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January 28, 2019

Mr. Patrick Wruck
Commission Secretary and Manager
Regulatory Support
British Columbia Utilities Commission
Suite 410, 900 Howe Street
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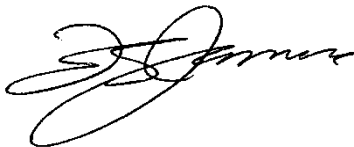
Dear Mr. Wruck:

RE: Project No. 1598941
British Columbia Utilities Commission (BCUC or Commission)
An Inquiry into the Regulation of Electric Vehicle Charging Service – Phase 2
British Columbia Hydro and Power Authority (BC Hydro)
Responses to BCUC Questions on Phase 2 Scoped Items

BC Hydro writes in compliance with Commission Order No. G-231-18 to provide, as Exhibit C1-7, its responses to Commission's request for submissions and evidence on Phase 2 of the Inquiry of Electric Vehicle Charging Service.

For further information, please contact Anthea Jubb at 604-623-3545 or by email at bchydroregulatorygroup@bchydro.com.

Yours sincerely,



Fred James
Chief Regulatory Officer

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Enclosure (1)

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Regulatory framework for non-exempt public utilities (pp. 47–48 of the Phase 1 Report)

1. Can both regulatory models – little or no regulation for those exempt public utilities and the participation of non-exempt utilities – co-exist? In the absence of price regulation, how can EV charging providers that are not otherwise public utilities (which would be exempt from regulation in accordance with the Panel's recommendation) be protected from being undercut by non-exempt public utilities? Should non-exempt public utilities be restricted to participate only in remote geographical locations that are currently uneconomical for exempt EV charging providers to serve?

RESPONSE:

At this early stage of market development, BC Hydro does not anticipate that non-exempt public utility participation in the electric vehicle (EV) charging market will create an impediment for third-parties to also participate. BC Hydro notes there is currently limited private sector participation in the EV direct current (DC) Fast Charging market.

BC Hydro does not support imposing geographic restrictions on the participation of non-exempt public utilities in the EV charging services market within a utility's service territory. Imposing geographic restrictions on the participation of non-exempt public utilities would discourage the participation of non-exempt public utilities in the EV charging services market.

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Regulatory framework for non-exempt public utilities (pp. 47–48 of the Phase 1 Report)

2. If the provision of EV charging is exempt from regulation, is there any justification for non-exempt public utilities to provide EV charging services? If the role of non-exempt public utilities is to kick start the market, how can the BCUC determine when the kick start is no longer needed? What is the role of those utilities once that kick start is completed? If there are stranded assets at that time how should they be dealt with?

RESPONSE:

One reason for non-exempt public utility participation in EV charging services is to support applicable government policy on climate change and transportation electrification. Please also refer to BC Hydro’s response to Question 11 for examples.

BC Hydro believes that non-exempt public utility participation in the EV charging market would likely encourage greater take-up of electric vehicle usage and in turn reduce greenhouse gas (GHG) emissions and local air pollution as well as increase utility revenue through additional electricity sales.

As noted in section 4 of BC Hydro’s Evidence in Phase 1 of the EV Inquiry, the private sector may be able to serve the fast charging marketplace under a fully competitive landscape at some point in the future as the market matures. Market maturity will depend on and vary between jurisdictions based on many factors. Also, as noted in BC Hydro’s response to BCUC IR 1.2.2 in Phase 1 of the Inquiry it would be premature for BC Hydro to speculate on its future role in this market, or potential stranded assets, until the market has had time to advance.

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Regulatory framework for non-exempt public utilities (pp. 47–48 of the Phase 1 Report)

3. If non-exempt public utilities participate in the EV charging market, should EV charging customers constitute a separate class from which costs associated with EV charging infrastructure is recovered? Or should the service be offered in a separate non-regulated business? What are the implications of each of these regulatory models?

RESPONSE:

This response also addresses Question 4.

BC Hydro supports the participation of non-exempt public utilities in the EV charging market. The determination of whether or not these services should be offered through a separate rate class, as well as the analysis of cost of service and the design of rates to recover such costs are best suited to a rate design application proceeding.

BC Hydro would only provide EV charging services on a regulated basis and not through a non-regulated entity. The implication of requiring non-exempt public utilities to offer EV services through a separate non-regulated business is that non-exempt public utilities would be discouraged from participating in the development of EV charging infrastructure. Lack of non-exempt public utility participation in the EV charging market may slow down the adoption of EVs in British Columbia. Please also refer to BC Hydro’s response to BCUC IRs 1.27.4. and 1.27.4.1 and Flintoff IR 1.9.1. from Phase I of the Inquiry.

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Regulatory framework for non-exempt public utilities (pp. 47–48 of the Phase 1 Report)

4. Should other customer classes of non-exempt public utilities subsidize costs associated with the provision of charging services that can't be recovered from EV charging customers? How much of the cost is it appropriate for them to subsidize – should there be a cap?

RESPONSE:

BC Hydro submits that analysis of the risk and magnitude of any potential cross subsidization is best suited to a Rate Design Application Proceeding.

BC Hydro expects that over time, costs associated with the provision of charging services would be recovered from EV charging customers. However, at the current early stage of market development some costs may need to be recovered from other ratepayers in order to support the development of the EV market.

Subsidization of EV charging services by all ratepayers over the near-term may be appropriate as it would be in support of government policy and would provide longer term benefits to all ratepayers resulting from greater EV adoption. These benefits include increased utility electricity revenues as well as reduced greenhouse gas emissions and reduced local air pollution.

Please also refer to BC Hydro's response to Questions 3 and 5.

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Regulatory framework for non-exempt public utilities (pp. 47–48 of the Phase 1 Report)

5. If assets are stranded as a result of changing technology or other factors, who should pay for the potential stranded EV charging assets which may be in the non-exempt public utility's rate base?

RESPONSE:

BC Hydro submits that the examination of prudence, cost treatment and design of rates to recover public utility expenditures are best suited to the applicable regulatory proceedings.

For example, through a Rate Design Application Proceeding the Commission may determine whether a rate is unjust or unreasonable. Through a Revenue Requirements Application Proceeding the Commission may determine whether utility expenditure is prudent and direct its cost treatment.

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Regulatory framework for non-exempt public utilities (pp. 47–48 of the Phase 1 Report)

6. In the context of BCUC economic regulation, what regulatory justification is required to allow existing utilities to cross subsidize EV charging services? If EV charging services add incremental load, does that justify cross-subsidization? Would the incremental load appear without the subsidization?

RESPONSE:

A regulatory justification for public utility investment in EV fast charging services may be based on the extent to which the economic benefits of the new load equal or exceed the costs of serving it.

These economic benefits may include:

- (a) Incremental utility revenues as the provision of public EV charging services will reduce barriers to EV adoption. The incremental utility revenues may include those from home based charging, workplace charging and public charging; and**
- (b) Avoided electric system infrastructure costs, if ownership of the EV charging services enables the utility to locate and manage the EV charging load in a manner that would defer distribution system and other investments.**

The costs may include the costs to serve the new load, including the cost of supplying energy and capacity as well as the cost of any charging infrastructure.

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Regulatory framework for non-exempt public utilities (pp. 47–48 of the Phase 1 Report)

7. What are the implications of the province’s energy objectives, as stated in the *Clean Energy Act*, with respect to non-exempt public utilities providing potentially subsidized EV charging services? Are there noneconomic justifications such as environmental benefits or meeting greenhouse gas reduction targets?

RESPONSE:

BC Hydro submits that if non-exempt public utilities are allowed to own fast charging stations a number of benefits will be realized. These benefits include greater take-up of electric vehicles, which will lower greenhouse gas emissions, lower local air pollutants, and increase utility revenue through additional electricity sales. Lowering greenhouse gas emissions aligns with the province’s energy objectives as stated in the *Clean Energy Act* (CEA).

Section 2 of the CEA sets out 16 “British Columbia’s energy objectives” including the objective to encourage the switching from one kind of energy source or use to another that decreases GHG emissions in British Columbia.

BC Hydro’s view is that these British Columbia’s energy objectives are not legally binding on the Commission for rate setting purposes. Subsections 44.2(5.1), 46(3.3)(a) and 71 (2.21)(a) of the *Utilities Commission Act* (UCA) expressly provide that the Commission must consider the energy objectives for the purpose of adjudicating BC Hydro’s DSM expenditure schedules, Certificates of Public Convenience and Necessity applications, and those EPA filings that are subject to a hearing. There is no corresponding requirement set out in sections 58 to 61 of the UCA, which contain the rate setting provisions.

The net results in BC Hydro’s view is that the Commission may, but is not obliged to, consider and be guided by British Columbia’s energy objectives, subject to the proviso that in the event of a conflict between an energy objective and a rate-setting provision of the UCA, the latter must prevail.

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Regulatory framework for non-exempt public utilities (pp. 47–48 of the Phase 1 Report)

8. If non-exempt public utilities participate in the EV charging market, do they have any obligation to serve EV charging customers?

RESPONSE:

In BC Hydro’s response to BCUC IRs 1.4.5 and 1.4.5.1 in Phase 1 of the EV Inquiry, we note that a public utility does have an obligation to serve and that the Commission has the jurisdiction to set the terms and conditions related to BC Hydro’s obligation to serve EV charging customers.

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Regulatory framework for non-exempt public utilities (pp. 47–48 of the Phase 1 Report)

9. Should non-exempt public utilities be provided the same exemptions in regard to EV charging services as are other EV charging market participants? This includes exemption from Part 3 of the UCA, with similar retentions of certain sections by the BCUC.

RESPONSE:

BC Hydro submits that the appropriate exemptions for the provision of EV charging services for non-exempt public utility are different from those that would be applicable to other EV charging market participants.

The appropriate exemptions for a non-exempt public utility are those that would allow a non-exempt public utility to undertake EV charging activities and recover its cost of doing so. As noted in BC Hydro’s response to Question 14, the province has several vehicles to provide these exemptions. One such vehicle is an amendment to the Greenhouse Gas Reduction Regulation (GGRR) to define the provision of EV charging services as a “prescribed undertaking”.

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**Regulatory framework for non-exempt public utilities (pp. 47–48 of the
Phase 1 Report)**

10. Any other comments that may be helpful to the Panel.

RESPONSE:

No comment.

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Wholesale rate (p. 49 of the Phase 1 Report)

11. Is there a need for a specific tariff provisions for the wholesale provision of electricity for the purpose of EV charging?

RESPONSE:

BC Hydro understands this question to be referring to electricity rates, terms and conditions for businesses or other entities that provide public or fleet EV charging,¹ and for brevity these are referred to as business rates for EV charging below. This response also addresses Question 12.

BC Hydro notes that business rates specifically for EV charging commonly target DC Fast charging and occasionally also Level 2 charging, but not Level 1 for several reasons:

- Due to their speed and capacity, DC Fast Charging and Level 2 charging are more practical for businesses and commercial fleets than is Level 1 charging which is more suitable for home based charging.²
- The load characteristics of DC Fast Charging, and to a lesser extent Level 2 charging, can result in high electricity bills when billed under standard business rates. DC Fast Charging infrastructure draws from 25 to 350 kW per dispenser. Under standard business rates, this level of power draw will trigger demand charges in addition to energy charges.³ These demand charges can negatively impact the economics of DC Fast Charging. As such, Demand charges are often identified as a barrier to deployment of charging infrastructure. Some utilities offer demand charge relief for DC Fast charging, in order to promote EV adoption in support of government policy objectives.

The need for specific tariff provisions for the wholesale provision of electricity for EV charging, and the suitability of various rate structure options, depends on the legal and policy context that a utility operates in as well as each individual utility's cost drivers and customer needs.

¹ For clarity, under BC Hydro's Electric Tariff, such customers would currently be billed under General Service Rates, such as Rate Schedule (RS) 1500 or RS 1600.

² DC charging takes approximately 30 minutes to charge, Level 2 charging takes approximately four hours, and Level 1 charging takes approximately eight hours.

³ For example, BC Hydro's Medium General Service Rate (RS 1500) applies to customers with billing demand between 35 kW and 150 kW, and includes a demand charge of \$5.07/kW. BC Hydro's Large General Service Rate (RS 1600) applies to customers to with billing demand above 150 kW and includes a demand charge of \$11.55/kW.

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BC Hydro is aware of at least six U.S. utilities⁴ and one Canadian utility (Hydro Quebec⁵) that offer business rates specifically for EV charging. The following provides additional jurisdictional information on utilities that have provided business rates for EV charging, and the legal and policy context under which they were provided.

- (a) In California, there is a state climate change policy and Senate Bill (SB) 350 (2015), which directed the California Public Utilities Commission and investor-owned utilities to propose programs and investments to accelerate widespread transportation electrification.

The California Public Utility Commission’s guidance ruling after the enactment of SB 350 noted utility “Transportation Electrification (TS) applications may propose projects to change the rate structures, including demand charges, that are currently in effect for EVs used in commercial applications.”⁶

In response, Southern California Edison and Pacific Gas and Electric recently developed and obtained Commission approval for EV charging rates for businesses that are based on time of use (TOU) energy charges and do not include demand charges. These rates are intended to address customer concerns with existing commercial rates. The utilities anticipate that the improved rate offerings should also encourage customers to participate in their transportation electrification infrastructure programs.

- (b) In Nevada, there is SB 145 (2015), which mandated Nevada Energy to create an Electric Vehicle Infrastructure Demonstration Program, and adopt the overall goal to expand and accelerate the deployment of electric vehicles and supporting infrastructure in Nevada.

In response, Nevada Energy filed an Application for an Electric Vehicle Infrastructure Demonstration Program with the Public Utilities Commission of Nevada.⁷ As one outcome to this application, Nevada Energy was directed to file a commercial DCFC Tariff, which it did on September 27, 2018.⁸ The proposed time of use rate for businesses offering EV DC fast charging provides a discount to the standard general service demand charge. The demand charge discount will decrease by 10 per cent per year over ten years.

⁴ Source: Review and Assessment of Electric Vehicle Rate Options in the United States: EPRI, Palo Alto CA: 2018. 3002012263.

⁵ Please refer to the following link: http://www.hydroquebec.com/business/customer_space/rates/rate_br_experimental_rate_fast_charge_stations.html.

⁶ R.13-11-007. Assigned Commissioner’s Ruling Regarding the Filing of the Transportation Electrification Applications Pursuant to SB 350, section 3.6 (page 20), September 14, 2016.

⁷ http://pucweb1.state.nv.us/PDF/AxImages/DOCKETS_2015_THRU_PRESENT/2018_2/31126.pdf.

⁸ Please refer to the following link: http://pucweb1.state.nv.us/PDF/AxImages/DOCKETS_2015_THRU_PRESENT/2018_9/33005.pdf.

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- (c) The Hawaiian Electric Company has implemented pilot commercial public charging rates to support EV adoption given the state’s clean energy and transportation goals.⁹ Rate Schedule EV-F consists of three time-of-use periods with no demand charge for operators of public EV charging facilities and is intended to support start-up charging services.
- (d) The Quebec Government has encouraged the adoption of EVs and is committed to transportation electrification to lower greenhouse gas emissions.¹⁰

Hydro Quebec has supported the arrival of EVs by supplying energy for vehicle charging at public 240- and 400-volt charging stations owned by the firm Circuit Electrique/Electric Circuit in Québec.¹¹

Hydro Quebec has also introduced an experimental wholesale EV rate (Rate BR) which is partly an hours-use-of-demand tariff in which improving load factor reduces the average price that the customer pays for electrical energy, regardless of customer size. The rate was developed to provide a better price incentive for site operators to add additional charging terminals and to increase utilization, as the current general service rates were viewed as hindering the deployment of the EV charging network.

In BC Hydro’s case, the CleanBC plan¹² introduces a zero emission vehicle mandate, and calls for an expansion of clean vehicle infrastructure. However, no legislation or regulation is in place in British Columbia that specifically addresses the provision of electricity for EV Charging. As such, any rates specific to EV charging, including time of use rates, would need to meet the applicable provisions in the *Utilities Commission Act* regarding rate setting – specifically sections 59 to 60.

⁹ Please refer to Hawaii Clean Energy Initiative at the following link: <http://www.hawaiicleanenergyinitiative.org/about-the-hawaii-clean-energy-initiative/>.

¹⁰ Please refer to Quebec’s 2015-2020 Transportation Electrification Action Plan at the following link: <https://transportselectriques.gouv.qc.ca/en/action-plan/>.

¹¹ Please refer to the following link: <https://lecircuitelectrique.com/welcome>.

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Wholesale rate (p. 49 of the Phase 1 Report)

12. If so, how should this wholesale tariff be designed? Is a time of use rate appropriate? Should there be any differences depending on the type of EV charging – Level 1, Level 2, and/or DCFC stations?

RESPONSE:

BC Hydro is examining various rate design options including time of use, time of demand, and demand charge relief. BC Hydro submits the analysis of rate design options is best suited to a Rate Design Application.

Please refer to BC Hydro's response to Question 11.

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Safety (pp. 38 and 48 of the Phase 1 Report)

13. Section 3 of the Electrical Safety Regulation states that it “does not apply to a public utility as defined in the *Utilities Commission Act* in the exercise of its function as a utility with respect to the generation, transmission and distribution of electrical energy”. Further, “distribution equipment” is a defined term in the UCA. Although it seems clear that EV charging equipment is not “generation or transmission”, the Panel did not make any finding in the Phase 1 Report on whether EV charging infrastructure is “distribution equipment.” The Panel invites submissions on this issue in Phase 2.

In responding, Interveners are requested to consider the status of the provider – for example, is the interpretation different for a non-exempt public utility than it would be for an exempt utility or a provider excluded from the definition of a public utility?

RESPONSE:

Regardless of whether the EV Supply Equipment (kiosk and charging station) is owned by a non-exempt public utility, an exempt utility, or an entity excluded from the definition of a public utility, BC Hydro considers such EV Supply Equipment as equipment covered under the Scope of the Canadian Electrical Code. As such, the installation, operation and maintenance of the equipment are under the jurisdiction of Technical Safety BC and/or the local authorities with jurisdiction such as municipalities.

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Greenhouse Gas Reduction Regulation (p. 52 of the Phase 1 Report)

14. In Phase 2, the Panel invites submissions from Interveners on whether amendments to the Greenhouse Gas Reduction Regulation to allow public utilities to own and operate EV charging stations as a “prescribed undertaking” are appropriate and if so, the appropriate extent and scope of such undertaking.

RESPONSE:

In BC Hydro’s Final Argument in Phase 1 of the EV Inquiry, BC Hydro argued that amendments to GRR could be used to allow public utilities to own and operate EV charging stations as a “prescribed undertaking”. This amendment would allow public utilities to recover the costs of EV charging stations from all ratepayers. In this argument, BC Hydro proposed amendments to the GRR as an example of an action the province could take.

The GRR is not the only mechanism by which the province could further the participation of non-exempt public utilities in the EV charging market. For example, the Lieutenant Governor in Council could direct the Commission with respect to the establishment of rates, terms and conditions of EV service by non-exempt public utilities.