.1 Please confirm or otherwise clarify the CEC's understanding that FBC reduced its originally proposed rate of \$0.27/minute to \$0.26/minute for 50kW charging.
- 17.2 Would Petro-Canada be considered a 'competitor' to BC Hydro for EV charging? Please explain why or why not.

18.0 Reference: Exhibit B-1, Appendix D, page 5 of 27

Methodology

METHODOLOGY

 The survey questionnaire consisted of two sections (Section A and Section B). Section A is a repeat of the 2019 EV Fast Charging Support Services Survey, while Section B was a new set of questions regarding fast charging rates and the fast charging experience overall. The two target groups were defined for this survey. The first target group (1,034 records) completed both Section A and Section B questions, while the second group (10,364 records) got Section B questions only. This report shows the combined results for both target groups for Section B only. The Section A report will be provided under separate cover.

 Data collection methodology – web survey

 Number of completions – 4,196 overall, including 346 completions for target group 1 and 3,850 completions for target group 2.

 Fieldwork was conducted from August 26 to September 7, 2020

 Leger was responsible for survey hosting and programming, providing the survey links for each target group, data collection and data processing. BC Hydro deployed the survey links via email to the two target groups, who are all BC Hydro charging station users.

18.1 Please describe what constituted the first target group and the second target group.

18.2 How were these target groups selected?

19.0 Reference: Exhibit B-1, page 25

BC Hydro considered the feedback from customers and stakeholders when designing the Proposed Rates. For example, our Proposed Rates are within the range considered passable to customers and stakeholders. Further, while BC Hydro considered proposing a single rate for all station power levels, based on the feedback shown in section [3.2](#), we decided to propose a different rate for each of the three station power levels. In addition, as suggested in the customer feedback, BC Hydro's Proposed Rates are higher than the rate to charge at home, but less than that of operators such as Tesla and Petro Canada, and also less than the equivalent of a tank of gas. For example, the average cost for a charging session at a BC Hydro fast charging station is \$6. In comparison charging at a Tesla or Petro Canada fast charging station may be \$8 or more, while charging at home under BC Hydro's residential service rate schedule may be \$2 and a tank of gasoline may be at least \$20.

- 19.1 Please provide an expected cost of filling an average size tank with gasoline.

20.0 Reference: Exhibit B-1, pages 25-26

BC Hydro's longer-term rate design objective is for the fast charging service rates to collect sufficient revenues from the users of the service to recover its full costs

including electricity (Energy and Demand), as well as the fast charging station maintenance and capital costs, on a portfolio (or all station) basis. However, achieving this objective will require station utilization levels to be higher than what can be expected over the near term. To encourage station utilization while maintaining a level playing field with other fast charging station operators, the Proposed Rates are designed to align with prices of other operators, to fall within the range of prices that research indicates customers are willing to pay, and to collect sufficient revenue to recover at least the cost of electricity based on BC Hydro's General Service rate schedules as further described below. Higher rates would reduce initial station utilization and BC Hydro expects this would reduce revenue recovery.

- 20.1 Over what period of time does BC Hydro plan to reach its full cost recovery objective? Please provide the plan for doing so.
- 20.2 What actions and evaluation has BC Hydro undertaken to date to ensure its full cost recovery in the future?
- 20.3 Please confirm that matching BC Hydro's prices with operators such as Tesla or Petro-Canada would likely result in higher revenue collection.
- 20.4 Please provide quantification of the revenues expected to be collected if BC Hydro prices were to match Petro-Canada's prices.
- 20.5 Given the expected prevalence of BC Hydro charging stations, is it fair to say that BC Hydro could be considered a price-setting leader in BC? Please explain why or why not.
- 20.6 Please provide a quantitative sensitivity analysis of different prices and the cost recovery. Please provide all of BC Hydro's assumptions in the analysis.
- 20.7 Please confirm or otherwise explain that BC Hydro could have higher rates to maintain 'a level playing field' with other competitive market fast charging stations.
- 20.8 Please confirm or otherwise explain that 'a level playing field' should consider the ability of a competitor to recover its costs and still remain competitive.

20.8.1 Please discuss the range of price points that BC Hydro considers as constituting a 'level playing field' and please explain why.

21.0 Reference: Exhibit B-1, page 25 and 26

4.1 Rate Design Approach

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; RS 1560, which is applicable to public fast charging service at 50 kW stations, is considered a Medium General Service rate (**MGS**) and is proposed at 21 cents per minute, and RS 1561, which is applicable to public fast charging service at 100 kW stations, is also considered an MGS rate and proposed at 27 cents per minute. The Proposed Rates are applicable in all of BC Hydro's integrated area or Rate Zone I. The Proposed Rates are subject to any BCUC approved general revenue requirement increases or decreases..

BC Hydro considers the fast charging service to be part of its General Service and has thus developed the Proposed Rates to reflect its General Service pricing for the following reasons.

- The "General Service" as defined in BC Hydro's Electric Tariff¹² captures the fast charging service. "General Service" is defined as "*Service for business, commercial, institutional or industrial use, including use in nursing homes,*

boarding houses, rooming houses, common areas of multiple occupancy buildings, recreational establishments, marinas and yacht clubs, hotels, motels, mobile home parks and similar establishments or parts thereof, or for any other use not specifically provided for in the Electric Tariff." (emphasis added) Fast charging service is not specifically provided for in the Electric Tariff and therefore qualifies as "General Service".

- Different power levels of fast charging stations correspond with the "Availability" requirement of Small General Service or Medium General Service. Under BC Hydro's Rate Schedules, Small General Service is available for customers whose Demand¹³ is less than 35 kW, and Medium General Service is available for customers whose Demand is between 35 kW and 150 kW.
- 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 this respect the Proposed Rates reflect the BCUC's recommendation in the Phase 2 EV Inquiry Report that "non-exempt public utilities provide a transparent wholesale pricing mechanism that applies to all operators of EV charging facilities..., including the non-exempt public utility itself"¹⁴.

- 21.1 Please confirm that BC Hydro is competing in the EV charging commercial business downstream from its normal Smart Meter electricity metering, and is competing with potential competitive market businesses.
- 21.2 Please confirm that electricity costs for EV charging stations are a fraction of the total cost of providing EV charging services, downstream from the BC Hydro Smart Meters.
- 21.3 Please confirm that BC Hydro could develop a separate rate class for EV charging users that would also ensure that energy and demand charges are not lower than that for other fast charging station operators, by charging general service electricity rates for its EV charging station services.
- 21.4 From which rate classes will any costs that are not recovered from EV charging customers be recovered? Please explain.

22.0 Reference: Exhibit B-1, page 28

Having separate Rate Schedules for each fast charging station power level service will allow BC Hydro to conduct the analysis of utilization, electricity load characteristics, costs and revenues for the purpose of the evaluation described in section 5 below. As explained in section 2.2 above, the fast charging service will be separately metered at the site level, and BC Hydro can track data on electricity use and revenue by Rate Schedule. In this respect, the Proposed Rates are consistent with the BCUC's recommendation in the Phase 2 EV Inquiry Report that non-exempt public utilities should develop a separate rate and tariff for fast charging service.

- 22.1 Please confirm that BC Hydro could conduct the same analysis if the EV charging were under separate rate schedules that were not included in General Service electricity rates.

23.0 Reference: Exhibit B-1, pages 29-30 and page 31

Equation 3: Rate to recover station capital costs =

$$\frac{\{(Annualized\ Capital\ Costs) / 12\ months\}}{Average\ Number\ of\ Charging\ Session\ per\ Station\ per\ month / Average\ Charging\ Session\ Length}$$

Where:

- 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.

- Scenario 3 is the full cost of service rate. This rate recovers all the costs associated with the fast charging service, which are the electricity costs as well as station capital and maintenance costs. This rate is calculated as the sum of Equations 1, 2 and 3. The capital costs in this scenario are net of funding from government partners such as NRCan.

Table 3 50 kW Charging Station Rate by Utilization and Cost Recovery Scenario

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 ¹⁷ (\$/min)	Full Cost of Service: Electricity + Maintenance + Capital Costs (\$/min)
3	46	0.25	0.76	1.29
3.7	57	0.21	0.62	1.06
5	77	0.17	0.47	0.79
10	153	0.11	0.26	0.42
15	230	0.09	0.19	0.29
20	307	0.07	0.15	0.23

23.1 BC Hydro states that in Scenario 3 the Full Cost of Service recovery is the sum of Equations 1, 2 and 3. Please identify in which equation the labour costs of \$800,000 are included, or confirm that as stated in the above excerpt, the labour costs are not included.

24.0 Reference: Exhibit B-1, page 28 and 31

While BC Hydro presents the full cost of service-based rate under various utilization scenarios in section 4.2 below, at this time we do not believe that the station utilization is high enough to make such a rate feasible. Our Proposed Rates recover at least the cost of electricity (Energy and Demand) but are not expected to recover all of the station capital and maintenance costs at this time. Costs not recovered by the Proposed Rates will be recovered from all ratepayers.

**Table 3 50 kW Charging Station Rate by
Utilization and Cost Recovery Scenario**

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 ¹⁷ (\$/min)	Full Cost of Service: Electricity + Maintenance + Capital Costs (\$/min)
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10	153	0.11	0.26	0.42
15	230	0.09	0.19	0.29
20	307	0.07	0.15	0.23

In all cases, the rate goes down as utilization increases and fixed costs such as the station capital costs and the MGS Demand Charge are spread across more station users. As noted above, BC Hydro does not have enough information on which to estimate station utilization at this time. However, based on a market study,¹⁸ we believe that the range of 3 to 5 per cent utilization is a reasonable estimate at this time for the 50 kW station. Our Proposed Rate of 21 cents per minute would recover

electricity (Energy and Demand) costs as specified under the MGS rate schedule at a utilization level of 3.7 per cent. If the utilization levels are greater than this, we would also recover some maintenance and capital costs. When the service was free, the average utilization was 15 per cent, however as described in section [3.1](#), half of potential station users indicated that they would stop using the service if a rate is introduced

- 24.1 Please confirm or otherwise explain the CEC’s understanding that FBC is expecting to recover the full cost of service for 50kW charging under its EV charging rate of \$0.26/minute.
- 24.2 Please provide BC Hydro’s understanding of the differences that result in such a significant variation in cost recovery capabilities.
- 24.3 Please provide BC Hydro’s equivalent rate scenario if it were matching the FBC methodology for determining rates.
- 24.4 Is it likely that FBC customers would use BC Hydro charging stations instead of FBC charging stations given the difference in proposed prices? Please explain.

- 24.5 How did BC Hydro arrive at the expected utilization rate of 3.7%?
- 24.6 Please provide BC Hydro's quantitative estimates for the uptake of its EV charging service over the next 5, 10, and 20-year periods.

25.0 Reference: Exhibit B-1, page 32

BC Hydro proposes 27 cents per minute for fast charging service at 100 kW stations. The rate will collect sufficient revenues to recover at least electricity supply costs (Energy and Demand charges) under the MGS rate so long as the station utilization rate is 6.5 per cent or greater. 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 high demand for charging has been demonstrated.

- 25.1 Please confirm the CEC's understanding that FortisBC is intending to recover its full cost of service for EV charging at 100 kW with a rate of \$0.54/minute.
- 25.2 Please provide BC Hydro's understanding of the differences that result in such a significant variation in cost recovery capabilities.
- 25.3 Is it likely that FortisBC customers would use BC Hydro charging stations instead of FBC charging stations given the difference in proposed prices? Please explain.
- 25.4 How likely does BC Hydro believe it is that it will achieve station utilization of 6.5% or greater? Please explain and provide evidence to support BC Hydro's expectation and when that might be achieved.

26.0 Reference: Exhibit B-1, page 34

6. If a fast charging service Customer intends to use a radio frequency identification card (**RFID**) purchased from BC Hydro to activate the use of a fast charging station, a one-time fee of \$15 will be applied for the initial purchase of the RFID card. The use of an RFID card is one of four station activation and payment options, as further described in section [6](#).

- 26.1 How did BC Hydro arrive at a fee of \$15 for its RFID card? Please provide the justification with quantification of costs.

27.0 Reference: Exhibit B-1, page 36 and page 36-37

BC Hydro proposes to monitor several aspects of the fast charging service, including station utilization (at different power levels), revenue collected under the applicable Rate Schedules, costs incurred, and customer feedback, and provide to the BCUC by March 31, 2024 an evaluation report and recommendations for fast charging service rates going forward.

(fiscal 2022 and fiscal 2023) as well as the completion of customer and stakeholder engagement informed by the results of the evaluation.

27.1 Please confirm that BC Hydro would have two years of data for fiscal 2022 and 2023 as of the end of March 2023.

27.2 Please explain why BC Hydro has requested an additional year in which to compile the evidence and report.

28.0 Reference: Exhibit B-1, page 36

The March 2024 report will include the evaluation of the following:

- Station utilization at different power level stations and factors that impact it;
- Customer satisfaction and experience;
- Implementation effectiveness including billing, payments and special conditions;
- Comparison of BC Hydro fast charging service rates with other operators.;
- Collection of data on the electricity use characteristics (e.g., load profile, load factor, and peak demand) of the fast charging service and determination of whether General Service remains appropriate or a new rate class should be developed specific to electric vehicle fast charging service;
- Technological advancements in metering and billing for fast charging services;
- Customer and stakeholder engagement on the results of the evaluation report and industry developments; and
- The potential need for repricing or redesign of the rates.

We propose to file the evaluation report and, if warranted, an application to propose new rate(s) for fast charging service, by March 31, 2024. This timeline will allow for the collection and analysis of two full fiscal years of utilization and financial data

(fiscal 2022 and fiscal 2023) as well as the completion of customer and stakeholder engagement informed by the results of the evaluation.

- 28.1 What specific information will BC Hydro collect that will enable it to determine the potential opportunity for repricing and improved cost recovery?
 - 28.1.1 Please explain how BC Hydro will collect the information and what methodologies will be applied to determining price elasticities.
- 28.2 Please confirm that BC Hydro will include engagement from non-EV users and from EV station competitors in its customer and stakeholder engagement in the future.
 - 28.2.1 Please elaborate on how many ratepayers who are non-EV users will be canvassed, and how the engagement will be conducted.
 - 28.2.2 Please elaborate on how many competitors will be canvassed, and how the engagement will be conducted.