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BRITISH COLUMBIA UTILITIES COMMISSION

An Inquiry into the Regulation of Electric Vehicle Charging Service

PHASE TWO REPORT

June 24, 2019

Before:

D. M. Morton, Panel Chair
A. K. Fung, QC, Commissioner
H. G. Harowitz, Commissioner

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August 6, 2019

Sent via email/eFile

Re: British Columbia Utilities Commission – An Inquiry into the Regulation of Electric Vehicle Charging Service – Phase 2 - Project No. 1598941

On June 24, 2019, the British Columbia Utilities Commission (BCUC) issued its Phase 2 Report into the Inquiry into the Regulation of Electric Vehicle Charging Service. The BCUC hereby issues an errata correcting page 45 of the Phase 2 Report. The corrections do not change the Panel's findings.

Sincerely,

Original signed by:

Patrick Wruck
Commission Secretary

/dg
Enclosure

Accordingly, the Panel recommends that if Government considers it appropriate to amend the GGRR to define EV charging infrastructure as a prescribed undertaking:

- The scope of the prescribed undertaking should be defined as narrowly as possible and monetary caps and/or time limits provided for the prescribed undertaking.
 - Consideration should be given to stipulating which costs can be included. For example, should ancillary services associated with a highway charging station be included in the prescribed undertaking? To the extent that any land acquisition, site preparation, paving, costs are incurred in respect of ancillary services, should they also be segregated?
 - Consideration should also be given to geography and/or other descriptors that set out where non-exempt investments are appropriate.
- Furthermore, we recommend that the BCUC retain its jurisdiction to ultimately determine whether the proposed investment qualifies as a prescribed undertaking under the definition set out in the GGRR.

The above discussion does not set out mutually exclusive approaches and is not intended to portray binary choices. Instead, it presents a spectrum of possible regulatory options depending on the degree of prescriptiveness of the specific Government direction or policy in question. For example, Government could provide broad direction with more narrowly defined direction in specific areas.

9.3.3 Panel Recommendations regarding legislative amendments

While the following recommendation s regarding the UCA are directly applicable to EVCS, they are also broadly applied to the review of other utility capital investments.

As we previously discussed [sections 44.2 and 45–46](#) in section [9.1.23-0](#) of this Report, there are inconsistencies in the language between sections 44.2 and 45–46 and also within each of these sections. These inconsistencies present challenges to decision makers. The inconsistencies are summarized as follows:

1. Section 46 requires that, when reviewing a CPCN application [filed by BC Hydro](#), the BCUC consider “the interests of persons in British Columbia who receive or may receive service from” the applicant. However, when reviewing a section 44.2 expenditure schedule application, this requirement [only](#) applies to applications from [BC Hydro](#) [all public utilities](#).
2. When reviewing a CPCN application [for a public utility other than BC Hydro](#), the BCUC is [not only](#) required to consider the Energy Objectives as enumerated in section 2 of the *Clean Energy Act* if the “matters addressed in the application” have been found to be in the public interest in the review, under section 44.1, of a long-term resource plan. However, there is [a](#) ~~an~~ requirement under s44.1 to consider [the Energy Objectives under](#) section 2 of the *Clean Energy Act* for [all public](#) ~~non-exempt~~ utilities ~~other than BC Hydro~~.
3. For both BC Hydro CPCN reviews and reviews of an expenditure under sections 45 and 46 and expenditure reviews under section 44.2, the BCUC is required to consider “BC’s energy objectives”; for any other non-exempt public utility, the BCUC is required to consider “the applicable of BC’s energy objectives.” However, the UCA is silent on which energy objectives are “applicable.”

Executive summary

On January 12, 2018, the British Columbia Utilities Commission (BCUC) established an inquiry to review the regulation of electric vehicle charging service in British Columbia (Inquiry). The Inquiry aims to explore the potential regulatory issues, including the level of regulation necessary in the electric vehicle (EV) charging services market, the rates for EV charging service, and any other matters that should be considered by the BCUC as the regulator of energy services provided by public utilities in British Columbia.

Following the recommendations made in Phase 1 of this Inquiry and a Ministerial Order, the BCUC issued an exemption from regulation under certain sections of the *Utilities Commission Act* for persons to provide public EV charging services (EVCS) for compensation if they are not already public utilities. Parties who are not otherwise public utilities providing public EVCS are now exempt from BCUC regulation.

This is the second and final report of the BCUC Inquiry. In this Phase 2 Report, the Panel reviews the role of the non-exempt public utility's participation in the EV charging market. We provide specific findings based on the evidence and submissions filed during this Inquiry and make recommendations to Government concerning the regulatory framework for these non-exempt public utilities.

Panel findings regarding the role of non-exempt utilities in the EVCS market

- While there are opportunities for the participation of non-exempt public utility participation in the EVCS, regulatory oversight can help to mitigate ratepayer risk and potential impact on exempt utilities:
 - there may be circumstances that justify non-exempt utility ratepayers bearing the risk of EV infrastructure investments. However, an important aspect of qualifying those investments as being in the public interest would require the non-exempt utility to demonstrate that the investment in question would not likely have been undertaken by the private sector.
 - Non-exempt public utilities may have a role in developing highway charging infrastructure and participation in activities downstream of the meter. However, careful consideration must be given to the extent of that role and the appropriate level of risk for the non-exempt public utility's ratepayers to bear.
- There is insufficient evidence to determine what specific levels of non-exempt public utility investment in EV charging infrastructure are required to kick-start the EV charging market or the extent to which this investment will actually provide a kick-start in that market;
- 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 don't have the end effect of crowding out exempt utility investment;
- There is no obligation of non-exempt utilities to build any specific station or stations in any specific location. However, once a non-exempt utility has built a station in a specific location, it must ensure that the station remain in good working condition unless the BCUC orders otherwise.

Panel findings regarding Safety

We recommend that the BCUC continue to retain jurisdiction relating over safety in accordance with sections 25 and 38 of the UCA.

Approaches to regulatory framework

Given the CleanBC goals to expedite EV adoption and expand clean vehicle infrastructure, and the perceived need for non-exempt public utilities to participate in the market, Government could require the BCUC to consider specific policy objectives when reviewing EV charging investment applications. In the alternative, it may seek to completely de-risk all or some non-exempt public utility investment in EV charging assets by making specific directions, such as permitting public utilities to make certain EV charging investments, which transfers risk from public utility's shareholder to ratepayers. These regulatory approaches are not binary choices and could be used in various combinations.

The Panel provides no specific recommendation on which approach the Government should take, but instead provides recommendations on possible approaches to regulation of EVCS.

A) Non-prescriptive approach to regulation

On one end of the spectrum is a non-prescriptive approach where Government broadly defines its policy goals and provide high level direction to the BCUC. The Panel provides the following recommendations on how this approach, if adopted, would be best implemented in British Columbia:

- Non-exempt public utilities be required to develop an "EVCS Resource Plan" for review by the BCUC;
- The BCUC develop EVCS Resource Plan filing guidelines. These filing guidelines for non-exempt utility should set out the public interest issues that need to be addressed;
- Non-exempt public utilities should review opportunities to revise existing tariffs to remove barriers for residents and users of multiple unit buildings, malls, institutions such as hospitals and schools, etc. to provide EV charging. This initiative to remove barriers should be provided in a way that does not put the utility's ratepayers at risk;
- Non-exempt utilities that participate in this market should be required to develop a tariff, for approval by the BCUC, for provision of electricity to exempt utilities which lays out the terms of access to the utility's distribution system to ensure a level playing field;
- Non-exempt public utilities should pursue practices, such as adopting open protocols and standards. These practices should protect ratepayers from the risk of stranded assets by maximizing the use of non-exempt utility investments, while at the same time potentially encouraging private investment and innovation;
- Ancillary services not be eligible for inclusion in rate base and that the BCUC so state in its EVCS Resource Plan Filing Guidelines;
- For any customers or operators utilizing any level of charging other than Level 1 or Level 2, we find that the development of a separate rate and tariff (or a separate class of service) is required;
- It is in the public interest for non-exempt public utilities to provide a transparent wholesale pricing mechanism that applies to all operators of EV charging facilities other than Level 1 and Level 2, including

the non-exempt public utility itself. Wholesale pricing tariffs should be submitted to the BCUC for review, and if appropriate, approval.

B) Narrowly define direction

On the other end of the spectrum, if Government wishes to stipulate that some or all EVCS investments made by non-exempt utilities should be at the risk of ratepayers, it can provide specific direction to either eliminate completely any regulation of the non-exempt public utility involvement in EVCS or provide prescriptive direction that would limit the role of the BCUC's economic regulation.

For example, if Government wishes to provide greater certainty to non-exempt utilities it could direct the BCUC to approve an application or specific class of applications. It could direct the BCUC to approve (or exempt from BCUC oversight) any application from a non-exempt utility for the provision of:

1. any EV charging infrastructure;
2. EV charging infrastructure in certain locations;
3. EV charging infrastructure subject to a price cap; and/or
4. some combination of 2 and 3 above.

If prescriptive direction is used, the Panel recommends against option 1 above (exempting any EV charging infrastructure) and instead recommends it be limited to areas where third parties are not likely to make investments and the quantum of investment by non-exempt utilities allowed by prescriptive direction be carefully limited to ensure that the private sector isn't unfairly impacted and non-exempt utility ratepayers are not put at undue risk.

With regards to the *Greenhouse Gas Reduction Regulation* (GGRR), the Panel finds that Level 1, Level 2 or Level 3 EV charging infrastructure does not meet the current definition of prescribed undertaking. The Panel recommends that, if Government considers it appropriate, to make certain amendment to the GGRR to define EV charging infrastructure as a prescribed undertaking:

- The scope of the prescribed undertaking should be defined as narrowly as possible and monetary caps and/or time limits provided for the prescribed undertaking.
 - Consideration should be given to stipulating which costs can be included, and
 - Consideration should also be given to geography and/or other descriptors that set out where non-exempt investments are appropriate.
- Furthermore, we recommend that the BCUC retain its jurisdiction to ultimately determine whether the proposed investment qualifies as a prescribed undertaking under the definition set out in the GGRR.

Recommendations regarding legislative amendments

Lastly, the Panel makes certain recommendations regarding the UCA, which are directly applicable to EVCS but are also broadly applicable to other utility capital investments:

- the language in sections 44.2 and 45–46 of the UCA be reviewed and, if possible, amended to make these sections more consistent, and

- that Government revise the energy objectives in the *Clean Energy Act* to enable the BCUC to prioritize the electrification of transportation infrastructure.

Ideally, the UCA should be amended to require the mandatory submission of EVCS Resource Plan filings to the BCUC for approval. In the absence of this legislative amendment, a ministerial order directing the non-exempt utilities to file the EVCS Resource Plan for approval would achieve a similar objective.

1.0 Introduction

This inquiry into the regulation of electric vehicle (EV) charging service (Inquiry) was undertaken in two phases. Phase 1 examined the EV charging services (EVCS) market in general and provided recommendations for the appropriate degree of regulation of entities that are not otherwise public utilities. Phase 2 turns its attention to the role of existing public utilities in this market (e.g. British Columbia Hydro and Power Authority and FortisBC Inc.)(BC Hydro, FBC), which we will refer to as the “non-exempt public utilities.” This Report explores how non-exempt public utilities might participate in this market and how their participation should be regulated, if at all.

1.1 Recap of Phase 1 Report

On January 12, 2018, the British Columbia Utilities Commission (BCUC) established this Inquiry to explore potential regulatory issues related to EV charging services, including the level of regulation necessary in the EV charging stations market, the rates for EV charging service, and other matters that should be considered by the BCUC.

The definition of “public utility” in the *Utilities Commission Act* (UCA) broadly includes many forms of energy services, if provided for compensation. In Phase 1 of the Inquiry, this Panel referenced the 2012 Report on the Inquiry into the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives (AES Inquiry) for regulated public utilities which provide products and services outside traditional utility activities. The BCUC established principles in the AES Inquiry: the BCUC should only regulate where necessary; and regulation should not impede competitive markets. This Panel indicated that it intends to adopt these key principles in this Inquiry.

On November 26, 2018, the BCUC issued the Phase 1 Report.¹ In the Phase 1 Report, the Panel found that the EV charging market, including landlords and strata corporations, does not exhibit monopoly characteristics. The broad definition of “compensation” in the UCA encompasses many forms of direct and indirect compensation rendering most EV charging stations to be public utilities. Economic regulation of any aspect of the EV market is not required to protect consumers from potential abuse of monopoly power. This means there is no need to regulate price and terms of service.²

The Panel recommended that the Minister of Energy, Mines and Petroleum Resources (MEMPR) issue an exemption with respect to the BCUC’s regulation of EV charging services but that the BCUC retain oversight on safety.

On March 22, 2019, subsequent to receiving Ministerial Order No. M104, the BCUC issued Order G-66-19 to exempt EV charging service providers that are not otherwise public utilities, as well as landlords and strata corporations, from regulation under Part 3 of the UCA other than sections 25 and 38 which pertain to safety.

¹ https://www.b cuc.com/Documents/Arguments/2018/DOC_53093_2018-11-26-PhaseOne-Report.pdf

² https://www.b cuc.com/Documents/Proceedings/2018/DOC_53042_2018-11-26-BCUC-EV-Inquiry-Executive-Summary.pdf

1.2 Regulatory process of Phase 2

By Order G-231-18 dated December 6, 2018, the BCUC set out the scope and regulatory timetable for Phase 2 of the Inquiry. Phase 2 of the Inquiry focuses on the regulatory framework for EV charging service providers that in Phase 1 were not recommended for exemption (e.g. British Columbia and Hydro Authority and FortisBC Inc.) (non-exempt public utilities). The 14 scoped items in Phase 2 are provided in Appendix A of Order G-231-18. By January 28, 2019, the BCUC received submissions from interveners on the Phase 2 scoped items.

On February 27, 2019, the BCUC held a procedural conference to receive oral submissions by the interveners on future process. At the procedural conference, the BC Government's legal counsel stated that the BC Government "strongly supports investments in electric vehicle charging services by those non-exempt public utilities" and argued "it would be appropriate for non-exempt public utilities to recover those costs from ratepayers."³

By Order G-50-19 dated March 6, 2019, the Panel accepted that there is a role for non-exempt utilities in providing public EV charging services. To reflect this public policy objective the Panel found it appropriate to narrow the scope for Phase 2 of the Inquiry to addressing the manner in which non-exempt utilities should participate. As per Order G-50-19, the Panel intends to provide high level guidance for future applications for these revised Phase 2 scope items:

- 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?
- For EV charging services provided by non-exempt public utilities participating in the EV charging market, should EV charging customers constitute a separate class from which costs associated with EV charging infrastructure are recovered?
- 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?
- 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?
- 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?
- Do non-exempt public utilities participating in the EV charging market have any obligation to serve EV charging customers?
- Is there a need for a specific tariff provisions for the wholesale provision of electricity for the purpose of EV charging?

³ Procedural Conference Transcript Volume 10, MEMPR, pp. 691–692.

- 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?

Furthermore on the revised Phase 2 scope items, the Panel stated in G-50-19 that it would make recommendations to MEMPR on the following matters:

- 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 of the Inquiry.

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?

- 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.

The Panel provided interveners an opportunity to file final and reply arguments on the revised scope.

1.3 Developments in the EV market since inception of the EV Inquiry

Since the EV Inquiry was launched in January 2018 there have been a number of developments in both the private and public sectors. For example, in April 2018, Volvo has announced that all new models will be electric from 2019, aiming for 50% of all vehicle sales to be electric by 2025.⁴ In January 2019, Greenlots, a US-based company in EV charging and energy management software and solutions, announced it has signed an agreement with Shell New Energies to become its wholly owned subsidiary.⁵ Shell aims to make electricity a significant part of its business.⁶ In February 2019, Petro-Canada announced it is building a network of EV fast charging stations across Canada. The company states that “More than 50 EV stations will be located along the Trans-Canada highway at strategically located Petro-Canada stations from Nova Scotia to British Columbia. Construction is set to begin this spring with sites opening over the next year.”⁷

In the public sector the Federal and BC Governments have both announced targets aimed at ramping up the number of electric vehicles on Canadian roads. In May 2019, the BC Government passed legislation⁸ which will require the sale of new light-duty cars and trucks to be zero-emission vehicles by 2040. The Federal Government has set similar targets at the national level, aiming for all new light-duty vehicle sales to be zero-emission by

⁴ <https://www.media.volvocars.com/global/en-gb/media/pressreleases/227602/volvo-cars-aims-for-50-per-cent-of-sales-to-be-electric-by-2025>; <https://www.volvocars.com/us/about/electrification>

⁵ Shell New Energies, established in 2016, focuses on new fuels for transport, and power, from generation, markets, and supplying it directly to customers; <https://www.prnewswire.com/news-releases/greenlots-announces-acquisition-by-shell-one-of-the-worlds-leading-energy-providers-300786520.html>

⁶ <https://www.shell.com/energy-and-innovation/new-energies/electric-vehicle-charging.html>

⁷ <https://www.suncor.com/en-CA/newsroom/news-releases/1724495>; <https://www.shell.com/energy-and-innovation/new-energies/electric-vehicle-charging.html>

⁸ <https://news.gov.bc.ca/releases/2019EMPR0011-000608>

2040.⁹ The Federal 2019 Budget provides support to expand the network of zero-emission vehicle charging and refuelling stations, and is creating new incentives for people and businesses to purchase zero-emission vehicles.¹⁰

2.0 Structure of this Phase 2 Report

In Order G-50-19, the Panel indicated that it intended to issue its Phase 2 Report in two stages: the first, regarding specific recommendations on safety and potential GGRR amendments, followed by any high-level guidance on the remaining matters in the revised scope items. However, we have since concluded that many of the scope items do not lend themselves to this bifurcation and must be considered as a whole. Therefore, the Panel has prepared this single Phase 2 Report to address all scope items, as appropriate:

- Section 3.0 summarizes the regulatory framework and past BCUC decisions considered relevant to this Phase 2 scope;
- Section 4.0 summarizes the Government policy framework that is applicable, or potentially be applicable, to the EV charging market;
- Section 5.0 reviews the EV charging infrastructure in Canada and in BC;
- Section 6.0 reviews the California model and other states regarding their approach to regulating EV charging infrastructure;
- Section 7.0 highlights the submissions on the revised scope items received by the participants;
- Section 8.0 provides the Panel's findings on the various issues contained in the revised scope;
- Section 9.0 discusses the existing regulatory framework in BC and other jurisdictions, explores regulatory options available to the Government, and then outlines the Panel's recommendations;
- Section 10.0 provides the Panel's findings and discussion on safety; and
- Section 11.0 addresses an issue raised by FortisBC Alternative Energy Service Inc. in its final arguments.

3.0 Regulatory framework and past BCUC decisions

In this section of the report, the Panel provides an overview of the regulatory principles established in the existing regulatory framework and past BCUC decisions as they relate to the regulation of the EV charging market. The matters surrounding the revised scope of Phase 2 involves regulatory principles such as cost causation, participation of regulated public utilities in a competitive market, and legislative requirements with regards to rate setting. In the subsections which follow, the Panel summarizes the regulatory framework and past BCUC decisions considered relevant to this Phase 2 scope.

⁹ <http://www.tc.gc.ca/en/services/road/innovative-technologies/zero-emission-vehicles.html>

¹⁰ <https://www.canada.ca/en/transport-canada/news/2019/04/government-of-canada-invests-in-zero-emission-vehicles.html>

3.1 The Alternative Energy Services Inquiry Report

In 2011, following various complaints from an industry association of energy service companies, the BCUC launched an inquiry into FortisBC Energy (FEI) Inc.'s offering of products and services in alternative energy solutions and other new initiatives. The inquiry was partly to address FEI's participation in the provision of products and services that are outside of traditional gas distribution utility activities, or "alternative energy services," but was also intended to:

- provide guidance to future BCUC panels dealing with applications related to new business activities outside the traditional gas and electricity distribution utility business; and
- clarify how new regulated activities should be structured so as to be fair to the traditional ratepayer, and users of the new service and the utility itself.

The AES Inquiry panel noted that regulation exists to protect the public from potential monopolistic behaviour on the part of a public utility while ensuring the continued quality of an essential service.¹¹ However, superior protection for consumers is the competitive marketplace.¹² The AES Inquiry Report outlines two key principles related to the role of regulation, specifically: (i) only regulate where required and (ii) regulation should not impede competitive markets.¹³ As previously mentioned, this Panel relied on these principles in the Phase 1 Report leading to its recommendation to exempt certain persons from BCUC regulation.

As for the regulation of public utilities for non-exempt public utilities such as BC Hydro and FBC, the Panel adopts the findings in the AES Inquiry that monopolies may abuse their power by way of:

- excessive pricing - resulting in excess monopoly profits;
- predatory pricing - where the monopoly is able to discourage competitors from entering the market through pricing below cost in the short term; and
- cross-subsidization - excessive pricing in some areas, subsidizing low cost pricing in others.

The AES Inquiry Report also stated that subject to a materiality threshold, customers should only be charged those costs that they can be reasonably determined to incur.¹⁴

In terms of a regulated utility venturing into a new business, the AES Inquiry panel indicated that structuring a new regulated business activity as a separate class of service within the regulated utility is most appropriate when some, or all, of the following characteristics are present:

- The new regulated business activity largely uses and is dependent on the traditional gas utility distribution infrastructure but with additional clearly identifiable costs and/or assets that pertain specifically to the new business activity;
- The risk of the new business activity differs from the risk faced by the traditional natural gas ratepayer; and
- An identifiable customer base is served by the new regulated business activity.

¹¹ The AES Inquiry Report, p. 8.

¹² Ibid., p. 14.

¹³ Ibid., pp. 6–7.

¹⁴ EV Inquiry Phase 1 Report, p. 46.

We will elaborate on these principles in sections 8 and 9 when we further consider cost causation as applied to investments in the EV charging services market.

3.2 Retail market downstream of the meter (RMDM) Guidelines

The BCUC's RMDM Guidelines provide guidance as to the regulatory issues that should be considered when non-exempt public utilities participate in a competitive environment. In the case of EV charging infrastructure, non-exempt public utilities are making investments in an EV charging market that compete with a wide array of businesses. The EV charging market is, for the most part, now exempt from regulation as per Order G-66-19.

The RMDM Guidelines provide three BCUC objectives that speak to subsidization, risks, and efficient allocation of resources. Specifically, the RMDM Guidelines state that there must be no subsidy of unregulated business activities, whether undertaken by the utility or its non-regulated business, by utility ratepayers. The risks associated with participation in the unregulated market must be borne entirely by the unregulated business activity, that is, the risks must have no impact on utility ratepayers. The most economically efficient allocation of goods and services for ratepayers should be sought.¹⁵

4.0 BC Clean Energy Act, Greenhouse Gas Reduction Regulation, Climate Leadership Plan, and CleanBC Plan

In this section, we summarize BC's legislative and policy framework relevant to EV charging infrastructure. We will provide a more complete discussion of the existing regulatory framework in section 9 of this Report.

4.1 Clean Energy Act and Greenhouse Gas Reduction Regulation

On June 3, 2010, the BC Government enacted the *Clean Energy Act* in order to establish energy policies and regulations to support the Province's energy, economic, and greenhouse gas reduction priorities.¹⁶ The *Clean Energy Act* states that BC's energy objectives are, among other things, to reduce greenhouse gas emissions and, more specifically, to encourage the switching from one kind of energy source or use to another that decreases greenhouse gas emissions.¹⁷

To help implement these goals, section 18(1) of the *Clean Energy Act* defines a prescribed undertaking as "a project, program, contract or expenditure that is in a class of projects, programs, contracts or expenditures prescribed for the purpose of reducing greenhouse gas emissions in British Columbia."¹⁸ Section 18(2) requires the BCUC to set rates that allow for the sufficient recovery of costs incurred by a public utility for a prescribed undertaking, and section 18(3) provides that the BCUC must not exercise its power in a way that would directly or indirectly prevent a public utility from carrying out a prescribed undertaking.¹⁹

The BC Greenhouse Gas Reduction (Clean Energy) Regulation (GGRR)²⁰, established a number of prescribed

¹⁵ Retail Markets Downstream of the Utility Meter Guidelines dated April 1997, Figure 5, p. 9.

¹⁶ *Clean Energy Act*, SBC 2010, c. 22, s 2. http://www.bclaws.ca/civix/document/id/complete/statreg/10022_01

¹⁷ Ibid.

¹⁸ *Clean Energy Act*, SBC 2010, c. 22, s 18, 1.

¹⁹ Ibid., pp. 2–3.

²⁰ B.C. Reg. 102/2012 (O.C. 295/2012), http://www.bclaws.ca/civix/document/id/complete/statreg/102_2012

undertakings under section 18 of the *Clean Energy Act* with the objective of promoting electrification in several sectors of the provincial economy.²¹

As a result, the BCUC is required to set rates for a public utility that allow the collection of sufficient revenues through rates in order to carry out the prescribed undertakings in the GGRR. However, where there is ambiguity as to whether an activity is a prescribed undertaking, the BCUC has jurisdiction to determine whether an activity falls under that definition.

4.2 CleanBC Plan

BC's Climate Leadership Plan and Clean BC Plan are relevant to the EV charging market and the uptake of EVs. BC's Climate Leadership Plan includes expanding support for zero emission vehicle charging stations in buildings and expanding the Clean Energy Vehicle Program to support new vehicle incentives and infrastructure.²² The Climate Leadership Plan recognizes that a major current challenge for the adoption of EVs is ensuring that owners can readily access charging stations.²³

Shortly after the BCUC issued the Phase 1 EV Report, the BC Government on December 5, 2018, released the CleanBC Plan. The CleanBC Plan includes a plan for cleaner transportation, as follows:

Bring down the price of clean vehicles

- Just over 20 years from now, every new car will be a zero-emission vehicle (ZEV), with phased-in increases to the ZEV standard.
- Help people to afford cleaner cars and save money on gasoline bills with ZEV incentives.
- Make it easier to charge or fuel a ZEV or hydrogen car.

Speed up the switch to cleaner fuels

- Make our fuel cleaner by increasing the low carbon fuel standard to 20% by 2030 and increasing the production of renewable transportation fuels.
- Make vehicles run cleaner by increasing tailpipe emissions standards for vehicles sold after 2025.²⁴

The CleanBC Plan addresses EV charging stations, stating that:

As part of the move to ZEVs, we're making new investments in home and workplace charging, public charging stations and hydrogen fueling stations, so that British Columbians can charge-up in the convenience of their own home or workplace, and anyone can travel throughout the province in their ZEV. The private sector has a big role to play in this new clean energy infrastructure development, and the Province will be addressing barriers to investment in commercial charging, and hydrogen fueling, further expanding consumer choice and confidence

²¹ Order in Council 101 (B.C. Reg 76/2017), http://www.bclaws.ca/civix/document/id/oic/oic_cur/0101_2017

²² BC's Climate Leadership Plan dated August 2016, p. 5, https://www2.gov.bc.ca/assets/gov/environment/climate-change/action/clp/clp_booklet_web.pdf.

²³ BC's Climate Leadership Plan dated August 2016, p. 20.

²⁴ CleanBC Highlights Report, https://blog.gov.bc.ca/app/uploads/sites/436/2019/02/CleanBC_Highlights_Report_Updated_Mar2019.pdf.

for drivers. We're also exploring ways to help make sure that people in multi-unit housing can charge their cars at home. This will be explored further as we implement CleanBC.²⁵

5.0 EV charging infrastructure

Existing public EV charging stations in BC are generally a mix of municipal, private and public utility investments. Evidence in this Inquiry suggests that more than 80 percent of all charging occurs at home. However, the availability of public EV charging provides an essential backstop and enables longer journeys.²⁶

At the time of the Phase 1 Report that was released in November 2018, evidence in this Inquiry indicates there were 663 Level 2 charging stations with a total number of 1,142 ports in BC. The majority of these Level 2 charging stations are owned and/or operated by businesses and municipalities. There were 76 public DCFC stations with 120 ports in BC. The majority of these public DCFC stations are owned by BC Hydro.²⁷

Recently, on May 30, 2019, the *Zero Emissions Vehicle Act*²⁸ received royal assent. This Act requires all new light-duty cars and trucks sold or leased in BC to be zero-emission vehicles by 2040.

5.1 Non-exempt public utility investment in EV charging service

Since 2012, BC Hydro has been working with federal, provincial and local governments, businesses and other stakeholders to remove barriers to the adoption of EVs in BC, including the installation of DCFC stations. BC Hydro's Electric Vehicle Smart Infrastructure Project ran from 2012 to 2016, resulting in the deployment of 30 stations using capital provided by the Province of BC, NRCAN and BC Hydro.²⁹ Sites selected were typically community centres or other major community hubs owned by local and regional governments,³⁰ and are predominantly based in the Lower Mainland and Southern Vancouver Island region. BC Hydro owns all 30 stations, but 28 of them are leased to and operated by the municipalities in which they are located. The remaining 2 are operated by EcoDairy and Powertech Labs. As a station owner, BC Hydro is responsible for station repairs and maintenance.³¹

BC Hydro's second phase rollout from 2017 to 2018 added an additional 22 DCFC installations. Capital funding was provided by a mixture of the station hosts, NRCAN's EV Initiative,³² the Province of BC (MEMPR as well as the Ministry of Transportation Infrastructure), and BC Hydro.

In a separate initiative, the Community Energy Association (CEA) provided funding for the deployment of 13³³ DCFC stations located along the highway corridors in the Kootenay region.

²⁵ CleanBC Plan, p. 19 https://blog.gov.bc.ca/app/uploads/sites/436/2019/02/CleanBC_Full_Report_Updated_Mar2019.pdf.

²⁶ EV Inquiry Phase 1 Report, p. 14.

²⁷ EV Inquiry Phase 1 Report, pp. 15-16.

²⁸ S.B.C. 2019, c. 29 <https://www.leg.bc.ca/parliamentary-business/legislation-debates-proceedings/41st-parliament/4th-session/bills/progress-of-bills>.

²⁹ EV Inquiry Phase 1, Exhibit C1-3, BC Hydro slide presentation, p. 5.

³⁰ <https://www.nrcan.gc.ca/energy/funding/current-funding-programs/eii/16387>

³¹ Ibid., pp. 9, 11.

³² Phase 1 of NRCAN's Electric Vehicle and Alternative Fuel Infrastructure Deployment Initiative, <https://www.nrcan.gc.ca/energy/alternative-fuels/fuel-facts/ecoenergy/20197>

³³ Sources disagree about the number, but appears to be 6 sites, 8 stations. All sources agree that the total is 13 in the Accelerate Kootenay's Initiative, with 5 owned by FortisBC.

BC Hydro deployed 8 of these stations and FBC deployed the other 5, each utility owning and operating the stations in their respective service areas.³⁴

Under Phase 2 of NRCan's EV Initiative, BC Hydro has received co-funding for another 23 DCFC stations, and FortisBC has received co-funding for 12 new stations,³⁵ all of which were under construction as of March 2019.³⁶

5.2 EV charging infrastructure activities across Canada

Due to initiatives by the federal, provincial, and municipal governments, as well as utilities and private firms, public charging infrastructure is continuing to grow in Canada. By the end of December 2017, there were approximately 5,843 EV charging stations in Canada, of which 5,168 were Level 2, 483 DCFC, and 190 Tesla Superchargers. This represented a 38 percent increase in public charging infrastructure installations across Canada in 2017 compared to 2016.³⁷

Recent private sector developments include the formation of Electrify Canada, a partnership formed by Electrify America in cooperation with Volkswagen Group Canada to build DCFC infrastructure, in July 2018. It plans to build 32 fast charging stations in in southern BC, Ontario, and Quebec, with operations expected to start mid 2019.³⁸ In February 2019, PetroCanada announced it is building a network of 50 DC fast chargers across Canada from Halifax, Nova Scotia, to Vancouver, with the first station opened in Ontario.³⁹

Federal initiatives have been led by Natural Resources Canada (NRCan), in collaboration with a variety of other partners, which has supported the construction of more than 500 EV fast chargers to date.⁴⁰ In 2017 NRCan collaborated with three private companies in 2017 to install 34 fast-charging stations along the Trans-Canada Highway in Ontario and Manitoba.^{41, 42} NRCan's ongoing Electric Vehicle and Alternative Fuel Infrastructure Deployment Initiative (NRCan EV Initiative) offers repayable contributions to support the construction of a coast to coast EV fast charging network. The NRCan EV Initiative will pay up to 50% of the total project costs to a maximum of fifty thousand dollars (\$50,000) per charging unit.⁴³ BC Hydro received funding for 21 stations under its Phase 1 implementation, out of a national total of 102.

³⁴ News release dated May 25, 2018, https://www.cdn.fortisbc.com/libraries/docs/default-source/news-events/mediarelease_accelerate_kootenays.pdf?sfvrsn=72ba357a_2

³⁵ <https://www.fortisbc.com/about-us/environment/partnering-for-climate-action>

³⁶ <https://www.nrcan.gc.ca/energy/alternative-fuels/fuel-facts/ecoenergy/21738>. Another 55 stations have received co-funding in BC under the same program, for the following proponents: HTEC Hydrogen Technology and Energy Corporation, the City of Vancouver, the Corporation of the City of North Vancouver, Suncor, Canadian Tire, and the University of Fraser Valley

³⁷ http://www.ieahev.org/assets/1/7/Report2018_Canada.pdf

³⁸ <https://www.electrify-canada.ca/about-us>. Press release at: <https://elam-cms-assets.s3.amazonaws.com/inline-files/Volkswagen%20Group%20Canada%20Forms%20Electrify%20Canada%20to%20Install%20Ultra-Fast%20Electric%20Vehicle%20Chargers.pdf>

³⁹ <https://www.petro-canada.ca/en/personal/fuel/alternative-fuels/ev-fast-charge-network>

⁴⁰ <http://www.tc.gc.ca/en/services/road/innovative-technologies/zero-emission-vehicles.html>

⁴¹ <https://www.nrcan.gc.ca/energy/funding/icg/19851>

⁴² The project was funded by an \$8-million "repayable contribution" from NRCan under the Canadian Energy Innovation Program, as well as private investment from eCAMION, a Toronto-based energy storage system developer, Leclanché, an energy storage provider, and Geneva-based power producer SGEM. "Fast-charging stations for electric vehicles coming to Trans-Canada Highway", article dated July 24, 2017, <http://www.ecamion.com/fast-charging-stations-for-electric-vehicles-coming-to-trans-canada-highway/>

⁴³ <https://www.nrcan.gc.ca/energy/alternative-fuels/fuel-facts/ecoenergy/18352>

At the provincial level, the Governments of Ontario, Quebec and BC have actively supported the development of EV charging infrastructure.⁴⁴ Hydro-Quebec's Electric Circuit, launched in 2012, was Canada's first public charging network for EVs, offering both 240-volt and 400-volt charging stations. By early 2019 the Circuit included 1,700 stations, including 176 fast-charging stations.⁴⁵ The stations are installed in the parking lots of the Circuit's numerous partners across Québec and in the North-East of Ontario, and operated by Hydro-Quebec. In 2019, Hydro Quebec announced it had received funding for 100 new stations from the Federal government to be installed before the end of 2019 and have long-term plans to build 1600 fast charging stations over the next 10 years.⁴⁶

In Alberta the NRCan EV Initiative supported an initial three EV fast charging stations at Canadian Tire locations in 2017,⁴⁷ while in February 2019 the Alberta Government announced plans to provide \$1.2 million to co-fund the Peak to Prairies EV network, in collaboration with local partners, and the Federation of Canadian Municipalities. The network will consist of 20 fast-charging stations that will be installed across southern Alberta by the end of 2019. Long term ownership and operation of the charging infrastructure will be carried out by ATCO.⁴⁸

6.0 Jurisdictional comparison

A key objective of this Phase 2 Report is to provide recommendations for a regulatory framework for non-exempt utilities going forward to support the provincial Government's clean energy policies in transportation electrification. In so doing, the Panel finds it helpful to provide a scan of other jurisdictions to consider how some regulators in the United States deal with public utility investments in EV charging service.

In jurisdictions where there is public utility involvement in the EV charging service sector, we observe that it is generally influenced by explicit statutory goals. For example, the California Senate established new clean energy, clean air and greenhouse gas and reduction goals for 2030 and beyond that, among other things, require public utilities to undertake transportation electrification activities. In 2016, the Oregon Legislature directed investor-owned utilities to achieve advanced transportation electrification and achieve ratepayer and environmental benefits. In 2019, the New Mexico Legislature also directed public utilities to file applications to expand transportation electrification. These jurisdictions provide examples where public utilities are permitted to provide EV charging services and recover costs through rates.

On the other hand, there are some jurisdictions which have allowed public utility investments in the EV market without specific legislation direction. One such example is the approval of EV programs by the Maryland utilities

⁴⁴ While Ontario had pledged to take provide ZEV incentives and support infrastructure rollout by ensuring recharging capacity was integrated into designated parking facilities owned by the Ontario government and GO Transit parking facilities⁴⁴, they have since ended their vehicle and charging incentive programs. <http://www.mto.gov.on.ca/english/vehicles/electric/electric-vehicle-incentive-program.shtml>

⁴⁵ Article dated March 11, 2019, <https://news.hydroquebec.com/en/press-releases/hq/1469/electric-circuit-and-groupe-filgo-sonic-inaugurate-ev-charging-superstation-in-saint-apollinaire/>

⁴⁶ Article dated January 23, 2019, <https://montrealgazette.com/business/local-business/federal-government-to-fund-100-new-electric-car-charging-stations-in-quebec>

⁴⁷ Article dated November 8, 2017, <https://www.jwnenergy.com/article/2017/11/alberta-getting-its-first-electric-vehicle-charging-corridor/>

⁴⁸ Article dated February 1, 2019, <https://www.atco.com/en-ca/projects/peaks-to-prairies-electric-vehicle-charging-station.html>

regulator that allows public utilities to invest in make-ready infrastructure and own charging stations.⁴⁹ In addition, the Michigan utilities regulator approved \$10 million capital investments in EV charging infrastructure.⁵⁰ On its own motion, the Minnesota utilities regulator also requested that public utilities file detailed plans on how the utility would increase electric vehicle adoption in the state to further public interests.⁵¹

6.1 California

California represents the largest EV market in North America and was one of the first jurisdictions to address EV charging service policy. As of October 2017, California had 337,482 zero-emissions vehicles, making up four and a half percent of the total vehicle fleet in California.⁵² As of December 2017, the United States had about 765,000 plug-in cars, with California accounting for approximately forty eight percent of cumulative US plug-in sales at over 365,000 units.⁵³ Since 2016, the California Public Utilities Commission (CPUC) has approved more than \$800 million for transportation electrification programs.⁵⁴ Experience in California is therefore particularly instructive for other regulators which are considering the appropriate regulatory framework for EV charging service.

In October 2015, California adopted legislation which amends the California Public Utilities Code to require the CPUC to direct utilities to file applications to accelerate widespread transportation electrification.⁵⁵

Senate Bill (SB) 350 adds the following definition of “Transportation electrification” to the California Public Utilities Code:

“Transportation electrification” means the use of electricity from external sources of electrical power, including the electrical grid, for all or part of vehicles, vessels, trains, boats, or other equipment that are mobile sources of air pollution and greenhouse gases and the related programs and charging and propulsion infrastructure investments to enable and encourage this use of electricity.

SB 350 also amends the Public Utilities Code to state that the California Legislature finds and declares the following (among other things) regarding transportation electrification:⁵⁶

- Advanced clean vehicles and fuels are required to reduce petroleum use and achieve GHG reduction targets;
- Widespread transportation electrification requires increased access to zero-emission vehicles for consumers, particularly among low-income or disadvantaged communities;
- Widespread transportation electrification requires electrical corporations to increase access to the use of electricity as a transportation fuel;

⁴⁹ Exhibit C36-2, Alliance, Phase 2 evidence, p. 10.

⁵⁰ Ibid.

⁵¹ Ibid.

⁵² EV Inquiry Phase 1, Exhibit C12-2, FBC evidence, p. 14.

⁵³ EV Inquiry Phase 1, Exhibit C24-2, CEC evidence, pp. 72–73.

⁵⁴ EV Inquiry Phase 2, ChargePoint, Final Argument, p. 5.

⁵⁵ Senate Bill 350, the Clean Energy and Pollution Reduction Act of 2015 (SB 350), s. 32, which adds s. 740.12 to the Public Utilities Code (Chapter 547, Statutes of 2015).

https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB350.

⁵⁶ SB 350, s. 32, which adds s. 740.12 to the Public Utilities Code

https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB350.

- Deploying electric vehicles should assist in grid management and the integration of renewable energy;
- Deploying electric vehicle charging infrastructure should increase sales of electric vehicles by making charging easily accessible and fuel less costly than gasoline or other fossil fuels; and
- Furthermore, SB 350 states that the CPUC is to direct utilities to file applications related to transportation electrification and the CPUC must approve or modify and approve these programs if they (among other things) align with the findings and declarations summarised above, include a reasonable cost recovery mechanism, minimize overall costs and maximize overall benefits, and include performance accountability measures.⁵⁷

In addition, the Public Utilities Code states that the CPUC's policies authorizing utilities to develop equipment or infrastructure needed for electric-powered and natural gas-fueled low-emission vehicles shall ensure that the costs and expenses of those programs are not passed through to electric or gas ratepayers unless the CPUC determines that those programs are in the ratepayers' interest. The CPUC's policies shall also ensure that utilities do not unfairly compete with nonutility enterprises.⁵⁸

After the new legislation was passed, the CPUC directed utilities to file applications for programs to accelerate transportation electrification. The CPUC established a set of principles to guide the commission's review of the applications and set out the criteria the applications would have to meet.⁵⁹ Among other things, the CPUC stated that applications should identify which proposed programs should be given a priority review (non-controversial, short term (e.g. one year) investments, with budgets of US\$4 million per project, with a total funding limit of \$20 million per utility), or standard review (e.g. 2-5 years or greater budget).⁶⁰

Because one of the objectives of the legislative change is to collect information and share lessons learned, the CPUC established utility data collection and reporting requirements for priority projects by the largest utilities in the state.⁶¹ Each utility is required to submit a report of all approved programs. The current templates are available on the CPUC website⁶² under the "reporting requirements" section.

6.2 Oregon

In 2016, the Oregon State Legislature passed legislation which established, among other things, programs encouraging transportation electrification.⁶³ The new legislation added a number of findings and declarations

⁵⁷ SB 350, s. 32, which adds s. 740.12 to the Public Utilities Code:

https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB350.

⁵⁸ <http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M167/K099/167099725.PDF>.

⁵⁹ Assigned Commissioner's Ruling Regarding the Filing of the Transportation Electrification Applications Pursuant to Senate Bill 350, CAP/jt2 9/14/16: <http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M167/K099/167099725.PDF>. Appendix A contains the SB 350 Transportation Electrification Application Guidance.

⁶⁰ Assigned Commissioner's Ruling Regarding the Filing of the Transportation Electrification Applications Pursuant to Senate Bill 350, CAP/jt2 9/14/16: <http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M167/K099/167099725.PDF>. See also the CPUC's Decision on the Transportation Electrification Priority Review Projects, D.18-01-024, p. 14 <http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M204/K670/204670548.PDF>.

⁶¹ Ibid., p. 95.

⁶² <http://www.cpuc.ca.gov/sb350te/>

⁶³ SB 1547, s. 20: <https://olis.leg.state.or.us/liz/2016R1/Downloads/MeasureDocument/SB1547/Enrolled>. See also Oregon Revised Statutes Chapter 757 — Utility Regulation Generally: https://www.oregonlegislature.gov/bills_laws/ors/ors757.html

similar in nature to California’s SB 350 to the utilities regulation sections of the Oregon Revised Statutes, including:⁶⁴

- Transportation electrification is necessary to meet a number of environmental goals, including greenhouse gas emissions reduction;
- Widespread transportation electrification requires that electric companies increase access to the use of electricity as a transportation fuel;
- Widespread transportation electrification should stimulate innovation and competition;
- Transport electrification should assist in managing the electrical grid and improve efficiency and flexibility; and
- Charging EVs in a manner that provides benefits to electrical grid management affords fuel cost savings for vehicle drivers.

The new legislation requires the Oregon Public Utility Commission (OPUC) to direct electric utilities to file applications for the purpose of accelerating transportation electrification. When considering a transportation electrification program and determining cost recovery, the OPUC is required to consider whether the program achieves a number of factors, including whether the expenditures are prudent, and are reasonably expected to be used and useful.⁶⁵

The new legislation establishes that costs shall be recovered from ratepayers in a manner similar to recovery of distribution system investments. Furthermore, once charging equipment has fully depreciated, the OPUC may allow utilities to donate that infrastructure to the owner of the property on which the equipment is located.⁶⁶

6.3 New Mexico

In 2019, New Mexico’s Legislature amended its Public Utility Act, directing public utilities to file with the New Mexico Public Regulation Commission (NMPRC) applications to expand transportation electrification. These applications may include investments or incentives related to the electrification of public transit, education programs, rate designs that encourage efficient use of the electric grid, and other programs that support transportation electrification.⁶⁷

When considering transportation electrification applications, the NMPRC must consider whether the programs and investments are:⁶⁸

- reasonably expected to improve the utility’s electrical system efficiency and flexibility;
- reasonably expected to increase access to electricity as a transportation fuel;

⁶⁴ SB 1547, s. 20: <https://olis.leg.state.or.us/liz/2016R1/Downloads/MeasureDocument/SB1547/Enrolled>. See also Oregon Revised Statutes Chapter 757 — Utility Regulation Generally: https://www.oregonlegislature.gov/bills_laws/ors/ors757.html.

⁶⁵ SB 1547, s. 20: <https://olis.leg.state.or.us/liz/2016R1/Downloads/MeasureDocument/SB1547/Enrolled>. See also Oregon Revised Statutes Chapter 757 — Utility Regulation Generally: https://www.oregonlegislature.gov/bills_laws/ors/ors757.html.

⁶⁶ SB 1547, s. 20: <https://olis.leg.state.or.us/liz/2016R1/Downloads/MeasureDocument/SB1547/Enrolled>. See also Oregon Revised Statutes Chapter 757 — Utility Regulation Generally: https://www.oregonlegislature.gov/bills_laws/ors/ors757.html.

⁶⁷ New Mexico House Bill 521: <https://www.nmlegis.gov/Sessions/19%20Regular/final/HB0521.pdf>.

⁶⁸ New Mexico House Bill 521:
<https://www.nmlegis.gov/Sessions/19%20Regular/final/HB0521.pdf>.

- designed to reduce GHGs;
- reasonably expected to increase consumer choice for EV charging;
- reasonable and prudent; and
- transparent.

Public utilities applying to the NMPRC under the Act have the option to recover reasonable costs of such programs through a tariff rider, base rate or both.⁶⁹

7.0 Submissions of the parties

In this section, the Panel summarizes and categorizes participants' submissions received throughout the course of this Inquiry, as it relates to the Phase 2 scope items.

7.1 Amending the Greenhouse Gas Reduction Regulation

One of the Phase 2 scope items include whether amendments to the GGRR were appropriate in order to allow public utilities to own and operate EV charging stations as a "prescribed undertaking" and if so, the appropriate extent and scope of such undertaking.

Several interveners support an amendment to the GGRR which would allow public utilities to own and operate EV charging stations as a 'prescribed undertaking.'⁷⁰ In general, these interveners argue that amending the GGRR will provide more certainty and clear direction for public utilities relative to other non-binding policies.⁷¹ Additionally, an amendment simplifies the BCUC review process, removes regulatory uncertainty and ensures public utilities can move forward quickly with these investments and build-out of infrastructure.⁷²

In Appendix B to its Phase 1 Final Argument, BC Hydro proposed the following changes to the GGRR:

Section 4 be amended by adding the following subsections:

- (5) A public utility's undertaking that is in a class defined as follows is a prescribed undertaking for the purposes of section 18 of the Act:*
 - (a) the public utility constructs or operates an electric vehicle charging station.*

Several parties⁷³ supported BC Hydro's proposed amendment; however, FBC suggested additional language should be added to allow for the purchase of EV charging stations which would be consistent with language in

⁶⁹ New Mexico House Bill 521:

<https://www.nmlegis.gov/Sessions/19%20Regular/final/HB0521.pdf>.

⁷⁰ BCSEA Final Argument, p. 9; Flintoff Final Argument, section 3.2, p. 9; Exhibit C5-8, CoV, Phase 2 evidence, p. 6; Exhibit C15-7, Greenlots, Phase 2 evidence, p. 11; Exhibit C20-7, ATI, Phase 2 evidence, p. 11; Exhibit C38-2, Siemens, Phase 2 evidence, pp. 11, 19; EV Inquiry Phase 1, Exhibit C9-7, UDI Final Argument, p. 3.

⁷¹ EV Inquiry Phase 2, BCSEA Final Argument, p. 9; EV Inquiry Phase 2, Flintoff Final Argument, Section 3.2, p. 9; Exhibit C15-7, Greenlots, Phase 2 evidence, p. 11.

⁷² EV Inquiry Phase 2, Flintoff Final Argument, section 3.2, p. 9.

⁷³ Exhibit C15-7, Greenlots, Phase 2 evidence, p. 11; EV Inquiry Phase 1, Exhibit C12-5, FBC reply argument, p.4.

other sections of the regulation regarding CNG and LNG fueling stations.⁷⁴ BC Hydro acknowledged that “this class of undertaking could also be defined with a temporal and/or financial limit...”⁷⁵

Many interveners acknowledge the benefits of allowing public utilities to invest in EV charging stations as a “prescribed undertaking,” but noted that other mechanisms could allow for public utility investment in the EV charging market.⁷⁶

In BC Hydro’s Phase 1 Final Argument, BC Hydro argued that the Province could take further actions outside of an amendment to the GGRR. As an example, BC Hydro stated that the Lieutenant Governor in Council could direct the BCUC to establish rates, terms, and conditions of EV service for non-exempt public utilities.⁷⁷ MEMPR submits that an amendment to the GGRR is just one method for promoting public utility involvement in the EV charging market and notes that other jurisdictions have taken a variety of legislative changes to promote public utility involvement.⁷⁸

ChargePoint argues that models used in the United States, such as California, Oregon, and New Mexico, should be used as guidance.⁷⁹ At a high-level, these models confirm the importance of utility participation in transportation electrification and require commissions to direct utilities to submit applications with the objective of accelerating transportation electrification. These policies provide criteria that commissions must consider when reviewing applications for investments. For example, investments must increase transportation electrification, support grid flexibility, support consumer choice, and be in the interest of ratepayers.⁸⁰

ChargePoint submits that these models establish clear policy direction and context and utilize commission expertise to implement policy in a transparent manner that balances ratepayer’s interests with climate objectives, long-term market stability and innovation. ChargePoint goes on to say that in these jurisdictions commissions’ expertise has proven to support utility programs and further transportation electrification goals.⁸¹

A number of interveners voiced concerns regarding amending the GGRR to allow public utilities to own and operate EV charging stations as a “prescribed undertaking.”

In particular, the Clean Energy Association of British Columbia (CEABC) argues that utility ownership and operation of stations are outside of the core business of public utilities, and because of this, utilities should not be allowed to own or operate EV charging stations except as a last resort.⁸²

The Commercial Energy Consumer Association of British Columbia (CEC) notes that non-exempt public utilities are not currently precluded from participating in the EV charging market, and as such, an amendment to the

⁷⁴ EV Inquiry Phase 1, Exhibit C12-5, FBC Reply Argument, p.4.

⁷⁵ EV Inquiry Phase 1, Exhibit C1-5, BC Hydro Final Argument, Appendix B, p. 1.

⁷⁶ Exhibit C19-12, MEMPR, Phase 2 evidence, p. 12; Exhibit C12-6, FBC, Phase 2 evidence, pp. 8-9; Exhibit C1-7, BC Hydro, Phase 2 evidence, BCH response to BCUC Q14; Exhibit C20-7, ATI, Phase 2 evidence, p. 3.

⁷⁷ Exhibit C1-7, BCH, Phase 2, response to BCUC Q14.

⁷⁸ Exhibit C19-12, MEMPR, Phase 2 evidence, p. 12.

⁷⁹ EV Inquiry Phase 2, ChargePoint, Final Argument, pp. 3-4.

⁸⁰ Ibid.

⁸¹ Ibid.

⁸² Exhibit C2-4, CEABC Phase 2 evidence, p. 9.

GGRR is not required.⁸³ The CEC submits that there are substantial issues and uncertainties that are unresolved regarding the development of the EV market and the impact of utility investment, and “amending the GGRR to provide EV charging as a ‘prescribed undertaking’ could significantly and inappropriately limit the BCUC’s opportunity to manage the ongoing investment in order to preserve the opportunities for market development.”⁸⁴

In addition, the CEC submits that the BCUC should not make a recommendation to change the GGRR and “that the BCUC’s mandate is to regulate utilities, and consider existing government policy, but does not, and should not, include the discriminatory promotion of industry development and provincial greenhouse gas regulation.”⁸⁵ ChargePoint supports increasing investment certainty through legislation, to facilitate non-exempt utility participation, but not at the expense of removing Commission scrutiny, which could chill the investment environment for non-utility players and put the long-term stability of the market at risk. For that reason, ChargePoint is in favor of legislative change, but advises against broadening the GGRR to allow for EV charging services as a prescribed undertaking.⁸⁶

Several interveners argue that EV charging service is consistent with the current definition of a prescribed undertaking under section 4 of the GGRR, and, therefore the GGRR already enables public utilities to include EV charging services, including EV charging stations, within their regulated rate base.⁸⁷ More specifically, these proponents argue that an amendment to the GGRR is unnecessary because pilot programs respecting technology that enable a utility’s customers to use electricity instead of other sources of energy that produce more GHG emissions are considered to be a prescribed undertaking under section 4(3)(c).⁸⁸

In Phase 1, the Panel found that “whether a specific application qualifies as a pilot project should properly be determined by the BCUC, based on the merits of the particular application including the proposed scale and term of such project.”⁸⁹

7.2 Location of EV charging stations

Geographic and market criteria

Throughout the proceeding the Panel heard various arguments on whether traditional utilities should be restricted to participating in the EV charging market based on certain geographic or market conditions.

Several parties expressed support for geographic or market-based criteria when determining the scope of non-exempt utility participation in the EV charging market.

⁸³ EV Inquiry Phase 2, CEC Final Argument, p. 5.

⁸⁴ Ibid.

⁸⁵ Exhibit C24-21, CEC, Phase 2 evidence, p. 17.

⁸⁶ Chargepoint Reply Argument, p. 1.

⁸⁷ Exhibit C36-2, Alliance Phase 2 evidence, p. 14; EV Inquiry Phase 1, Exhibit C4-11, Flintoff Final Argument, chapter 5; EV Inquiry Phase 1, Exhibit C5-7, CoV Ffinal Argument, p. 9; EV Inquiry Phase 1, Exhibit C12-4, FBC final argument, pp. 4–7 ; EV Inquiry Phase 1, Exhibit C15-5, Greenlots Final Argument, p. 2; EV Inquiry Phase 1, Exhibit C24-19, CEC Final Argument pp. 33–34, EV Inquiry Phase 1, Exhibit C34-6, CEA Final Argument, p. 3; EV Inquiry Phase 1, Exhibit C35-7, Victoria EVA final argument, pp. 2–3.

⁸⁸ EV Inquiry Phase 1, FBC Final Argument, pp. 4–7.

⁸⁹ BCUC – EV Inquiry Phase 1 Report, p. 51.

For instance, some interveners suggest that the scope of the traditional utility involvement could vary depending on the specific market being served (e.g. workplaces and retail locations, highway corridors, multiple unit residential buildings MURBs, single family homes).⁹⁰

On amending the GGRR, Guthrie submits that controls should be placed on the level of market penetration in any one area.⁹¹ Presumably the purpose of this limit is to ensure that a non-exempted public utility does not create a localized monopoly-like situation. Guthrie submits that non-exempt utility participation should focus on installation of charging stations on long-distance transportation corridors rather than local market coverage given the fact that the majority of EV charging takes place at home.⁹²

On the other hand, several interveners indicated that non-exempt public utilities should not be restricted to any particular market or location.⁹³ In particular, BC Hydro suggests that limiting non-exempt utilities to a particular geographic area would discourage non-exempt utility participation in the EV charging market.⁹⁴

On this subject, BCSEA submits that “it is currently uneconomic for any entity to provide public EVCS, without an internal or external subsidy, in any area of the Province” [emphasis in original].⁹⁵ BCSEA submits that limiting non-exempt utilities to remote geographic areas would be contrary to the Province’s stated goal that traditional public utilities should provide EV charging services in order to kick-start the market in BC.⁹⁶

FBC submits that non-exempt utilities should provide EV charging services wherever there is existing or expected underserved demand. FBC refines its point by stating this demand may be in remote locations areas but may be required to provide a continuous charging network.⁹⁷

On a related matter, the issue arises whether public utilities are allowed to provide EV charging services in another public utility’s traditional service territory. CEABC argues that the concept of service territories isn’t relevant since these are not monopoly services. Furthermore, it may be desirable to provide charging stations on highway corridors even when these roads pass through another public utility’s service territory.⁹⁸

On a related matter, some interveners indicated support for postage stamp rates for the prices offered by non-exempt public utilities.⁹⁹

Obligation to serve

In the revised scope items, the Panel requested submissions on non-exempt public utilities’ obligation to serve.

⁹⁰ Exhibit C38-2, Siemens, Phase 2 evidence, pp. 11, 19.

⁹¹ Exhibit C16-6, Guthrie, Phase 2 evidence, p. 9.

⁹² Ibid.

⁹³ EV Inquiry Phase 2, Flintoff Final Argument, section 3.3.1; Exhibit C1-7, BC Hydro Phase 2 evidence, response to BCUC question No. 2.

⁹⁴ Exhibit C1-7, BC Hydro Phase 2 evidence, response to BCUC question No. 2.

⁹⁵ EV Inquiry Phase 2, BCSEA Final Argument p. 4.

⁹⁶ Ibid.

⁹⁷ EV Inquiry Phase 2, FBC Final Argument, p. 3.

⁹⁸ EV Inquiry Phase 2, CEABC Final Argument, p. 3.

⁹⁹ EV Inquiry Phase 2, BCSEA Final Argument, p. 4.

Several parties submit that the obligation to serve would apply once EV infrastructure is built, but in general this principle does not compel public utilities to construct new charging stations.¹⁰⁰ On this matter, BCSEA requests that the BCUC clarify at a high level that this current understanding is correct.¹⁰¹

BC Hydro submits that the obligation to serve “is largely established by Commission orders, including for example the establishment of rates, terms and conditions that allow for or require particular services including, potentially, EV charging services.”¹⁰²

Flintoff notes that under section 28(3) of the UCA, the BCUC may relieve a public utility from the obligation to serve.¹⁰³ The CEC believes non-exempt public utilities should not have an obligation to serve the EV customers as long as competitors are allowed to enter the market.¹⁰⁴

7.3 Capital expenditures caps for public utilities

Cost-thresholds

A number of interveners suggested that cost-thresholds for public utility investments could be established by regulation or other means.¹⁰⁵ For the most part advocates for this approach did not suggest specific cost ceilings but did recognize that “reasonable” cost thresholds should be considered in order to reduce possible cross-subsidization and minimize the impact of potential stranded assets.

Some interveners have pointed to other sections of the GGRR that govern compressed natural gas (CNG) and liquefied natural gas (LNG) investments as a potential model for capping investments.¹⁰⁶ These proponents argue that these sections set clear and transparent limits regarding total expenditures and recovery of operating costs of eligible investments.

BC Old Age Pensioners’ Organization et al. (BCOAPO) suggests the current Demand-Side Measure Regulation is another reasonable model that could be followed. Under this framework benefits are increased by a set amount to recognize non-energy benefits.¹⁰⁷

BCOAPO also suggests that one way of providing a financial limit of sorts is to include EV charging stations as an additional undertaking under section 4 (3) (a) of the GGRR which requires that an undertaking must be “cost-effective.”¹⁰⁸ Regarding this “cost-effective” criteria, CoV submits:

The requirement for ‘cost-effectiveness’ in Section 4 of the GGRR would likely disqualify the deployment of DC Fast Charging in most locations at this early stage of the market, especially in areas with the least competitive choices such as remote, rural and low-income communities.

¹⁰⁰ EV Inquiry Phase 2, FBC Final Argument, p. 6; EV Inquiry Phase 2, BCOAPO Final Argument, pp. 13-14; EV Inquiry Phase 2, BCSEA Final Argument, pp. 5–6.

¹⁰¹ EV Inquiry Phase 2, BCSEA Final Argument, pp. 5–6.

¹⁰² EV Inquiry Phase 1, Exhibit C1-4, BC Hydro response to BCUC IR 1.4.5.

¹⁰³ EV Inquiry Phase 2, Flintoff Final Argument, section 3.3.6.

¹⁰⁴ EV Inquiry Phase 2, CEC Final Argument, p.4.

¹⁰⁵ EV Inquiry Phase 2, CEC Final Argument, p. 5; Brightside Final Argument, p. 3; Exhibit C5-5 City of Vancouver evidence, p. 6.

¹⁰⁶ EV Inquiry Phase 2, Brightside Final Argument, p. 3; EV Inquiry Phase 2, BCOAPO Final Argument, p. 11.

¹⁰⁷ EV Inquiry Phase 2, BCOAPO Final Argument, p. 11.

¹⁰⁸ Ibid., p. 17.

This outcome would work against the public interest for early investment in EV charging services in less economic areas.¹⁰⁹

On the opposite end of the spectrum, MEMPR states that there should be no cap on non-exempt utility investments and that all costs that can't be recovered directly from EV charging station customers should be subsidised by all ratepayers. MEMPR bases its position on the assumptions that increasing utility investment in the EV charging market will have a positive impact on EV sales, all ratepayers will benefit from lower GHG emissions, and ratepayers will benefit from increasing electricity sales.¹¹⁰ MEMPR argues that these assumptions can be revisited as the market develops.

Greenlots submits the BCUC has sufficient mechanisms already in place to evaluate whether a non-exempt public utility EV-related investment is in the public interest and therefore does not require the establishment of limitations or caps on such investments.¹¹¹

7.4 Stranded asset risks

In the context of a nascent industry with fast-changing technology, many interveners raised questions regarding the risk of stranded assets, particularly due to possible equipment obsolescence.

Several interveners submit that the issue of stranded assets can and should be dealt with through the usual regulatory processes at the time a stranded asset occurs, such as through a Revenue Requirements Application, and reviewed in accordance with the generally accepted regulatory practices.¹¹²

Other participants suggest that non-exempt utilities should address the issue of potentially stranded assets when undertaking investments in this market, either directly through applications to the BCUC or otherwise.¹¹³ BCOAPO goes on to argue that only BCUC approved expenditures should be allowed for recovery in the event of a stranded asset.¹¹⁴

The CEC and Flintoff submit that the approval of non-exempt utility investments in the EV infrastructure will reduce the likelihood of a post-prudency assessment which in turn means that ratepayers will more than likely bear the full cost of any stranded assets.¹¹⁵ As a result, the CEC recommends a cautious approval process done on a case-by-case basis to mitigate risk.¹¹⁶

Many interveners are less concerned about the risk of stranded assets and provided specific methods that may reduce the likelihood of assets becoming stranded.

¹⁰⁹ EV Inquiry Phase 1, Exhibit C5-7, CoV Final Argument, p. 9.

¹¹⁰ Exhibit C19-12, MEMPR, Phase 2 evidence, p. 9.

¹¹¹ Exhibit C15-7, Greenlots, Phase 2 evidence, p. 5.

¹¹² Exhibit C1-7, BC Hydro, Phase 2 evidence, p. 2 (in pdf); EV Inquiry Phase 2, FBC Final Argument, p. 5; Exhibit 36-2, Alliance, Phase 2 evidence, p.13; EV Inquiry Phase 2, BCSEA Final Argument, p. 5.

¹¹³ EV Inquiry Phase 2, BCOAPO Final Argument, p. 12; Exhibit C25-12, ChargePoint, Phase 2 evidence, p. 8; Exhibit 38-2, Siemens, Phase 2 evidence, pp. 11-12; Exhibit 15-7, Greenlots, Phase 2 evidence, , p. 6.

¹¹⁴ EV Inquiry Phase 2, BCOAPO Final Argument, p. 12.

¹¹⁵ EV Inquiry Phase 2, CEC Final Argument, p. 3; EV Inquiry Phase 2, Flintoff Final Argument, section 3.3.4.

¹¹⁶ EV Inquiry Phase 2, CEC Final Argument, p. 3.

With regard to the magnitude of the risks, CEA submits that the level of regulation should consider the size of the investments involved. CEA cites the following:

The Province has published documents that suggest another 100 DCFC will be required in BC. A DCFC is about \$100,000 installed. This is a \$10 million investment over several years, likely largely supported by federal (NRCAN) grants, assuming utilities deploy 100% of the new DCFC. Assuming that 50% of the DCFC installed cost is through federal grants, this is a \$5 million investment. Even if the province under-estimated DCFC requirements by 100%, this would still only be a \$10 million net investment.

...

The stranded asset discussion is a 'red herring' for a \$5 million net investment which can be risk-managed by utilities.¹¹⁷

FBC argues that the risk of stranded assets is less a factor in the current nascent market stage in comparison to when the market is more mature or shrinking since older assets will be required for longer.¹¹⁸ Similarly, MEMPR submits that older model EVs will still require access to "old technology" chargers even after higher capacity chargers are developed.¹¹⁹

Several parties provided examples of specific management practices that can reduce the risks of stranded assets, including:

- Redeploying older equipment to a new location when upgrading an existing station;¹²⁰
- Retaining older equipment when new higher capacity chargers are installed to reduce station congestion and provide more options at a particular station.¹²¹
- Using larger conduit when building stations;¹²²
- Using open standards such as Open Charge Point Protocol or OpenADR;¹²³
- Requiring utilities to actively engage in transportation electrification planning process to stay up-to-date on the latest market developments.¹²⁴

Regarding amending the GGRR, BrightSide Solutions (Brightside) notes that "the provisions for cost recovery in the GGRR for natural gas stations provide that all rate payers provide a backstop for stranded assets."¹²⁵

¹¹⁷ EV Inquiry Phase 2, CEA Final Argument, pp. 3, 5.

¹¹⁸ EV Inquiry Phase 2, FBC Final Argument, p. 5.

¹¹⁹ Exhibit C19-2, MEMPR, Phase 2 evidence, p. 8.

¹²⁰ EV Inquiry Phase 2, FBC Final Argument, p. 6.

¹²¹ Ibid.

¹²² EV Inquiry Phase 2, Alliance Reply Argument, p. 4.

¹²³ Exhibit 36-2, Alliance, Phase 2 Evidence, p. 13; Exhibit C15-7, Greenlots, Phase 2 evidence, p. 6; Exhibit C38-2, Siemens, Phase 2 evidence, p. 12; EV Inquiry Phase 2, BCSEA Final Argument, p. 6.

¹²⁴ Exhibit C36-2, Alliance, Phase 2 evidence, p. 13.

¹²⁵ EV Inquiry Phase 2, Brightside Final Argument, p. 5.

7.5 Cost recovery mechanism, rate setting and cross subsidization from non-EV users

Cross subsidization and load building

In Phase 2 the Panel sought evidence on what, if any, regulatory justification is required to address the issue of cross-subsidization in the current regulatory environment in which the non-exempt utility investments in EV charging infrastructure exist.

Some interveners submit that it's appropriate for existing utilities to subsidize EV charging services over the short term because the long term benefits associated with accelerating EV adoption would outweigh the short-term costs.¹²⁶ Proponents also submit that this approach would be in support of Government climate and GHG reduction policies.¹²⁷ Parties submit that some of the benefits of EV adoption include reducing GHG emissions, reducing air-pollution, and building electricity load which in turn reduces the unit cost of energy. ChargePoint cites a study conducted by MJ Bradley and Associates that found a \$2.6 billion net benefit of EV adoption in Michigan by 2050 if EV sales reach more than 55 percent of total vehicle sales due to reduced electricity bills.¹²⁸ ChargePoint also cites a cost-benefit analysis conducted by four utilities in Maryland that found that the proposed EV investments by the utilities would result in net benefits to all ratepayers due to the increased load.¹²⁹

In contrast, BrightSide argues that the building incremental load may not be a benefit to ratepayers in the long term. Brightside submits that benefits of incremental load growth depend on the assumption that load growth will not require further investment in production and distribution assets. Brightside's view is that the utility's electricity load will substantially increase with the widespread adoption of EVs and will require infrastructure investments that will increase the average cost of supply for the utility over the long term.¹³⁰

Regarding the uncertainty around potential benefits, MEMPR submits that the assumed benefits could be revisited as the market develops.¹³¹

Additionally, some interveners argue that it is currently uneconomic for utilities to provide EV charging services without some form of subsidy for EV charging.¹³² FBC notes that it is unclear how, without some sort of direct Government investment or utility rate-basing, uneconomic charging stations (e.g. remote locations) would be funded, which indicates that some sort of subsidization is needed in order to 'kick-start' the market.¹³³

In support of some level of subsidization, FBC submits that there is already a degree of inter- and intra-class cross subsidization due to variations such as customer location and load factor. FBC also submits that the situation is similar to other utility projects such as system extensions, which are undertaken based on projected load growth and may not fully recover the cost of service in earlier years.¹³⁴ FBC argues that modest cross-

¹²⁶ Exhibit C1-7, BC Hydro, Phase 2 evidence, p. 4 (in pdf); Exhibit C20-7, ATI, Phase 2 evidence, 7, p. 6; Exhibit C25-12, ChargePoint, Phase 2 evidence, pp. 8-10; Exhibit C19-12, MEMPR, Phase 2 evidence, p. 9.

¹²⁷ Exhibit C1-7, BC Hydro, Phase 2 Evidence, p. 4 (in pdf).

¹²⁸ Exhibit C25-12, ChargePoint, Phase 2 evidence, p. 8.

¹²⁹ Ibid.

¹³⁰ EV Inquiry Phase 2, Brightside Final Argument, p. 5.

¹³¹ Exhibit C19-12, MEMPR, Phase 2 Evidence, p. 9.

¹³² Exhibit C6-16, BCSEA, Phase 2 evidence, p. 5; Exhibit C15-7, Greenlots, Phase 2 evidence, p. 2.

¹³³ EV Inquiry Phase 2, FBC Final Argument, p. 6.

¹³⁴ Ibid., p. 4.

subsidization must be weighed against the need to accelerate EV adoption in support of Government policy objectives and the possibility that all rate classes may benefit.¹³⁵

Some interveners frame the issue in terms of cost-causation principles or perceived issues of unfairness. These proponents argue that to the extent costs can be associated with a particular class of customers then these costs should be recovered from this group to the greatest degree possible as a matter of principle.

Flintoff submits that subsidizing owners of EVs is regressive since, generally speaking, EV owners are in a higher income class than non-EV owners and as such EV owners should not be subsidized by other rate classes.¹³⁶

Other parties indicated that subsidizing EV infrastructure by spreading costs across a utility's rate base will give existing public utilities a competitive advantage over unregulated entities. BrightSide states that "clearly, where one party in the market has the ability to subsidize investments and to have full cost recovery certainty, and the other must take commercial risk, there is no level playing field."¹³⁷ These interveners argue that controls should be set in place, whether through specific language in the GGRR or otherwise, that ensure non-exempted public utilities do not cross subsidize from non-EV users.¹³⁸

BCSEA submits that there is little evidence that regulated utilities will undercut non-regulated utilities and that shouldn't be a factor in the BCUC's evaluation.¹³⁹

Several interveners argue that private entities will be and are able to compete with existing public utilities.

CEA notes that Petro Canada and Canadian Tire have begun deploying DCFC stations throughout Canada. CEA notes that "these entities appear willing to sustain losses for several years to establish market presence, branding / marketing benefits, and to explore the potential for an increase in retail sales."¹⁴⁰ MEMPR and other parties also anticipate that exempt entities will develop novel business models to compete with non-exempt utilities, such as offering ancillary services.¹⁴¹ Similarly, Siemens argues that exempt public utilities will be more flexible and more responsive to market developments.¹⁴²

FBC argues that exempt entities that provide EV charging services are likely to be large, sophisticated organizations, such as local governments and car manufacturers. FBC submits that these entities will be able to incorporate EV charging costs in their overall business model and would have access to capital at comparable costs to those available to a public utility.¹⁴³

From the perspective of regulated utility rate making, FBC states that it expects existing utilities will design rates that recover the costs of owning and operating DCFC stations. FBC points out that its current DCFC fee of \$9 per

¹³⁵ Ibid., p. 4.

¹³⁶ EV Inquiry Phase 2, Flintoff Final Argument, section 3.3.3.

¹³⁷ EV Inquiry Phase 2, Brightside Final Argument, p. 3.

¹³⁸ See for example: Exhibit C16-6, Guthrie, Phase 2 evidence, p. 9

¹³⁹ EV Inquiry Phase 2, BCSEA Final Argument, p. 3.

¹⁴⁰ EV Inquiry Phase 2, CEA Final Argument, p. 3.

¹⁴¹ Exhibit C19-12, MEMPR, Phase 2 evidence, , p. 6; Exhibit C18-2, FBCPIBC, Phase 2 evidence, pp. 1-2; Exhibit C38-2, Siemens, Phase 2 evidence, p. 3; EV Inquiry Phase 2, EV Inquiry Phase 2, CEA Final Argument, p. 3.

¹⁴² Exhibit C38-2, Siemens, Phase 2 evidence, p. 3.

¹⁴³ EV Inquiry Phase 2, FBC Final Argument, pp. 2-3.

half hour, which is based on a cost of service model, is greater than the price at some charging stations operated by the City of Vancouver (\$8 per half hour).¹⁴⁴

Intervenors also provided suggestions on specific mechanisms whereby the BCUC or the government could limit the risk of cross subsidization.

Siemens suggest that a mixed strategy approach could be used where underserved markets could have costs recovered from all ratepayers whereas other markets may have some (or none) of the costs recovered from general ratepayers.¹⁴⁵

BrightSide argues that it would be logical to use a mechanism like the CNG and LNG model that recovers the majority or all of the cost of service over the short-term with long-term costs backstopped by the utility's ratepayers. BrightSide submits that the current GGRR provisions allow public utilities to own and operate CNG and LNG fueling station provided they have customer contracts to cover 80% of the operating costs for the first 5 years.¹⁴⁶ Furthermore, using this model means 80 percent of the cost of service for the 20 year life of the fueling stations is backstopped by natural gas ratepayers.¹⁴⁷ However, BrightSide submits that the EV charging market will likely not support term agreements and that initial volumes will not support full cost recovery.¹⁴⁸

BrightSide goes on to say that the result of the GGRR policy has been the significant growth of the natural gas vehicle market in BC; however there has been minimal uptake in non-utility ownership of CNG and LNG stations. BrightSide cautions that these results suggest that utility participation can have a meaningful impact in encouraging early market traction but may also hinder participation for other potential market participants.¹⁴⁹

Separate class of service

In the revised scope the Panel sought evidence on whether it is necessary to establish a separate EV rate class for the purpose of recovering the costs associated with that activity.

Many intervenors suggest that rate design issues are best addressed in a rate design application proceeding.¹⁵⁰

Proponents of establishing a separate class of service argue that EV charging has inherent characteristics that distinguish it from other classes of service. Specifically, Flintoff argues that DCFC stations require a different rate structure because the load profiles, location, and other characteristics are different than other rate classes.¹⁵¹ On the other hand, the CEC argues that EV charging is an end-use for electricity that is applicable to all rate classes (e.g. residential and commercial customers) and therefore does not support development of a separate rate class for EV charging.¹⁵²

¹⁴⁴ Ibid., p. 2.

¹⁴⁵ Exhibit C38-2, Siemens, Phase 2 evidence, p. 4.

¹⁴⁶ EV Inquiry Phase 2, Brightside Final Argument, p. 3.

¹⁴⁷ Ibid., p. 3.

¹⁴⁸ Ibid., p. 5.

¹⁴⁹ Ibid., p. 3.

¹⁵⁰ See for example: Exhibit C1-7, BC Hydro, Phase 2 evidence, p. 4 (in pdf); Exhibit C25-12, Chargepoint, Phase 2 evidence, p. 14.

¹⁵¹ EV Inquiry Phase 2, Flintoff Final Argument, section 3.3.2.

¹⁵² EV Inquiry Phase 2, CEC Final Argument, p. 2.

In BC Hydro's Phase 1 submission, BC Hydro stated that applying a traditional cost of service approach to allocating costs associated with EV infrastructure to EV customers would be prohibitive to the development of the EV sector.¹⁵³

MEMPR prefers a model that allows public utilities to recover EV related costs from all ratepayers in order to "kick-start" the market.¹⁵⁴

Wholesale rate

As stated above, many interveners indicate that issues revolving around rate-design would be best addressed in a separate rate design application.¹⁵⁵

Several interveners suggest that a new wholesale rate for the provision of electricity to EV charging stations is unnecessary. FBC submits that existing rate classes can accommodate the supply of electricity to EV charging stations and suggest that rate issues can be addressed as the market matures.¹⁵⁶ CEABC agrees and submits that the existing wholesale tariffs are adequate.¹⁵⁷

MEMPR makes the following observations:

- *Public utilities in BC do not generally offer end-use rates, although there are exceptions (e.g., BC Hydro's shore power rate, E-Plus rate, street lighting rates, irrigation rate, exempt residential service rate for farms);*
- *although they are not EV-specific, time of use residential rates could provide significant savings to EV owners who are able to charge their vehicles at home during off-peak times; and*
- *utilities could also develop demand response tariffs that could reduce peak demand or manage load on distribution circuits as home charging grows.*¹⁵⁸

Regarding time-of-use rates, BCSEA submits that this rate design is unlikely to benefit commercial DCFC stations since customers typically charge their vehicles during peak hours and little if at during off-peak hours.¹⁵⁹

Flintoff submits that Level 1 and 2 chargers can operate under existing rate classes.¹⁶⁰

BrightSide suggests that BC Hydro should develop a new wholesale rate for providing electricity EV charging stations because EV charging has characteristics different than other forms of demand. "For example, addition of EV demand often requires bolstering of the distribution system (e.g. transformer additions and supply line system improvements)."¹⁶¹

¹⁵³ EV Inquiry Phase 1, Exhibit C1-2, BC Hydro Evidence, p. 12.

¹⁵⁴ Exhibit C19-12, MEMPR, Phase 2 evidence, p. 8.

¹⁵⁵ EV Inquiry Phase 2, BCOAPO Final Argument, p. 7; Exhibit C1-7, BC Hydro, Phase 2 evidence, p. 15 (in pdf).

¹⁵⁶ EV Inquiry Phase 2, FBC Phase 2 evidence, Exhibit C12-6, p. 8.

¹⁵⁷ EV Inquiry Phase 2, CEABC Final Argument, p. 6.

¹⁵⁸ EV Inquiry Phase 2, MEMPR, Phase 2 evidence, Exhibit C19-12, p. 11.

¹⁵⁹ EV Inquiry Phase 2, BCSEA Final Argument, p. 7.

¹⁶⁰ EV Inquiry Phase 2, Flintoff Final Argument, Phase 2, section 3.3.9.

¹⁶¹ EV Inquiry Phase 2, Brightside Final Argument, p. 7.

BCOAPO points to the submissions from parties which are providing EV charging services that indicate there are issues with the current rates that negatively affect the business case for charging stations.¹⁶² A particular issue highlighted throughout the Inquiry has been the negative effect of demand charges on the economics of owning or operating a charging station. In this respect, BCSEA notes that most EV charging stations have a peak load that would put that customer in a medium or large general service rate that has a demand charge. BCSEA notes that “demand charge produces a particularly expensive bill for customers that have a low load factor... especially before they have a fully developed customer base.”¹⁶³

BCSEA submits that “consideration could be given to a design in which the commercial-scale EVCS providers’ cost of supply electricity was equivalent to the implicit cost of supply electricity attributed to the utility’s own delivery of public DCFC service.”¹⁶⁴

Similarly, CEABC and Leading Ahead Energy submit that exempt and non-exempt public utilities should purchase electricity on the same terms and conditions.¹⁶⁵ In this regard, BCOAPO points out that, in FBC’s recent Application for a Rate Design and Rate for Electric Vehicle Direct Current Fast Charging Service, FBC used its incremental cost of energy to establish the EV charging fee.¹⁶⁶

7.6 Equal access to grid interconnection

Several interveners voice concerns regarding non-exempt utilities’ ability to leverage their position as the traditional utility gatekeeper to grid access in a way that gives the utility an advantage over non-regulated entities. To ensure exempted utilities and non-exempted utilities are able to compete on an equal footing, some parties submit that, regardless of who owns or operates an EV charging station, all participants should be given equal access to interconnect to the grid when installing EV charging stations.

BrightSide submits that

EV Charging projects must go through an interconnection process to be added to the grid. Non-utility EV station providers will need access to timely and efficient interconnection services on the same terms and conditions as utility projects. BrightSide argues that measures should be taken to ensure that interconnection services provided by the utility to EV projects are delivered in a manner that does not discriminate between utility-based projects and competitive market projects.¹⁶⁷

CEABC argues that BC Hydro has a potential conflict of interest when it is responsible for the interconnection process and operating the EV charging station. CEABC suggests that BC Hydro should be required to apply for interconnection on the same grounds as other parties and that the application is publicly available.¹⁶⁸ In the view of BC Hydro, CEABC’s comments are out of scope and have no evidentiary basis and are “certainly not sufficient

¹⁶² EV Inquiry Phase 2, BCOAPO Final Argument, p. 14.

¹⁶³ EV Inquiry Phase 2, BCSEA Final Argument, p. 6.

¹⁶⁴ *Ibid.*, p. 7.

¹⁶⁵ EV Inquiry Phase 2, CEABC Final Argument, p. 4; Exhibit C3-7, Leading Ahead, Phase 2 evidence, p. 4 (in pdf).

¹⁶⁶ EV Inquiry Phase 2, BCOAPO Final Argument, p. 7.

¹⁶⁷ EV Inquiry Phase 2, Brightside Final Argument, p. 4.

¹⁶⁸ EV Inquiry Phase 2, CEABC Final Argument, p. 4.

to allow the BCUC to make any of the requested recommendations.”¹⁶⁹ FBC responds in a similar manner, stating that:

Interconnection concerns raised by some interveners in their submissions are without foundation.... These concerns are entirely speculative. FBC’s tariff, as well as provisions of the *UCA*, prevent undue discrimination in connecting new customers or loads.... Moreover, the BCUC’s complaints process remains open, if necessary.¹⁷⁰

ATI submits that actions can be taken that ensure that non-exempt public utilities pay the same costs for charging station connection and operation as other entities.¹⁷¹

7.7 Proposal for an integrated plan for EVCS development and deployment on a provincial level

CEABC submits that

Existing Public Utilities should be required to file overall business cases/applications for the investments they intend to make in EV Charging Services on a non-confidential basis for advance approval by the BCUC. The business cases would include the financial models and the full details of how they expect to make their intended rate of return and the identification of any requirement for cross subsidization from the Existing Public Utility’s ratepayers.¹⁷²

Guthrie submits that operational and financial transparency should be addressed in any potential amendment to the GGRR.¹⁷³

The CEC submits that

In its Phase 2 Evidence ChargePoint recommends that utility EV charging initiatives should be reviewed on a case-by-case basis taking into account market and customer needs and the likely impact on the competitive market. They cite a number of jurisdictions that have passed laws and developed guidelines for program evaluation that require consideration of competition and customer choice

The CEC agrees that a case by case evaluation could serve to reduce the scale of impact on the competitive market if undertaken with a view to preserving the potential for a market to develop as well as the status of the market at the time of consideration.¹⁷⁴

Panel comments

With the evidence and parties’ positions thus summarized in this and the preceding section of this Report, the remainder of this Phase 2 Report provides the Panel’s observations, findings and recommendations. These discussions are broken down into three major sections:

¹⁶⁹ BCHydro Phase 2 Reply Argument, p. 6.

¹⁷⁰ FBC Phase 2 Reply Argument, Reply Argument, p. 5.

¹⁷¹ Exhibit C20-7, ATI, Phase 2 evidence, p. 6.

¹⁷² EV Inquiry Phase 2, CEABC Final Argument, p. 2.

¹⁷³ Exhibit C16-6, Guthrie, Phase 2 evidence, p. 9.

¹⁷⁴ EV Inquiry Phase 2, CEC Final Argument, p. 1.

- In section 8, we discuss the role of non-exempt utilities in the EVCS market;
- In section 9, we provide an overview of the existing regulatory framework in BC and in other jurisdictions, then we provide the Panel’s recommendations on the possible approaches to the regulation of non-exempt utilities; and
- In section 10, we discuss safety.

8.0 Panel Discussion and findings: The role of non-exempt utilities in the EVCS market

8.1 Kickstarting the EV market

Some interveners put forward, as rationale for supporting non-exempt utility participation in the EVCS market, the proposition that there is a need to “kick-start” the market. They argue that prospective purchasers’ decisions are adversely affected if charging facilities are not readily available: hence the need to accelerate the speed of investment in the EVCS market. While we agree that there is some merit to this line of argument, we believe it must be weighed carefully against other factors.

Some parties appear to conflate the market for electric vehicle purchases with the market for electric vehicle charging services. The Panel takes no issue with the objective to stimulate EV adoption rates but is less persuaded that kick-starting the EVCS market is necessarily the most effective means to achieve this end. At first blush, it may be reasonable to assume that greater availability of EV infrastructure could lead to more owners being interested in purchasing electric vehicles. However, it is equally plausible that there are other factors inhibiting the uptake in EV purchases, such as the higher purchase price of EVs relative to that of internal combustion engine (ICE) vehicles. If the price of electric vehicles is the primary barrier to an increase in purchases, then no matter how abundant the EV charging infrastructure, in the absence of a more comparable purchase price between EVs and ICE vehicles, the acceleration of EV charging investment may do little, if anything, to incent more rapid EV adoption.

The extent to which the EVCS market would evolve in the absence of stimulus is a matter of speculation. As noted in the Phase 1 Report, there is already a nascent, yet developing competitive market in some areas of the province. The possibility exists that a competitive market could develop in all areas of the province that EVCS is required, but because of the characteristics of the EV charging market, a mature and competitive market for EVCS may only develop in certain areas of the province.

This is not to say that the Panel concludes that there should be no efforts made to increase the pace of EV charging infrastructure roll-out beyond what would naturally evolve, but as discussed further in sections 8 and 9 of this Report, care needs to be taken to find the right balance between costs and efficacy of such any such initiatives.

We find there is insufficient evidence to determine what specific levels of non-exempt public utility investment in EV charging infrastructure are required to kick-start the EV charging market or the extent to

which this investment will actually provide a kick-start in that market.¹⁷⁵

8.2 Building Incremental Load as a justification for non-exempt Public Utility participation

Some interveners argue that EVCS investments by non-exempt public utilities impose unnecessary and unjustified risk on those utilities' ratepayers. Inherent in the proposition that market intervention is needed to stimulate investment that would otherwise not occur, is the recognition that the resulting investment entails risk that exempt utilities are unwilling to incur. With these non-exempt public utility investments in EV charging infrastructure comes the risk that demand for service may not be sufficient to fully recover costs. In such cases, this risk must necessarily be borne by either the non-exempt public utility's existing ratepayers, its shareholder(s) or some combination of the two. In this Inquiry many parties – primarily those that argue for non-exempt public utility participation in the market – argue that the risk should be borne by utility ratepayers.

Some interveners point to the benefit of building incremental electrical load as a rationale for all ratepayers assuming investment risk in EVCS. They argue that increased electrification of the transportation system will, all else equal, result in more demand for electricity and this could benefit ratepayers by way of lower rates. The Panel notes that, to the extent a non-exempt public utility's ratepayers benefit from increased load from EV charging, those ratepayers will receive that benefit regardless of who builds or operates any given EV charging station since the non-exempt utility is the monopoly supplier of wholesale electricity to all EVCS providers.

We also note that any such benefit depends on the time of day the increased demand occurs. If it occurs predominantly during off peak hours, the increased revenues may come with limited incremental cost, thereby reducing rates for all ratepayers. On the other hand, if the increased demand arises during peak load times, it may trigger the need for increased generation capacity. While no evidence was presented on time of use, the Panel observes that in contrast to at-home charging which often occurs overnight, use of public EVCS is more likely during normal waking hours. We make further comment on the issue in section 9.

The Panel finds that there may be circumstances that justify non-exempt utility ratepayers bearing the risk of EV infrastructure investments. However, an important aspect of qualifying those investments as being in the public interest would require the non-exempt utility to demonstrate that the investment in question would not likely have been undertaken by the private sector.

8.3 Potential impact of non-exempt utility participation on exempt utilities

The CleanBC Plan states that “[t]he private sector [e.g. exempt utilities] has a big role to play in this new clean energy infrastructure development, and the Province will be addressing barriers to investment in commercial charging, and hydrogen fueling, further expanding consumer choice and confidence for drivers.”

In the absence of regulation, there is a risk that actions taken by a non-exempt public utility could significantly discourage participation in the EVCS market by exempt utilities. For example, non-exempt utilities could: potentially overbuild in regions where the private sector would otherwise have stepped in; or set a retail price

¹⁷⁵ Subsequent to the close of the evidentiary record, BC hydro published this survey: https://www.bchydro.com/content/dam/BCHydro/customer-portal/documents/news-and-features/BC%20Hydro%20EV%20Road%20Trip%20Report_June%202019.pdf However, it has not been reviewed by the Panel nor the Interveners in this Inquiry.

below cost. These actions can expose ratepayers to unnecessary risk and also result in less than optimal development of the EVCS market.

Given the potential role of the private sector in the development of EVCS, we find it 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 don't have the end effect of crowding out exempt utility investment. Accordingly, the Panel finds there is a role for regulatory oversight over non-exempt public utility EV charging infrastructure investment. We make further comment on the issue in section 9.

Some interveners suggest that the need for EV charging infrastructure is urgent and a key criticism of regulatory oversight is that the BCUC regulatory process takes too long. The BCUC's open and transparent regulatory process requires time in order to ensure that projects meet the legislative requirements, meet the public interest test, ensure ratepayers are not exposed to unnecessary risk and also ensure that exempt utilities are incented to make investments in EV charging infrastructure.

8.4 Where is investment required?

While some similarities exist between the retail gasoline network and the EV charging network, there are fundamental differences. Virtually all gasoline for non-commercial and non-industrial transportation end-use is provided in a retail setting, at "gas stations." In contrast, in this Inquiry, we have received evidence that a significant amount of EV charging takes place at home or at work. Even though the charging equipment available in an average home is slow, it is likely sufficient to provide a significant amount of transportation energy, in particular for a daily local commute.

However, there is a significant and presumably growing proportion of residential customers living in multi-unit residential buildings (MURBs), with little to no access to at-home charging. Similarly, access to charging at workplaces is also uneven.

Given the current technology, recharging an electric vehicle is a longer process than refuelling a traditional gasoline vehicle. The evidence in this proceeding shows that the current technology of a full Level 2 charge takes several hours, while even a "fast" Level 3 charge takes approximately 30 minutes. While these relatively long recharge times may be acceptable for at-home (overnight) charging, for other requirements the Panel considers this a disincentive to "stand alone" public charging: many EV owners appear to prefer to combine any required charging with other activities such as shopping, working out at the gym or, as previously discussed, while at work. This suggests that there is the opportunity for providers to combine EV charging with parking facilities or other commercial uses.

Long distance highway travel requires EV owners to have access to fast charging in convenient locations. This need has been recognized by both the Federal and the Provincial Governments and both have provided significant incentives to build EV charging infrastructure to support long distance highway driving. However, this funding in BC has been focussed to date on major highway corridors – there remains a significant number of highways in BC with no, or with little, fast charging infrastructure at present.

Given these observations about current EV charging activities, the Panel sees the following areas for EV charging infrastructure investment:

1. Along highway corridors that are not currently well served
2. In parking areas of retail facilities
3. In residential single-family dwellings and townhouses
4. In a MURB
5. In a workplace that provides parking
6. In public parking lots

The above list is not exhaustive, nor are the categories necessarily mutually exclusive. However, it serves to frame the discussion of areas of potential non-exempt public utility investment. Some of the categories above may best lend themselves to investment by the electricity service account holder – for example single family dwellings and townhouses. Other categories may be particularly suited to investments by exempt utilities – for example in parking areas of retail establishments. However, there may be other areas where there is insufficient incentive for exempt public utilities to invest, such as along remote highway corridors.

Given the evidence heard in this Inquiry regarding the lack of charging infrastructure on remote areas of public highways and the consequent “range anxiety” felt by EV drivers using those highways, the Panel finds that non-exempt public utilities may have a role in developing highway charging infrastructure. However, careful consideration must be given to the extent of that role and the appropriate level of risk for the non-exempt public utility’s ratepayers to bear. While not conclusive, the evidence suggests that such locations do not provide a sufficient return to incent exempt utility investment, in which case it is likely that non-exempt utility ratepayers will subsidize investments made by their utility in these locations.

On the other hand, if at least some highway locations are profitable and exempt utilities have not yet invested because of the state of regulatory uncertainty that previously existed, this suggests that non-exempt utilities should not necessarily invest immediately and that exempt utilities should be given an opportunity to invest first in order to encourage the development of a competitive market.

There is a “public vehicle fueling infrastructure” already in place along major highways that could potentially be used to leverage the deployment of fast charging. Petro-Canada has recently announced that “more than 50 EV stations will be located along the Trans-Canada highway at strategically located Petro-Canada stations from Nova Scotia to British Columbia.” In addition, Shell has recently purchased Greenlots¹⁷⁶ which may enable it to more easily deploy charging stations in its existing gas station network. We also note that Tesla provides proprietary EV charging facilities along public highways.

In this Inquiry, we have heard from many parties living in MURBS – strata and rental buildings. They complain about a lack of accessible EV charging infrastructure in their parking areas – frequently their parking stalls lack even access to a level one charger.

Accordingly, there may be a role for non-exempt public utilities in facilitating the development of EV charging infrastructure in strata and rental properties. A recent example of this participation is BCUC Order G-92-19 that

¹⁷⁶ <https://www.greentechmedia.com/articles/read/shell-acquires-greenlots-to-lead-north-american-electric-vehicle-charging#gs.6wwreu>

approved amendments to the residential tariff to allow for the electricity metering of parking stalls in a MURB and combining the bill with that of the parking stall owner's dwelling unit, thereby eliminating the separate basic charge for the parking stall's electric meter. **However, given these activities are largely downstream of the meter, the Panel finds that careful consideration must be given to both the extent of the non-exempt utility's role in participation in activities downstream of the meter and the appropriate level of risk for the utility's ratepayers to bear.**

In summary, we find that while there are opportunities for the participation of non-exempt public utility participation in the EVCS, regulatory oversight can help to mitigate ratepayer risk and potential impact on exempt utilities. We will further discuss the nature of recommended regulation in section 9 of this Report.

8.5 The obligation to serve

Does a non-exempt utility have any obligation to serve an EV charging customer? An EV is a portable, electrically powered device, that can be charged at home or can be easily transported somewhere else and be charged – unlike, say, a refrigerator, but like a mobile phone. A non-exempt public utility is under no obligation to provide charging facilities for individuals' mobile phones when they are away from their residence.

However, several parties submit that the obligation to serve would apply once EV infrastructure is built, but in general feel that this principle does not compel public utilities to construct new charging stations.¹⁷⁷

The Panel notes:

1. generally speaking many owners have access to at-home charging,
2. owners have choices in the kind of vehicle they can own, including an ICE vehicle with fewer range issues, a model of electric vehicle with improved range performance, or a hybrid, and
3. exempt utilities can serve at least portions of the EV charging market.

Accordingly, we find there is no obligation of non-exempt utilities to build any specific station or stations in any specific location. However, once a non-exempt utility has built a station in a specific location, it must ensure that the station remain in good working condition unless the BCUC orders otherwise. To do otherwise risks ratepayers having to bear the costs of a utility asset that cannot be used to generate the necessary revenue to cover its costs, while allowing the utility to nonetheless earn a return on the inclusion of that asset into its rate base.

9.0 Panel Discussion and Recommendations: Regulatory approaches

In this section, the Panel examines the existing regulatory framework in BC and elsewhere, then provides a discussion on the alternatives from the existing regulatory framework, followed by the Panel's recommendations.

¹⁷⁷ EV Inquiry Phase 2, FBC Final Argument, p. 6; EV Inquiry Phase 2, BCOAPO Final Argument, pp. 13-14; EV Inquiry Phase 2, BCSEA Final Argument, pp. 5-6.

9.1 Existing regulatory framework

Regulatory approval of the recovery of capital investments made by non-exempt public utilities is subject to a test that the spending is prudently incurred (prudency test). Any spending found not to be prudently incurred may not be recovered in rates and is to the account of the shareholder. Generally speaking, the prudency test considers whether the project was needed and what alternatives were available in addition to whether the execution of the project was conducted in a reasonable manner.

Non-exempt public utilities can seek prior approval from the BCUC, under either section 44.2 of the UCA (Expenditure schedule) or sections 45–46 (Certificate of public convenience and necessity) of the UCA of a proposed capital project (such as EV charging infrastructure), if the utility seeks to recover the project cost in rates. The approval process includes a review of the need for the project along with available alternatives and the non-exempt public utility’s project plan. While BCUC approval of a project under these sections does not guarantee that the utility can recover the project costs in rates, the risk of non-recovery is reduced to potential prudency issues related to the execution of the project.

The existing regulatory process to review a regulated utility’s EV capital investment application under either sections 44.2 or 45–46, provides transparency and an opportunity for public input. A public proceeding is normally held by the BCUC to review these applications. This regulatory review process is to ensure that the interests of the non-exempt public utility and its ratepayers are considered, and that its capital investment proposal is tested, under the provisions of the UCA and any other applicable legislation and Government direction.

The regulatory framework for the review, including the public interest test, is outlined below. The BCUC applies this framework when evaluating non-exempt public utility applications for approval of investment expenditures.

Similarly, the BCUC typically considers applications for rates in open, transparent proceedings. During these proceedings, the BCUC examines issues such the following:

1. Which class of ratepayers should pay for the investment recovery. In particular, in the case of rates to recover EV charging infrastructure investment, should the costs be recovered from those who charge their vehicles, from all residential ratepayers, all ratepayers or some combination thereof?
2. What is the appropriate amortization period to recover these costs? Is an amortization period dictated by accounting policy appropriate or is there a regulatory justification for a different period?

9.1.1 BCUC mandate as an economic regulator

The BCUC’s jurisdiction under the UCA is primarily as an economic regulator of public utilities. Traditional public utilities are natural monopolies, and regulation is a substitute for competition to prevent potential abuse of monopoly power. That said, technology is transforming the utility sector and there is a growing number of utility businesses that are not natural monopolies – an example being EV charging infrastructure. The BCUC has recommended forbearance in such cases, as it did in Phase 1 of this Inquiry.

9.1.2 Capital expenditures

The UCA also requires the BCUC to consider the public interest when determining whether to approve capital expenditures. For example:

- Section 44.2(1) of the UCA states that a public utility may file with the BCUC an expenditure schedule containing a statement of demand side measures, capital and/or energy acquisition expenditures that the utility has made or anticipates making during the period addressed by the schedule. Sections 44.2(3) and (4) of the UCA stipulate that the BCUC must accept the expenditure schedule if it determines that the expenditures would be in the public interest or reject the capital expenditure schedule either in whole or in part.
- Section 45(1) of the UCA states that a person must not begin the construction or operation of a public utility plant or system, or an extension of either, without first obtaining from the BCUC a certificate of public convenience and necessity approving the construction or operation. Under section 45(5), the BCUC may exclude utility plants from the requirement under section 45(1) to obtain approval from the BCUC.
- Section 46 (3.1) and (3.2) state that for public utilities other than BC Hydro, unless the matters addressed in the application for the certificate were determined to be in the public interest in the course of considering a long-term resource plan under section 44.1, the BCUC must consider:
 - the applicable of British Columbia's energy objectives,
 - the most recent long-term resource plan filed by the public utility under section 44.1, if any, and
 - the extent to which the application for the certificate is consistent with the applicable requirements under sections 6 and 19 of the *Clean Energy Act*.
- Section 46 (3.3) states that for BC Hydro, in addition to considering the interests of current or potential BC Hydro customers in BC, the BCUC must consider:
 - BC's energy objectives,
 - an applicable integrated resource plan approved under section 4 of the *Clean Energy Act*, and
 - the extent to which the application for the certificate is consistent with the requirements under section 19 of the *Clean Energy Act*.

Although the public interest test is considered a broad test, the BCUC can only make orders that fall within its statutory jurisdiction. The Supreme Court of Canada has held in relation to the Alberta energy utilities regulator that “(t)he limits of the powers of the Board are grounded in its main function of fixing just and reasonable rates (“rate setting”), and in protecting the integrity and dependability of the supply system.”¹⁷⁸ Thus the public interest test is necessarily grounded in relevant legislation, including the UCA, applicable sections of the *Clean Energy Act* and associated regulations, and relevant case law.

9.1.3 Rate setting

The BCUC is responsible for regulating public utilities in BC and ensuring that ratepayers receive safe, reliable energy services at fair rates from the utilities that serve them. At the same time, the BCUC must ensure that

¹⁷⁸ *ATCO Gas & Pipelines Ltd. v. Alberta (Energy & Utilities Board)*, 2006 SCC 4, at para. 7.

regulated public utilities have the opportunity to earn a fair return on their capital investments in exchange for the provision of these services. In doing so, the BCUC's regulatory mandate is to balance the interests of the regulated public utility and those of its ratepayers.

Sections 59 and 60 of the UCA require the BCUC to set rates that are just, reasonable and not unduly discriminatory. On a plain reading of the UCA, these rate setting provisions are primarily economic in nature.

Section 59 of the UCA addresses the issue of rate discrimination. It states that a public utility must not make, demand or receive "an unjust, unreasonable, unduly discriminatory or unduly preferential rate for a service provided by it." Section 59 of the UCA also provides that a rate is "unjust" or "unreasonable" if the rate is: (a) more than a fair and reasonable charge for service of the nature and quality provided by the utility; (b) insufficient to yield a fair and reasonable compensation for the service provided by the utility, or a fair and reasonable return on the appraised value of its property; or (c) unjust and unreasonable for any other reason.

Section 60 of the UCA provides broad rate-setting guidelines for the BCUC to consider when determining rates. In setting a rate, the BCUC must consider all matters that it considers to be proper and relevant affecting the rate. Section 60 of the UCA also requires that the BCUC must have due regard to the setting of a rate that is not "unjust" and "unreasonable" within the meaning of section 59, provides the utility a fair and reasonable return on any expenditure made by it to reduce energy demands, and encourages public utilities to increase efficiency, reduce costs and enhance performance.

Section 60(b.1) of the UCA gives the BCUC discretion to "use any mechanism, formula or other method of setting the rate that it considers advisable and may order that the rate derived from such a mechanism, formula or other method is to remain in effect for a specified period."

Section 60(c) of the UCA provides general guidelines for utilities with more than one class of service and states that the BCUC must: (i) segregate the various kinds of service into distinct classes of service; (ii) in setting a rate to be charged for the particular service provided, consider each distinct class of service as self-contained unit; and (iii) set a rate for each unit that it considers to be just and reasonable for that unit, without regard to the rates set for any other unit.

Sections 61(1) to (3) of the UCA requires a public utility to file rate schedules with the BCUC, receive the BCUC's approval before rescinding or amending a schedule, and charge only those rates that are in accordance with the filed schedules. In accordance with Section 60(4), the BCUC may, on complaint of a person whose interests are affected, or on its own motion, direct an inquiry into the new schedule of rates having regard to the setting of a rate that is not unjust or unreasonable. After such an inquiry, the BCUC under section 61(6) may confirm, rescind, vary, refund or provide a customer credit for the impugned rate or part thereof.

The BC Court of Appeal stated in *Prince George Gas Co. v. Inland Natural Gas Co. (1957)* that "a rate which is set, without regard to what is a fair and reasonable charge for the services rendered by a public utility, for the express purpose of compelling some consumers to subsidize others, is, in my opinion, inconsistent with the statutory provisions governing rates."¹⁷⁹

¹⁷⁹ 1957 CanLII 270 (BC CA) <https://www.canlii.org/en/bc/bcca/doc/1957/1957canlii270/1957canlii270.html?resultIndex=1>

9.1.4 Separate class of service

In respect of a public utility's provision of more than one class of service, section 60(1)(c) of the UCA states that if the public utility provides more than one class of service, the BCUC must:

- segregate the various kinds of service into distinct classes of service,
- in setting a rate to be charged for the particular service provided, consider each distinct class of service as a self contained unit, and
- set a rate for each unit that it considers to be just and reasonable for that unit, without regard to the rates set for any other unit.

A class of service is one or more customers taking service under the same terms and conditions. Common examples are residential, commercial, and industrial customer classes. The purpose of creating distinct classes of service is to give effect to the principle of cost causality. Cost causation aims to have customers bear the share of costs that are attributable to their class of service and to prevent cross-subsidization among different customer groups.

From an economic point of view, new regulated business activities may require some separation from the traditional utility to prevent cross-subsidization and risk transfer to existing utility ratepayers. In that case, it might be appropriate to manage the new activity as part of the existing utility service, but with a separate class of service.

A separate class of service provides some degree of ring-fencing from other classes of service within the public utility. This allows for greater transparency and facilitates the appropriate allocation of costs to users of the service.

New business activities may have unique costs relevant to that service while still depending on the assets of the traditional utility. In that case, the need for separation is not as great as when the new regulated business activity uses separate assets.

Compared to undertaking the activity in a separate affiliated regulated utility, establishing a separate class of service within an existing utility could increase risk to ratepayers, for example, from stranded assets related to the new business activity. Where the risk of costs flowing back to the regulated ratepayer is found to be minimal, though, a separate class of service may be appropriate.

9.1.5 Cost causation

The principle of cost causation has formed the basis for previous BCUC decisions and is applicable to the revised scope of Phase 2 of the EV Inquiry. The revised scope contains consideration of such items as the establishment of a separate class of service for EV charging customers, cross subsidization between EV and non-EV customers, and the risk of stranded assets.

In considering the applicability of the principle of cost causation, the Panel highlights recent decisions resulting from BC Hydro's 2015 Rate Design Application (BCH 2015 RDA) proceeding.¹⁸⁰ In that decision, the BCUC considered BC Hydro's 2016 Cost of Service study, rate design proposals, and proposals for its Electric Terms and Conditions. The BCUC made a number of findings based on the principle of cost causation. For example, the BCUC found that an application brought by an intervenor group for reduced rates for low income residential ratepayers was unsupported by an economic or cost of service justification and would therefore be unjust, unreasonable and unduly discriminatory and not in accordance with section 59 of the UCA.

9.2 Regulatory framework in other jurisdictions

The Panel has reviewed the regulatory framework in California, Oregon, and New Mexico. With regard to ratepayer risk:

1. California prohibits the recovery of costs from ratepayers unless the CPUC finds the programs are in ratepayers' interests. Senate Bill 350 specifically amends section 740.8 of the California Public Utilities Code to define ratepayer interests as follows:¹⁸¹

As used in Section 740.3 or 740.12, "interests" of ratepayers, short- or long-term, mean direct benefits that are specific to ratepayers, consistent with both of the following:

- (a) Safer, more reliable, or less costly gas or electrical service, consistent with Section 451, including electrical service that is safer, more reliable, or less costly due to either improved use of the electric system or improved integration of renewable energy generation.
- (b) Any one of the following:
 - (1) Improvement in energy efficiency of travel.
 - (2) Reduction of health and environmental impacts from air pollution.
 - (3) Reduction of greenhouse gas emissions related to electricity and natural gas production and use.
 - (4) Increased use of alternative fuels.
 - (5) Creating high-quality jobs or other economic benefits, including in disadvantaged communities identified pursuant to Section 39711 of the Health and Safety Code.

SB 350 also added the following, among other language, to the California Public Utility Code:

The commission, in consultation with the State Air Resources Board and the Energy Commission, shall direct electrical corporations to file applications for programs and investments to accelerate widespread transportation electrification to reduce dependence on petroleum, meet air quality standards, achieve the goals set forth in the Charge Ahead California Initiative ..., and reduce emissions of greenhouse gases to 40 percent below 1990 levels by 2030 and to 80 percent below 1990 levels by 2050. Programs proposed by electrical corporations shall seek to minimize overall costs and maximize overall benefits. The commission shall approve, or modify and approve, programs and investments in transportation electrification, including those that deploy charging infrastructure, via a reasonable cost recovery mechanism, if they are consistent with this section, do

¹⁸⁰ BCH 2015 RDA proceeding, Order G-5-17 and Decision dated January 20, 2017, https://www.bcuc.com/Documents/Proceedings/2017/DOC_48618_01-20-2017_G-5-17_BCH-2015-RDA-Decision-WEB.pdf.

¹⁸¹ SB 350: https://leginfo.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB350.

not unfairly compete with nonutility enterprises as required under Section 740.3, include performance accountability measures, and are in the interests of ratepayers as defined in Section 740.8.

In essence, the California PUC is required to approve investments in EV charging infrastructure if those investments:

- do not unfairly compete with nonutility enterprises as required under Section 740.3,
 - include performance accountability measures, and
 - are in the interests of ratepayers as defined in Section 740.8.
2. In Oregon, SB 1547 requires the Oregon PUC to consider the following when determining the recovery for EV charging costs, including whether they are prudent and reasonably expected to be used and useful:¹⁸²

20 ... (4) When considering a transportation electrification program and determining cost recovery for investments and other expenditures related to a program proposed by an electric company under subsection (3) of this section, the commission shall consider whether the investments and other expenditures:

- (a) Are within the service territory of the electric company;
- (b) Are prudent as determined by the commission;
- (c) Are reasonably expected to be used and useful as determined by the commission;
- (d) Are reasonably expected to enable the electric company to support the electric company's electrical system;
- (e) Are reasonably expected to improve the electric company's electrical system efficiency and operational flexibility, including the ability of the electric company to integrate variable generating resources; and
- (f) Are reasonably expected to stimulate innovation, competition and customer choice in electric vehicle charging and related infrastructure and services.

3. In New Mexico, investments in EV charging infrastructure must be reasonable and prudent.¹⁸³

Some of the criteria required in the consideration of ratepayer interest above are similar to some of BC's energy objectives as described in section 2 of the *Clean Energy Act*, specifically:

(d) to use and foster the development in British Columbia of innovative technologies that support energy conservation and efficiency and the use of clean or renewable resources;

.....

(f) to ensure [BC Hydro]'s rates remain among the most competitive of rates charged by public utilities in North America;

(g) to reduce BC greenhouse gas emissions

(i) by 2012 and for each subsequent calendar year to at least 6% less than the level of those emissions in 2007,

(ii) by 2016 and for each subsequent calendar year to at least 18% less than the level of those emissions in 2007,

¹⁸² SB 1547: <https://olis.leg.state.or.us/liz/2016R1/Downloads/MeasureDocument/SB1547/Enrolled>.

¹⁸³ New Mexico House Bill 521: <https://www.nmlegis.gov/Sessions/19%20Regular/final/HB0521.pdf>.

- (iii) by 2020 and for each subsequent calendar year to at least 33% less than the level of those emissions in 2007,
- (iv) by 2050 and for each subsequent calendar year to at least 80% less than the level of those emissions in 2007, and
- (v) by such other amounts as determined under the Climate Change Accountability Act;
- (h) to encourage the switching from one kind of energy source or use to another that decreases greenhouse gas emissions in British Columbia;
- (i) to encourage communities to reduce greenhouse gas emissions and use energy efficiently;
- (k) to encourage economic development and the creation and retention of jobs.

As discussed in the previous section of this Report, the BCUC is required to consider these objectives when assessing whether projects are in the public interest.

9.3 Panel Recommendations: Possible approaches to regulation for non-exempt public utilities

At this time, the CleanBC Plan and Government's objectives are not specific, nor are they binding on the BCUC. While the BCUC must consider policy such as the CleanBC Plan, we must evaluate applications in accordance with the existing legislative and regulatory framework.

Given the CleanBC goals to expedite EV adoption and expand clean vehicle infrastructure, and the perceived need for non-exempt public utilities to participate in the market, Government could require the BCUC to consider specific policy objectives when reviewing EV charging investment applications. In the alternative, it may seek to completely de-risk all or some non-exempt public utility investment in EV charging assets by making specific directions, such as permitting public utilities to make certain EV charging investments, which transfers risk from public utility's shareholder to ratepayers. These regulatory approaches are not binary choices and could be used in various combinations.

The Panel provides no specific recommendation on which approach the Government should take, but instead provides recommendations on possible approaches to regulation of EVCS.

9.3.1 Broadly defined Government direction

On one end of the spectrum is a non-prescriptive approach. Government broadly defines its policy goals and may provide high level direction to the BCUC in its review of a non-exempt utility's activities in the EV charging market. This provides regulatory oversight over the risks borne by the regulated entity and its ratepayers, while ensuring any negative impact of non-exempt public utilities investment in EVCS on exempt utilities is minimized. California's legislation, as described above, is an example of broadly defined Government direction.

Given the Panel findings in section 8 of this Report and assuming a broadly defined Government approach outlined above, we now provide the following recommendations on how this approach, if adopted, would be best implemented in British Columbia.

Non-exempt public utilities should develop Resource Plans for EV charging infrastructure investments

The Panel notes that during the course of this Inquiry, BC Hydro has made several public announcements of its

future planned deployment of additional EV charging service^{184, 185} and we also acknowledge the Government's targets under its Clean Energy Vehicle Program to include "the delivery of the 1,000-point Charging Infrastructure Project."¹⁸⁶ However, there is no evidence filed in this Inquiry that any non-exempt public utility has a comprehensive plan regarding proposed expenditures in EV charging infrastructure. It is clear that there does appear to be some overall investment plan for some non-exempt public utilities, however given the uncertainty in the regulation of the EV charging market and the quickly evolving nature of that market, it is understandable that any plan may be fast-evolving.

As with any utility investment, without a plan, it is difficult to evaluate the risks and benefits to ratepayers. In the instance where the non-exempt utility is investing in a market in which exempt utilities are also making investments, an evaluation and understanding of the potential impact on exempt utility participants is required.

As an example, the Hawaii Public Utilities Commission received the Hawaiian Electric Companies' Electrification for Transportation Roadmap. This roadmap was composed by three electric companies.^{187, 188}

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.

The benefits of an EVCS Resource Plan include:

- Transparency to the exempt participants, the public and ratepayers;
- Proper investment planning (e.g. non-exempt public utilities would be held accountable on the number and location of public EV charging stations that justify the investment;
- Future regulatory efficiency, once approval is obtained; and
- Consultation with and increased buy-in from potentially affected exempt utilities.

¹⁸⁴ https://www.bchydro.com/news/press_centre/news_releases/2018/ev-fast-charging-stations-phase-2.html

¹⁸⁵ <https://www.cbc.ca/news/canada/british-columbia/bc-electric-cars-gas-prices-1.5095687>

¹⁸⁶ https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/electricity-alternative-energy/transportation/cev_phase_1_review_final_2.pdf

¹⁸⁷ <http://puc.hawaii.gov/news-release/puc-invites-public-comment-on-the-hawaiian-electric-companies-roadmap-for-electric-vehicles/>.

¹⁸⁸ https://www.hawaiianelectric.com/documents/clean_energy_hawaii/electrification_of_transportation/201803_eot_roadmap.pdf.

The Panel also recommends that the BCUC develop EVCS Resource Plan filing guidelines. These filing guidelines for non-exempt utility should set out the public interest issues that need to be addressed.

We also recommend that the BCUC ensure that potential private sector EV infrastructure providers are consulted in the development of these guidelines and the EVCS Resource Plans.

Removal of barriers for residents and users of multiple unit buildings, malls, institutions such as hospitals and schools, etc.

While many parties assume that charging in MURBs should be “free” in order to be equitable with home charging, home ownership and condo ownership are inherently different. There are numerous trade-offs made by potential purchasers of houses and condominiums – between renting and buying – that affect many factors, not just access to EV charging. That said, there are relatively inexpensive steps that can be taken by electricity distribution providers that can remove barriers for residents and users of multiple unit buildings, malls, institutions such as hospitals and schools, etc. to provide EV charging. One area in particular is amending tariff conditions to enable easier access to metering and billing – as was demonstrated in BCUC’s approval for BC Hydro under Order G-92-19.

The Panel recommends that non-exempt public utilities review opportunities to revise existing tariffs to remove barriers for residents and users of multiple unit buildings, malls, institutions such as hospitals and schools, etc. to provide EV charging. This initiative to remove barriers should be provided in a way that does not put the utility’s ratepayers at risk. We will further discuss this issue of ratepayer risk below.

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

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

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

Non-exempt public utilities should pursue practices, such as adopting open protocols and standards to adequately protect ratepayers from risk

Various parties emphasize the need for interoperability and open protocols and standards in order to mitigate the risk of stranded assets, encourage consumer choice, and foster innovation. In general, the use of proprietary communications software increases the likelihood of stranded assets as a site owner is locked into one particular network or software service. The Panel recognizes that during the early, nascent stage of market development there is an inherent level of uncertainty as technology can change rapidly, and the Panel believes it appropriate for non-exempt utilities to proactively address these changes.

The Panel agrees with parties that non-exempt public utilities should pursue practices, such as adopting open protocols and standards and that these practices should take steps towards adequately protecting ratepayers

from the risk of stranded assets by maximizing the use of non-exempt utility investments, while at the same time potentially encouraging private investment and innovation.

Non-exempt public utilities should not be permitted to include ancillary services within its regulated rate base

In the Phase 1 Report, the Panel heard submissions by interveners including the need to enhance ancillary services. A number of parties have complained that, unlike a typical gasoline/diesel fueling station, EV charging stations generally have no ancillary services provided. The Panel found that the UCA provides no jurisdiction for the BCUC to regulate, or order the provision of, such ancillary services.¹⁸⁹

The Panel's findings in Phase 1 were aimed at EV charging service providers in general. While the Panel found that the UCA provides no jurisdiction for the BCUC to regulate ancillary services such as snack bars, it becomes a potential issue if non-exempt public utilities (e.g. BC Hydro and FBC) include these ancillary services as part of owning/operating EV charging service and include these assets in their rate base. While these services may be desired to accompany EV charging services, these are also non-traditional areas of public utility investment. As previously discussed, the BCUC's RMDM Guidelines state that there must be no subsidy of non-regulated business activities, whether undertaken by the utility or its non-regulated business, by the utility ratepayer. **The Panel recommends that these ancillary services not be eligible for inclusion in rate base and that the BCUC so state in its EVCS Resource Plan Filing Guidelines.**

Non-exempt public utilities should be required to 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; including if the operator is the non-exempt public utility itself

Here we examine two issues:

1. The potential for EV charging to impose increased peak loads on the system to the detriment of existing ratepayers; and
2. The rate that providers of EV charging services pay to non-exempt public utilities for electricity.

As we have previously discussed, if enough EV charging takes place at the same time, it can potentially accentuate an existing peak load – or even create a new peak. This could drive the need for additional generation, or, if energy needs to be purchased by the utility it could come at times of peak demand elsewhere, when energy prices are inherently higher. Should this be reflected in the price of energy paid by EV charging customers?

Here, we consider the specific nature of the EV charger. Level 1 and Level 2 have substantially different characteristics from a Level 3 charger:

1. Level 1 EV charging is virtually indistinguishable from any other activity that utilizes a 120 volt outlet – such as portable cell phone charging, hair drying or lighting. Further, the ubiquitous nature of 120 volt outlets makes it problematic to separately meter any Level 1 EV charging. While Level 1 EV charging could potentially add to load during peak periods, the slow nature of a Level 1 charge mitigates the impact because the instantaneous load from EV charging is small. That said, there is evidence that EV

¹⁸⁹ EV Inquiry Phase 1 Report, p. 36.

owners charging at home in jurisdictions with TOU rates do shift the time they charge their vehicle to off-peak hours. However, these jurisdictions generally charge TOU rates on all electricity consumption, not just that used for Level 1 EV charging.

2. Level 2 charging is substantially similar to Level 1 charging, at least with respect to the issues discussed in (1) above, although the rate of energy consumption is somewhat larger. Further, although Level 2 charging equipment isn't as ubiquitous as Level 1, there still remain challenges with separately metering Level 2 charging, especially in a residential or commercial context. Most of these customers already have 240 volt circuits that they utilize for various applications (i.e. dryers and stoves). It would be problematic to meter Level 2 EV charging separately.
3. Level 3 (DCFC) charges at a much higher charging rate and therefore has the greatest potential to place significant demand on the system at peak times. Further, given the higher voltage needed it is easier to identify – and therefore separately meter - customers with Level 3 charging stations.

Non-exempt public utilities participate in both the retail and wholesale market in the following categories:

1. As retailers, supplying electricity, to customers that may be used to charge EVs;
2. As wholesalers supplying to exempt utilities electricity for EV charging services;
3. Providing specific EV charging services directly to the public – in this instance, they are both wholesalers (providing electricity to their own charging infrastructure) and retailers (providing charging service to the public).

With regard to category (1) above, given the relatively low penetration of EV vehicles currently and the difficulties previously discussed of separately metering Level 1 and Level 2 charging, we do not find it to be either practical or necessary to consider any mechanisms to differentiate between EV charging and any other end-use of electricity.

However, for any customers or operators utilizing any level of charging other than Level 1 or Level 2, we find that the development of a separate rate and tariff (or a separate class of service) is required.

At this time, we make no recommendation on whether this service should implement a time of use rate – this issue should be addressed in the non-exempt utility's tariff and rate design applications. Further, we do not recommend change to the rates that non-exempt public utilities charge its customers with respect to any Level 1 or Level 2 charging that takes place on their premises.

Given non-exempt public utility involvement in both categories (2) and (3), we have concerns about the potential uneven level playing field, in particular in regard to Level 3 charging. As noted by BCSEA,¹⁹⁰ most EV charging stations have a peak load that would put that customer in a medium or large general service rate that has a demand charge. The negative effect of demand charges on the economics of owning or operating a charging station is an issue highlighted throughout the Inquiry.

It is unclear how non-exempt public utilities intend to compensate themselves at the wholesale level, but, as BCOAPO pointed out in FBC's recent Application for a Rate Design and Rate for Electric Vehicle Direct Current

¹⁹⁰ EV Inquiry Phase 2, BCSEA Final Argument, p. 6.

Fast Charging Service, FBC used its incremental cost of energy to establish the EV charging fee.¹⁹¹ This puts the non-exempt public utility at a price advantage over exempt public utilities providing charging services and that advantage could inhibit the development of a competitive market. **The Panel therefore finds that it is in the public interest for non-exempt public utilities to provide a transparent wholesale pricing mechanism that applies to all operators of EV charging facilities other than Level 1 and Level 2, including the non-exempt public utility itself. Wholesale pricing tariffs should be submitted to the BCUC for review, and if appropriate, approval.**

9.3.2 Narrowly defined Government direction

Given the BCUC's current regulatory framework (as discussed earlier in section 9) all public utility applicants regulated by the BCUC must justify the rate they charge to recover their investment in, and costs related to, EV charging infrastructure. The risk of those assets being stranded, as with all such risk, must be borne by either the shareholder or the ratepayer, and under the existing regulatory framework, shareholders potentially incur that risk.¹⁹²

If Government wishes to explicitly stipulate that some or all EVCS investments made by non-exempt utilities should be at the risk of ratepayers, it can provide specific direction to either eliminate completely any regulation of the non-exempt public utility involvement in EVCS or to provide prescriptive direction that would limit the role of the BCUC's economic regulation.

Specific direction

We have earlier put forward recommendations to the existing regulatory regime that will provide more specific support for Government policy as a possible approach at one end of the regulatory spectrum. While the suggested recommendations serve to clarify Government's policy, they stop short of specifically directing the BCUC to approve specific EVCS investments.

However, if Government wishes to provide greater certainty to non-exempt utilities it could direct the BCUC to approve an application or specific class of applications. For example, it could direct the BCUC to approve (or exempt from BCUC oversight) any application from a non-exempt utility for the provision of:

1. any EV charging infrastructure;
2. EV charging infrastructure in certain locations;
3. EV charging infrastructure subject to a price cap; and/or
4. some combination of 2 and 3 above.

While specific direction allows non-exempt utilities to make investments on an unfettered basis, it potentially places ratepayers at risk. In addition, it could potentially impede the development of a competitive market. If the Government chooses to direct the BCUC to approve an EV charging application or class of applications, the BCUC would not be able to provide any regulatory oversight over these expenditures.

¹⁹¹ EV Inquiry Phase 2, BCOAPO Final Argument, p. 7.

¹⁹² *ATCO Gas and Pipelines Ltd. v Alberta Energy and Utilities Board*, 2006 SCC 4

The CleanBC Plan states, “the private sector has a big role to play in this new clean energy infrastructure development, and the Province will be addressing barriers to investment in commercial charging, and hydrogen fueling, further expanding consumer choice and confidence for drivers.

Pertinent to the above provincial objective, the Panel finds that any specific Government direction provided should be done sparingly, if at all. **If specific direction is used, the Panel recommends against option 1 above. The Panel recommends that any specific direction be limited to areas where third parties are not likely to make investments and the quantum of investment by non-exempt utilities allowed by specific direction be carefully circumscribed to ensure that the private sector isn’t unfairly impacted and non-exempt utility ratepayers are not at undue risk.**

The GGRR is an example of specific direction provided by Government to allow non-exempt utilities to recover investments made in certain undertakings – called prescribed undertakings. The GGRR was originally enacted to allow certain levels of investment in CNG and LNG for transportation and has since been expanded to include prescribed undertakings with the objective of promoting electrification in several sectors of the provincial economy. Essentially, the GGRR de-risks, for the shareholder, public utility prescribed undertakings by removing the BCUC’s mandate to review these types of investments in consideration of the public interest. It allows the non-exempt utility to place these investments into rate base, up to the spending caps. This ensures that utility investments are recovered ultimately from its ratepayers. The role of the BCUC when a utility invests in a prescribed undertaking is limited to a determination whether the activity meets the definition of the prescribed undertaking. This is either done on a prospective basis, if the utility files an application, or on a retrospective review initiated by the BCUC.

At issue in this Inquiry has been whether the provision of EV charging infrastructure constitutes a prescribed undertaking, as that term is defined in the GGRR. We have reviewed the GGRR and find that Level 1, Level 2 or Level 3 EV charging infrastructure does not meet the current definition of prescribed undertaking. With regard to parties that argue section 4(3)(c) of the GGRR provides the necessary support, in our view, Level 1, Level 2 or Level 3 EV charging infrastructure is not a “pilot project respecting technology.” It is a mature technology, even though the possibility exists of an enhanced “level 4” charging technology developing.

While we agree with the CEC’s position that “utilities are not currently precluded from participating in the EV charging market, and as such, an amendment to the GGRR is not required,” we note that participation in the EV charging market comes with risk to shareholders that they will be able to recover their investment. Given that risk, there is a possibility that public utilities will not make those investments. The GGRR provides a specific example of a narrowly defined Government directive that could address this issue, if the Government chooses to do so.

Government could define a prescribed undertaking and also provide a cap on the amount of investment made in the prescribed undertaking. For example, a prescribed undertaking could be defined as the provision of EV charging infrastructure along the Highway 3 corridor along with a cap of \$500,000 for any individual non-exempt public utility providing that infrastructure.

Following from earlier comments on the specific role of utilities in a regulated environment, the Panel notes that while the public may desire some ancillary services (e.g. food concessions) attached to (or proximate to) an EV charging station, it is less clear whether the costs of such investments should find their way into rate base.

Accordingly, the Panel recommends that if Government considers it appropriate to amend the GGRR to define EV charging infrastructure as a prescribed undertaking:

- **The scope of the prescribed undertaking should be defined as narrowly as possible and monetary caps and/or time limits provided for the prescribed undertaking.**
 - **Consideration should be given to stipulating which costs can be included. For example, should ancillary services associated with a highway charging station be included in the prescribed undertaking? To the extent that any land acquisition, site preparation, paving, costs are incurred in respect of ancillary services, should they also be segregated?**
 - **Consideration should also be given to geography and/or other descriptors that set out where non-exempt investments are appropriate.**
- **Furthermore, we recommend that the BCUC retain its jurisdiction to ultimately determine whether the proposed investment qualifies as a prescribed undertaking under the definition set out in the GGRR.**

The above discussion does not set out mutually exclusive approaches and is not intended to portray binary choices. Instead, it presents a spectrum of possible regulatory options depending on the degree of prescriptiveness of the specific Government direction or policy in question. For example, Government could provide broad direction with more narrowly defined direction in specific areas.

9.3.3 Panel Recommendations regarding legislative amendments

While the following recommendation s regarding the UCA are directly applicable to EVCS, they are also broadly applied to the review of other utility capital investments.

As we previously discussed in section 3.0 of this Report, there are inconsistencies in the language between sections 44.2 and 45–46 and also within each of these sections. These inconsistencies present challenges to decision makers. The inconsistencies are summarized as follows:

1. Section 46 requires that, when reviewing a CPCN application, the BCUC consider “the interests of persons in British Columbians who receive or may receive service from” the applicant. However, when reviewing a section 44.2 expenditure schedule application, this requirement only applies to applications from BC Hydro.
2. When reviewing a CPCN application, the BCUC is only required to consider the Energy Objectives as enumerated in section 2 of the *Clean Energy Act* if the “matters addressed in the application” have been found to be in the public interest in the review, under section 44.1, of a long-term resource plan. However, there is no requirement under s44.1 to consider section 2 of the *Clean Energy Act* for non-exempt utilities other than BC Hydro.
3. For both BC Hydro CPCN reviews and reviews of an expenditure under sections 45 and 46 and expenditure reviews under section 44.2, the BCUC is required to consider “BC’s energy objectives”; for any other non-exempt public utility, the BCUC is required to consider “the applicable of BC’s energy objectives.” However, the UCA is silent on which energy objectives are “applicable.”

The Panel recommends that the language in sections 44.2 and 45–46 of the UCA be reviewed and, if possible, amended to make these sections more consistent.

Further, if Government wishes the BCUC to prioritize the electrification of transportation infrastructure when reviewing expenditure requests, the Panel recommends that Government lay out criteria as clearly as possible. One possible approach would be to revise the energy objectives in the *Clean Energy Act*:

1. so they aren't mutually exclusive
2. so that EV charging infrastructure, and more broadly, transportation electrification, is specifically addressed
3. to include objectives relating to non-exempt public utility investment in EV charging infrastructure and ensure those objectives are "applicable" to non-exempt public utilities.

Ideally, the UCA should be amended to require the mandatory submission of EVCS Resource Plan filings to the BCUC for approval. In the absence of this legislative amendment, a ministerial order directing the non-exempt utilities to file the EVCS Resource Plan for approval would achieve a similar objective.

10.0 Safety

In the Phase 1 Report, the Panel made the following request:

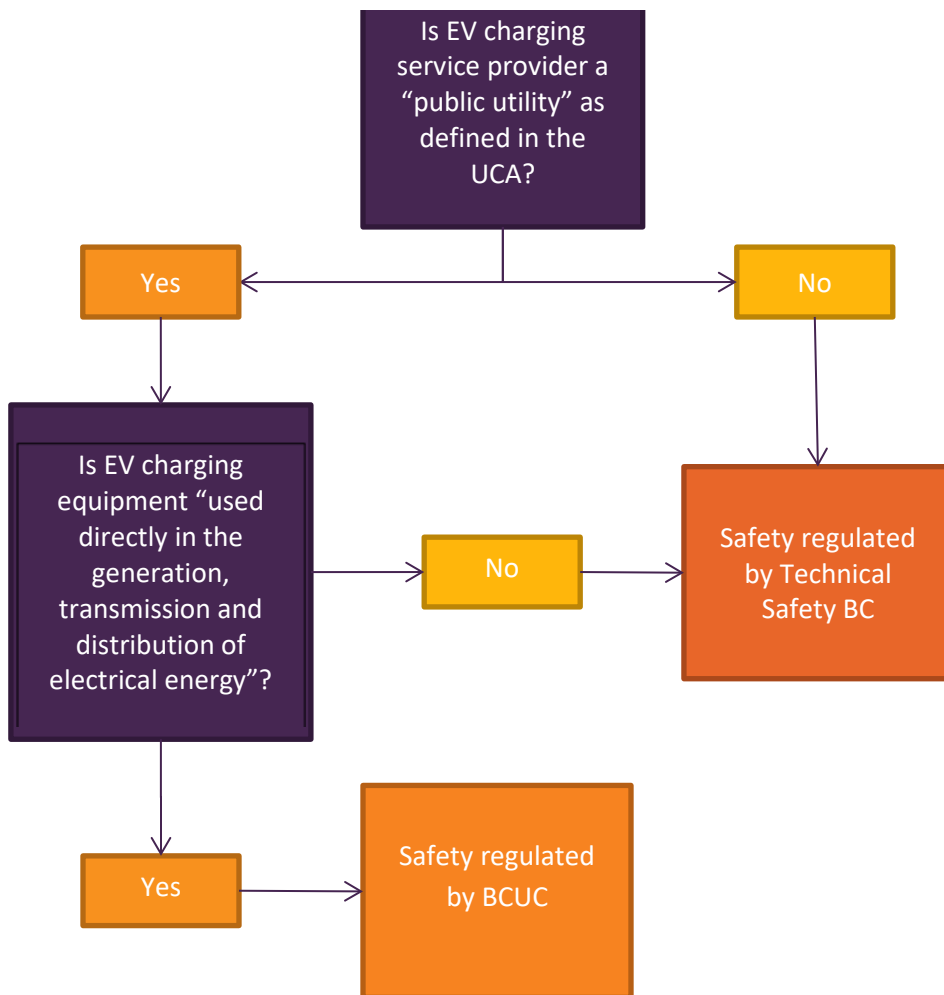
Section 3 of the Electrical Safety Regulation states that it "does not apply to a public utility as defined in the Utilities Commission Act in the exercise of its function as a utility with respect to the generation, transmission and distribution of electrical energy". Further, "distribution equipment" 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?

In Order G-50-19, the Panel stated that it would make recommendations on this issue to the Ministry.¹⁹³

¹⁹³ Exhibit A-41, https://www.bcuc.com/Documents/Proceedings/2019/DOC_53525_A-41-G-50-19-Timetable-Reasons.pdf

Who regulates safety?



10.1 Evidence and submissions (Phase 1 and Phase 2)

BCUC regulation is not required because EV charging equipment is not "distribution equipment"

Several interveners and Technical Safety BC submit that the BCUC should not regulate the safety of EV charging service under the UCA because EV charging equipment is not "distribution equipment".¹⁹⁴ Some parties state that the Electrical Safety Regulation applies to the safety of EV charging equipment and service.¹⁹⁵ BC Hydro and Tesla submit that EV supply equipment and services are already covered under electrical safety codes.¹⁹⁶ Some also argue that the EV charging equipment is downstream of the utility's meter and therefore should not be covered under the UCA.¹⁹⁷

¹⁹⁴ Exhibit E-22, Technical SafetyBC Phase 2, Letter of comment, p. 1; Exhibit C19-12, Phase 2, MEMPR, p. 12; Exhibit C2-4, Phase 2, CEABC, p. 8.

¹⁹⁵ Exhibit C12-6, FBC, Phase 2 evidence, pp. 17–18; Exhibit C25-12, ChargePoint, Phase 2 evidence, p. 15.

¹⁹⁶ Exhibit C1-7, BC Hydro, Phase 2 evidence, p. 16; EV Inquiry Phase 1, Exhibit C28-6, Tesla Final Argument, p. 7.

¹⁹⁷ Exhibit C16-6, Guthrie, Phase 2 evidence, Guthrie, p. 8; Exhibit C12-6, FBC Phase 2 evidence, pp. 17–18.

In its letter of comment, Technical Safety BC submits that through the application of the Electrical Safety Regulation, EV supply equipment (EVSE) must only be installed by qualified individuals who work for licensed electrical contractors or persons who are otherwise authorized, and all installations of EVSE must be performed under a permit.¹⁹⁸

Is there a need to make a finding as to whether EV charging equipment is “distribution equipment” at all?

MEMPR and BC Hydro view that the Panel’s finding as to whether EV charging equipment is “distribution equipment” is unrelated when it comes to safety.¹⁹⁹ While the UCA defines “distribution equipment”, the term is used in Sections 32 and 33 of the UCA only to set out provisions regarding a public utility’s placement of distribution equipment on municipal areas. The term “distribution equipment” is not specifically referenced with respect to safety under the UCA. Instead, Sections 25 and 38 say that the BCUC must regulate public utilities to provide safe service in general.

Some level of BCUC oversight or action may be required because EV charging equipment is “distribution equipment,” could be “distribution equipment,” or is ambiguous.

Intervenors illustrate different scenarios and rationale for determining why EV charging equipment may or may be “distribution equipment”.²⁰⁰ For example, Flintoff submits that electric power distribution equipment is used in the final stage in the delivery of electric power to a customer’s load. Flintoff discusses the following scenarios and his views:²⁰¹

- In the case of a non-exempt (regulated) public utility, the customer’s load is the EV itself not the DCFC conversion (AC to DC) equipment. Therefore, the EV charging stations may be considered distribution equipment and not subject to Electrical Safety Regulation.
- In the case of an exempt public utility (still a public utility), the customer’s load is the EV conversion (AC to DC) equipment. As an exempt public utility, the EV charging stations would be subject to Electrical Safety Regulation.
- In the case of a provider excluded from the definition of a public utility but not having an exemption from regulation (not a public utility) or a non-regulated arm of a public utility (not a public utility), the EV charging stations would be subject to Electrical Safety Regulation.

If the Panel finds that EV charging equipment is not “distribution equipment” then, regardless of ownership, the equipment will fall under the jurisdiction of Technical Safety BC.²⁰² Flintoff supports Technical Safety BC setting the safety inspection requirements.²⁰³

¹⁹⁸ Exhibit E-22, Technical SafetyBC, Phase 2, Letter of comment, p. 1, ; Exhibit C19-12, Phase 2, MEMPR, p. 12; Exhibit C2-4, Phase 2, CEABC, p. 8.

¹⁹⁹ Exhibit C19-12, MEMPR, Phase 2 evidence, p. 12; BC Hydro, Phase 2, Reply Argument on Revised Scope, p. 6.

²⁰⁰ Exhibit C24-21, CEC, Phase 2 evidence, pp. 15–17; Exhibit C38-2, Siemens, Phase 2 evidence, p. 18.

²⁰¹ Exhibit C4-13, Phase 2, Flintoff, pp. 19-20.

²⁰² EV Inquiry Phase 2, Flintoff, Final Argument on Revised Scope, p. 9.

²⁰³ Ibid. p. 1.

However, BCSEA appears to provide an opposing view on Flintoff's second bullet. Interpreted literally, BCSEA submits that Section 3 of the Electrical Safety Regulation means that the Electrical Safety Regulation does not apply to "exempt public utilities" that provide EVCS.²⁰⁴ For 'exempted' utilities, the CEC views that the concept of utility distribution equipment should not apply to the EV charging infrastructure. Rather, the CEC introduces the notion that the distribution equipment should be considered as that infrastructure belonging to the monopolistic utility, and ending at the 'customer meter,' the terminal between the energy providing monopolistic utility (i.e. non-exempt utility such as BC Hydro) and the utility's own customer, the exempted utility. EV charging infrastructure owned by a 'non-exempt utility' would reasonably be considered as 'distribution facilities'.²⁰⁵

While BCSEA submits that it does not have a comprehensive position on which agency is, or should be, responsible for EV charging service conducted by public utilities, BSCEA notes that even if Technical Safety BC has authority to regulate EV charging equipment it does not preclude the possibility that the BCUC may also have jurisdiction.²⁰⁶

Greenlots submits that "distribution equipment" as defined by the UCA is ambiguous regarding EV charging equipment. Therefore, Greenlots "generally caution against exemptions from appropriate safety regulations for both utility and non-utility providers of EV charging services unless the regulation explicitly provides for this, which it does not appear to do."²⁰⁷

10.2 Panel findings

Most interveners and Technical Safety BC are of the view that the safety of EV charging equipment is within the jurisdiction of Technical Safety BC, regardless whether the EV charging takes place in a private setting (e.g. home charging) or in a public space (e.g. public Level 2 charging or DCFC service). Further, no party is opposed to Technical Safety BC providing safety regulatory oversight on EV charging equipment.

While the Panel does not dispute that the current safety oversight regime is as it has been described in this proceeding, we have the following observations.

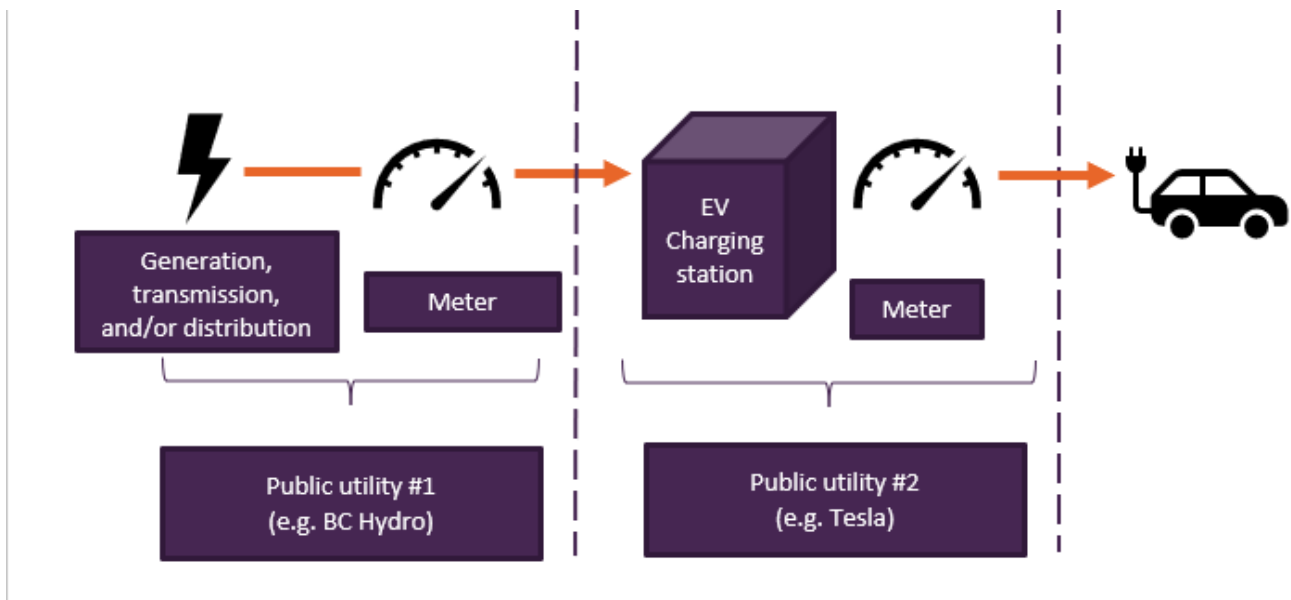
The consideration of public utility distribution equipment is more nuanced than most parties acknowledge. Consider the following illustration:

²⁰⁴ Exhibit C6-16, BCSEA, Phase 2 evidence, p. 10.

²⁰⁵ Exhibit C24-21, CEC, Phase 2 evidence, pp. 15-17.

²⁰⁶ EV Inquiry Phase 2, BCSEA, Final Argument on Revised Scope, pp. 9-10.

²⁰⁷ Exhibit C15-7, Greenlots, Phase 2 evidence, p. 10.



There is not one, but two public utilities in this example. BC Hydro supplies electricity to Tesla, which owns and operates the charging station. With respect to BC Hydro, Tesla’s charging equipment is downstream of the meter and is not used directly in BC Hydro’s generation, transmission or distribution of electrical energy. It is not even a utility asset with respect to BC Hydro. However, with respect to Tesla, the charging equipment is a utility asset – equipment owned by Tesla, which is a public utility, albeit exempt from most provisions of Part 3 of the UCA, for the purpose of providing EV Charging services for compensation. The question is whether the equipment is used directly in the distribution of electrical energy with respect to Tesla.

Section 38 of the UCA provides that a public utility must maintain its equipment to enable it to provide safe service. Given the submissions of Technical Safety BC and MEMPR, however, the Panel is satisfied that safety supervision of EV charging infrastructure, as currently provided by Technical Safety BC, is adequate such that duplication of that safety regulation by the BCUC is unwarranted and would be counterproductive. Thus, the Panel is satisfied that there is sufficient safety oversight pertaining to EV charging stations.

Furthermore, the BCUC has the jurisdiction under the UCA to intervene to provide the necessary safety oversight if and when needed. Section 25 of the UCA provides that in the event the service of a public utility is unsafe, then the BCUC has the ability to order the public utility to provide safe service. **Consequently, given the provisions under the UCA, the Panel makes no determination as to whether EV charging station is or is not distribution equipment, although we recommend that the BCUC continue to retain jurisdiction relating to safety in accordance with Sections 25 and 38 of the UCA.**

11.0 Issue Arising: FortisBC Alternative Energy Services Inc.

FortisBC Alternative Energy Services Inc. (FAES) argues that “TES Providers Should be Treated Differently from Regional Electric Utilities.” In support of this position, it states:

FAES is not a regional electric utility and has more in common with EV charging service providers that are not otherwise public utilities, and landlords or stratas providing EV charging service in that capacity. Like those entities, FAES generally operates outside of traditional regulation under

the UCA, and within the service area of regional electric utilities. The “otherwise existing utility” taxonomy introduced by the Panel in Phase One of the Inquiry is all that differentiates FAES from other providers of EV charging service that are also not regional electric utilities. In addition, FAES’s TES projects are already subject to regulatory treatment in accordance with the TES Guidelines.²⁰⁸

11.1 Panel Discussion

The Panel disagrees with FAES’ position that it should be treated differently from regional electric utilities. The Panel’s Phase 1 Report did not make a distinction between electric utilities and other utilities that are regulated. At issue is not the nature of the utility business, it is concern for cross subsidization from captive ratepayers. Unlike non-exempt public utilities, landlords and MURBs do not present the same concerns as they operate in markets that are generally competitive, thereby reducing or eliminating any incentive to cross-subsidize costs attributable to EV charging.

DATED at the City of Vancouver, in the Province of British Columbia, this 24th day of June 2019.

Original signed by:

D. M. Morton
Panel Chair / Commissioner

Original signed by:

A. K. Fung, QC
Commissioner

Original signed by:

H. G. Harowitz
Commissioner

²⁰⁸ EV Inquiry Phase 2, FAES Final Argument, pp. 2–3.

Glossary and List of Acronyms

| Acronym / Glossary | Description |
|---------------------|---|
| AC | Alternating current |
| AES Inquiry | Inquiry into the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives |
| Alliance | Alliance for Transportation Electrification |
| ATI | AddÉnergie Technologies Inc. |
| BC Hydro | British Columbia Hydro and Power Authority |
| BCOAPO | British Columbia Old Age Pensioners' Organization, Active Support Against Poverty, Council of Senior Citizens' Organizations of BC, Disability Alliance BC, Tenant Resource and Advisory Centre, and Together Against Poverty Society |
| BCSEA | BC Sustainable Energy Association and Sierra Club BC |
| BCUC | British Columbia Utilities Commission |
| BrightSide | BrightSide Solutions |
| CEA | Community Energy Association |
| CEABC | Clean Energy Association of British Columbia |
| CEC | Commercial Energy Consumers Association of British Columbia |
| CNG | Compressed natural gas |
| COSA | Cost of Service Analysis |
| CoV | City of Vancouver |
| CPCN | Certificate of Public Convenience and Necessity |
| CPUC | California Public Utilities Commission |
| DC | Direct current |
| DCFC | Direct Current Fast Charging; also known as Level 3 charging; Time to charge: 30–60 minutes for full charge; Locations: highway corridors |
| DCFC station | Direct current fast charging station |
| ESM | Earnings sharing mechanism |
| EV | Electric vehicle |
| EV charging station | Owned and operated by a variety of private and public entities |
| EVCS | EV charging services |
| EVSE | EV supply equipment |
| FAES | FortisBC Alternative Energy Services Inc. |

| Acronym / Glossary | Description |
|--------------------|---|
| FBC | FortisBC Inc. |
| FBCPIBC | Fraser Basin Council/Plug In BC |
| FEI | FortisBC Energy Inc. |
| Flintoff | Flintoff, Donald |
| GGRR | Greenhouse Gas Reduction Regulation |
| GHG | Greenhouse gas |
| Guthrie | Guthrie, Gary |
| Inquiry | An inquiry to review the regulation of electric vehicle charging service in British Columbia |
| Level 1 charging | Requirement: AC (120 volt); Time to charge: four hours for 30 minutes of driving. Locations: residences, some public |
| Level 2 charging | Requirement: AC (120 volt); Time to charge: four hours for full charge. Locations: municipal locations, office towers, parks, recreational facilities, shopping malls |
| LNG | Liquefied natural gas |
| MEMPR or Ministry | British Columbia Ministry of Energy, Mines and Petroleum Resources |
| MURB | Multi-Unit Residential Building |
| NMPRC | New Mexico Public Regulation Commission |
| NRCan | Natural Resources Canada |
| OEB | Ontario Energy Board |
| OPUC | Oregon Public Utility Commission |
| RDA | Rate Design Application |
| RMDM Guidelines | Retail Markets Downstream of the Utilities Meter Guidelines |
| TES | Thermal Energy System |
| Tesla | Tesla Motors Canada ULC |
| UCA | <i>Utilities Commission Act</i> |
| UDI | Urban Development Institute |
| Victoria EVA | Victoria Electric Vehicle Association |
| ZEV | Zero emission vehicle |