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January 28, 2019

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British Columbia Utilities Commission
6th Floor – 900 Howe Street
Vancouver, BC V6Z 2V3

Attention: Patrick Wruck, Commission Secretary

Dear Sir:

BCUC Inquiry into the Regulation of Electric Vehicle Charging Services
Phase Two Intervener Evidence – ChargePoint Responses to Commission Questions

We are counsel to ChargePoint Inc. and enclose its evidentiary responses to the Commission's Phase Two questions. Please contact the writer if you have any questions.

Yours very truly,

Matthew D. Keen

MDK/roe

encl.

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BRITISH COLUMBIA UTILITIES COMMISSION

INQUIRY INTO THE REGULATION OF ELECTRIC VEHICLE CHARGING SERVICES PHASE 2

PROJECT NO. 1598941

CHARGEPOINT INC.

RESPONSE TO PHASE 2 QUESTIONS

January 28, 2019

CHARGEPOINT INC.

INQUIRY INTO THE REGULATION OF ELECTRIC VEHICLE CHARGING SERVICES

SUBMISSION TO PHASE 2 QUESTIONS

I. INTRODUCTION AND OVERVIEW

This document presents ChargePoint Inc.'s (ChargePoint) comments on the scope of inquiry for Phase 2 of the Electric Vehicle Charging Services Inquiry (Inquiry). The primary issue addressed in Phase 2 is the regulatory context for otherwise public utilities (referred to generally in this submission as utilities) who participate in the electric vehicle (EV) charging market.

This submission is organized into two parts. Following a high-level discussion of the primary Phase 2 issue (Section II), concise responses to the Commission's questions are provided in Section III. ChargePoint looks forward to participating in the additional stages of Phase 2.

II. THE ROLE OF UTILITIES IN THE EV CHARGING MARKET

Utilities have an important role to play in supporting the long-term sustainability and scalability of the EV charging competitive market. Well-designed utility investments and rates can create the conditions for private and utility investments in EV charging to flourish. A long-term, scalable, and competitive market for charging equipment and network services is critical to the level of deployment needed to meet the BC government's 2040 zero-emissions vehicle sales goals. To that end, ChargePoint strongly supports appropriate utility investment in EV charging.

Utilities across North America have acknowledged that their participation can help lower barriers to EV charging deployment and accelerate EV charging markets. A number of these utilities have also supported programs that enable the build out of networked EV charging infrastructure across a range of use cases.

As the BCUC examines utility participation in the competitive EV charging market in Phase 2, it should likewise consider how its recommendations will help accelerate BC's EV charging market, while preserving market competitiveness. In particular, the BCUC should seek to ensure that utility involvement leads to a more robust EV charging market, featuring improved access, technology innovation, and customer choice in charging equipment and network services.

To assist the Commission, ChargePoint has developed a set of essential principles to support successful implementation of utility programs that align the goals of the utility, competitive market participants, and end customers. These principles are based on ChargePoint's experience with utilities across the US.

To the maximum extent possible, utility programs should incorporate the following:

a. *Fostering and supporting a competitive market for EV charging infrastructure, setting it as a core goal.*

   Long-term, the demand for EV charging is best served by a self-sustained, dynamic competitive market, as it drives down costs for consumers and

advances innovative products and business models. Successful utility program designs seek to leverage existing market providers, accelerate competitive activities and opportunities, and support a sustainable, scalable market for EV charging infrastructure.

b. *Ongoing support for a diversity of competitive market offerings, allowing site hosts to continue to have a choice in charging solutions from multiple, qualified vendors of equipment and charging networks.*

   Site hosts make their choices of solutions based on a variety of factors and circumstances, such as available network features, brand and reputation, customer service, cost, aesthetics, reliability, and more. In successful utility programs, site hosts maintain the choice that they currently have among charging equipment and network providers, so that they may choose the solution that best fits their specific needs associated with their property and use case.

c. *Site host control of charging infrastructure located on their properties, including pricing and access control, to align with site host circumstances, preferences, and desired driver experience.*

   Site hosts invest in EV charging stations to achieve a wide range of goals. Through controls over pricing and access (e.g. only giving access to employees and restricting public use), site hosts can achieve their goals and optimize utilization. Utility programs that do not allow for site hosts' operational control of stations may discourage growth of site host engagement and investment, and potentially result in poor station utilization or negative driver experience.

d. *Stimulate private investment in charging infrastructure to ensure site hosts have "skin-in-the-game" and are invested in the success of deployments, and to maximize the use of ratepayer funds.*

   Utility investment in EV charging should align with and attract private investment, requiring site hosts to be materially and financially invested in the success of deployments. Connecting site hosts to the responsibilities of charging station deployment will lead them to make decisions to maximize utilization at their sites, which will benefit the overall program. Additionally, a private investment cost share will stretch and multiply investments of ratepayer funds.

e. *A requirement that all deployments utilize networked charging infrastructure to maximize flexibility, control, and grid benefits.*

   Utility programs recognize and maximize the benefits associated with electrification by requiring networked charging technologies in charging infrastructure programs. Smart, networked technologies enable grid benefits, as valuable charging data can be collected on each session to inform better utility planning decisions, help maintain reliability and affordability, and manage load.

ChargePoint's principles are based on critical features of existing successful utility programs for EV charging infrastructure, including programs approved in California[1], Nevada[2], Utah[3], Ohio[4],

[1] *See* California Public Utilities Commission. Application 17-01-020. "Transportation Electrification Proposals Pursuant to SB 350." 2018, http://www.cpuc.ca.gov/sb350te/.

[2] *See* Public Utilities Commission of Nevada. Docket No. 18-02002. "Joint Application of Nevada Power Company d/b/a NV Energy […] Electric Vehicle Infrastructure Demonstration Program for Program Year 2018-2019." June 27, 2018,

Massachusetts[5], New York[6], Rhode Island[7], and programs proposed in Pennsylvania[8], Washington[9], Maryland[10], Michigan[11], and Missouri[12].

Based on this record and our experience in active programs in other jurisdictions, ChargePoint submits that multiple utility investment models for EV charging can and should accommodate the program design features noted above to maintain a participating site host's choice and control to support the current competitive market for charging. This works to enhance the effectiveness of utility programs for EV charging services while ultimately mitigating the cost burden and risk associated with use of ratepayer funding.

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http://pucweb1.state.nv.us/PDF/AxImages/DOCKETS_2015_THRU_PRESENT/2018-2/31126.pdf.

[3] *See* Public Service Commission of Utah. Docket No. 16-035-36. "In the Matter of the Application of Rocky Mountain Power to Implement Programs Authorized by the Sustainable Transportation and Energy Act." June 28, 2017, https://pscdocs.utah.gov/electric/16docs/1603536/294954160353 6ptrao6-28-2017.pdf.

[4] *See* Public Utilities Commission of Ohio. Docket No. 16-1852-EL-SSO. "In The Matter of the Application of the Ohio Power Company for Authority to Establish a Standard Service Offer Pursuant to R.C. 4928.143."April 25, 2018, http://dis.puc.state.oh.us/DocumentRecord.aspx?DocID=1a7d9c25-92bc-42e4-896d-c888c1a015ac.

[5] *See* Massachusetts Department of Public Utilities. Docket 17-05. "Order Establishing Eversource's Revenue Requirement." November 30, 2017, https://eeaonline.eea.state.ma.us/EEA/FileService/V1.4.0/FileService.Api/file/FileRoom/dehehcjj.

[6] *See* New York Public Service Commission. Matter No. 17-00887. "Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Niagara Mohawk Power Corporation d/b/a National Grid for Electric Service", http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterCaseNo=17-E-0238.

[7] *See* Rhode Island Public Utilities Commission. Docket No. 4770. "The Narragansett Electric Co. d/b/a National Grid - Application for Approval of a Change in Electric and Gas Base Distribution Rates", http://www.ripuc.org/eventsactions/docket/4770page.html.

[8] *See* Pennsylvania Public Utilities Commission. Docket Number R-2018-3000124. "Pa. PUC v. Duquesne Light Company", http://www.puc.pa.gov/pcdocs/1586084.pdf.

[9] *See* Washington Utilities and Transportation Commission. Docket No. UE-180877. Tariff Revision – Puget Sound Energy, https://www.utc.wa.gov/docs/Pages/DocketLookup.aspx?FilingID=180877.

[10] *See* Maryland Public Service Commission. Case No. 9478. "In the Matter of the Petition of the Electric Vehicle Workgroup for Implementation of a Statewide Electric Vehicle Portfolio", https://www.psc.state.md.us/search-results/?keyword=9478&x.x=16&x.y=13&search=all&search=case.

[11] *See* Michigan Public Service Commission. Case No. U-20134. "In the matter of the application of Consumers Energy Company for authority to increase its rates for the generation and distribution of electricity and for other relief", https://mi-psc.force.com/s/case/500t0000009fPPSAA2/in-the-matter-of-the-application-of-consumers-energy-company-for-authority-to-increase-its-rates-for-the-generation-and-distribution-of-electricity-and-for-other-relief.

[12] *See* Missouri Public Service Commission. Case No. ET-2018-0132. "In the Matter of the Application of Union Electric Company d/b/a Ameren Missouri for Approval of Efficient Electrification Program, https://www.efis.psc.mo.gov/mpsc/commoncomponents/view_itemno_details.asp?caseno=ET-2018-0132&attach_id=2018012294.

III. SPECIFIC PHASE 2 QUESTIONS FROM THE BC UTILITIES COMMISSION

To determine the appropriate regulatory framework for EV charging service providers for which the Commission has not recommended an exemption (e.g. BC Hydro and FortisBC Inc.), the Commission has asked for comments on a series of questions attached to Order G-231-18. The questions posed by the Commission cover the regulatory framework for non-exempt public utilities, wholesale rates for EV charging service providers, regulation of safety for EV charging stations, and charging investments under BC's *Greenhouse Gas Reduction Regulation*
As noted above, ChargePoint supports utility participation that fosters the long-term stability and scalability of the competitive market, and responds directly to the Commission's questions below.

Regulatory framework for utilities

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

Yes, both regulatory models – utilities and exempt entities – can co-exist and in fact be complimentary and symbiotic. There is an important role for utilities to play in ensuring that EV charging is a part of a reliable electricity grid. Exempt entities (also referred to in this submission as third-party EV charging service providers or private investment) should be encouraged to develop and deploy technology solutions and business models that align with the needs of utilities and the grid, in addition to the needs of drivers and site hosts. In turn, utilities can support and enhance the competitive EV charging market by issuing electricity tariffs that send helpful signals and incentives, developing planning expertise and, in some cases, deploying charging infrastructure themselves.

Ideally, utilities' role in complementing the competitive EV charging market should not be restricted to remote geographies or specific market segments, although if only limited funding is available it may be prudent for a utility to focus investment on, for example, more remote locations underserved by the competitive market. Regardless of geographic boundaries, it is vital that the role for utilities supports a long-term sustainable competitive market. Utility EV charging initiatives should therefore be reviewed on a case-by-case basis in the normal course, taking into account market and customer needs and the likely impact on the competitive market.

A number of jurisdictions in the US support both utility and third-party EV charging provider participation in the market, and several of these jurisdictions have passed laws and developed guidelines for program evaluation that require consideration of competition and customer choice.

For example:

- California Senate Bill 350 Section 32 (2015) requires Commission consideration of competitiveness, non-utility impacts, and ratepayers' interests when reviewing investments in EV charging services.[13]
- Oregon Senate Bill 1547 (2016) requires the Commission to consider system benefits and innovation, competition, and customer choice when evaluating utility investments in EV charging services.[14]
- Massachusetts Senate Bill 2502 (2016) requires Commission consideration of public interest, EV advancement, and competitiveness impacts when reviewing investments in EV charging services.[15]
- Washington House Bill 1853 (2015) requires Commission consideration of fair market competition when reviewing investments in EV charging services.[16]

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

As noted in the previous response, utilities have an important role to play in supporting the competitive EV charging market and this role should not be temporary or restricted geographically. Utility investment, if designed effectively, can catalyze and foster a long-term, scalable, and competitive market for EV charging equipment and services. Therefore, the role of utilities should be defined by how their participation can support the long-term stability of the existing competitive market and how utility investments can complement, accelerate, and remove barriers to the provision of EV charging services overall. ChargePoint strongly supports utility investments in EV charging services that seek to achieve these outcomes.

As indicated in ChargePoint's initial evidence to this Inquiry[17], there are number of investment models that utilities can adopt to support the competitive market. The three primary models used in the US include:

1. **Ownership**: A utility procures, deploys, owns, and maintains charging infrastructure.
2. **Make-Ready**: A utility directs investments toward the *installation* of charging hardware, and more specifically, installing and maintaining the supporting electrical infrastructure on the distribution side as well as the customer side of the meter up to

[13] Senate Bill 350 Clean Energy and Pollution Reduction Act of 2015, https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB350.
[14] Senate Bill 1547 of 2016, https://olis.leg.state.or.us/liz/2016R1/Downloads/MeasureDocument/SB1547/Enrolled.
[15] Senate Bill 2020 An Act Promoting Zero Emission Vehicle Adoption of 2016, https://malegislature.gov/Bills/189/S2505.
[16] House Bill 1853 of 2015, http://lawfilesext.leg.wa.gov/biennium/2015-16/Pdf/Bills/Session%20Laws/House/1853-S.SL.pdf?cite=2015%20c%20220%20%C2%A7%202.
[17] Exhibit C25-2, p. 22.

the connection point for the charging station (e.g., this can include trenching or boring, conduit, wiring, labor, mounting, site reconditioning, and even landscaping along with signage). In covering this work, a utility prepares a site for installation of the charging station itself, which is purchased and operated by the site host.

3. **Rebate-based**: A utility provides rebate incentives to site hosts that are used toward the purchase and installation of qualifying charging stations onsite. Qualification standards for charging stations can be determined to ensure capabilities that will enable grid benefits.

The right model for utility investment in EV charging markets can take many forms, and no single solution is appropriate for every jurisdiction and use case. Moreover, each segment of the charging market – fleets, multi-unit dwellings, retail establishments, workplaces, municipalities, and corridors – has a different set of circumstances to consider the most effective investment. ChargePoint supports all three models and maintains that a suite of offerings may most adequately address the needs of different site hosts and use cases. The Commission should ensure that programs leverage the strengths of each model, provide for program flexibility, and align investments with the most appropriate use case.

Program design principles should align the goals of the utility, competitive market participants, and customers in their evaluation of utility investments. Working with utilities across North America, ChargePoint has developed the following principles for program design (as noted in Section I):

a. Fostering and supporting a competitive market for EV charging infrastructure, setting it as a core goal.
b. Ongoing support for a diversity of competitive market offerings, allowing site hosts to continue to have a choice in charging solutions from multiple, qualified vendors of equipment and charging networks.
c. Site host control of charging infrastructure located on their properties, including pricing and access control, to align with site host circumstances, preferences, and desired driver experience.
d. Stimulate private investment in charging infrastructure to ensure site hosts have “skin-in-the-game” and are invested in the success of deployments, and to ensure that ratepayer funds are maximized.
e. A requirement for all deployments to be smart, networked charging infrastructure, to maximize flexibility, control, and grid benefits.

These principles aim to support effective utility programs while mitigating the cost burden and risk associated with utility investments. Further, under these principles, utility investment should support the competitive market and minimize ratepayers’ cost risk. Building on the points noted above, stranded asset risk is mitigated in program design when:

- Site hosts select the charging equipment and network services that best meet their use case, support positive EV driver experiences, and encourage utilization.
- Site hosts set pricing and access control to achieve utilization goals specific to their individual use case.
- Site hosts have “skin-in-the-game” and have a material and financial stake in the

purchase, operation and use of the charging equipment.

- Equipment and sites are future proofed and are easily scalable without significant additional costs, ensuring flexibility to allow for technological changes over time (e.g., make-ready investments can incorporate new charging equipment at minimal cost or scalable charging equipment that can add additional capacity at minimal cost).
- Performance standards are established for equipment and network services to ensure station reliability and driver support.
- Utilities utilize smart, networked technologies to maximize benefits from data collection and load management.

The Commission should also require utilities to show that EV program design takes the current technology landscape for EVs and EV charging into account to minimize the risk of stranded assets. For example, EV battery capacity, charging plug standards, charging station capacity, and vehicle types may evolve over the life of the charging station.

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

ChargePoint strongly supports utility investment in electric vehicle charging infrastructure. ChargePoint's experience deploying over 60,000 charging stations suggests that there is no one-size-fits-all solution for utility investment. In the markets in which ChargePoint operates, it has observed a variety of utility investment models (rebate, make-ready, ownership) that have been funded by the entire rate-base or non-regulated entities.

While there are pros and cons to each approach, it is ultimately the manner in which utility investments are structured and programs designed that determines if investments either complement, or compromise, the competitive market and ongoing innovation. Therefore, it is important for regulators to review utility investments holistically to assess potential impacts on competition, ratepayer costs and benefits (if seeking cost recovery), market growth, and other policy goals related to greenhouse gas reduction and transportation electrification. The principles noted in the response above may serve as a helpful guideline for assessing investment effectiveness and risk in utility rate applications.

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

As noted in the response above, ChargePoint has observed and collaborated with utilities on a number of different funding models for EV investments on the basis of achieving net benefits for all ratepayers. Utility investment in EV charging can benefit all ratepayers in a number of ways including, but not limited to, increased incremental load, grid asset upgrade capital deferment, and more efficient grid utilization. In net benefit circumstances, utility investments do not reflect a cross subsidy.

Regulatory reviews and studies have shown that investments in EV charging can create sufficient new load to reduce unit energy costs, resulting in lower electricity rates and net benefits for all ratepayers, irrespective of EV charging station ownership.[18] This conclusion assumes, of course, that the new load does not result in significant new distribution infrastructure investment, and avoids peak period cost effects.

For example, a state-wide cost-benefit analysis of EV adoption in Michigan conducting by MJ Bradley and Associations found that net benefits (in the form of reduced electricity bills) to ratepayers would be $2.6 billion by 2050 if EV sales reach over 55% of new vehicle sales.[19] Further, a cost-effectiveness analysis of EV charging investments proposed by four utilities in Maryland (Baltimore Gas and Electric Company, Delmarva Power & Light Company, Potomac Electric Power Company, the Potomac Edison Company) and submitted to the Maryland Public Service Commission in support of the Petition for [the] Implementation of a Statewide Electric Vehicle Portfolio (CASE NO. 9478), found that the proposed investments would generate net benefits to all ratepayers due to increased load[20] (e.g., Baltimore Gas and Electric Company found that revenue from residential charging would exceed program costs by two times through 2025, and Potomac Electric Power Company found that program costs would be exceeded by three times through 2025).

Also, smart managed charging and investments in networked charging stations capable of load management may help ensure that EV charging takes place at times that are most beneficial to the grid. This can support the creation of widespread grid benefits resulting from more efficient grid utilization and deferred capital upgrades. Some of the same studies referred to above, note that benefits to all ratepayers increase when EV charging is shifted off-peak or intelligently managed (e.g., smart charging programs).[21] For example, a study analyzing the impacts of EV charging activity and time-of-use rates for Salt River Project in Arizona, found that time-of-use rates successfully shifted charging to off-peak hours, helping the utility defer future capital upgrade costs.[22] Further, a study commissioned by Public Service Electric and Gas (PSEG) Long Island found that managed charging could generate significant net-benefits in the form of deferred and reduced grid impacts, and deliver an additional 30% saving to ratepayers.[23]

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[18] E.g., M.J. Bradley & Associates (2016-2017), *State-Wide Costs and Benefits of Plug-in Vehicles in Connecticut, Maryland, Massachusetts, New York, and Pennsylvania, Colorado, Illinois, Michigan*, https://www.mjbradley.com/reports/mjba-analyzes-state-wide-costs-and-benefits-plug-vehicles-five-northeast-and-mid-atlantic; Submission to the Maryland Public Utilities Commission re: CASE NO. 9478(2018), https://webapp.psc.state.md.us/newIntranet/Maillog/content.cfm?filepath=C:%5CCasenum%5CAdmin%20Filings%5C200000-249999%5C221921%5CJointSignatoriesComments_FF.pdf; Electric Vehicles on Gabel Associates, Inc. (2018), *Long Island Cost and Benefits*, https://www.psegliny.com/saveenergyandmoney/solarrenewableenergy/electricvehicles/-/media/2C0D0CC8E48648ECBB38463CD0405826.ashx.

[19] M.J. Bradley & Associates (2017), *State-wide Costs and Benefits of Plug-in Vehicles in Michigan*, https://mjbradley.com/sites/default/files/MI_PEV_CB_Analysis_FINAL_03aug17.pdf.

[20] Submission to the Maryland Public Utilities Commission re: CASE NO. 9478 (2018), https://webapp.psc.state.md.us/newIntranet/Maillog/content.cfm?filepath=C:%5CCasenum%5CAdmin%20Filings%5C200000-249999%5C221921%5CJointSignatoriesComments_FF.pdf.

[21] E.g. M.J. Bradley & Associates (2016-2017) and Gabel Associates, Inc. (2018).

[22] Utility Drive (2018), *Time of use rates can manage EV charging new report* says, https://www.utilitydive.com/news/time-of-use-rates-can-manage-ev-charging-new-report-says/515284/.

[23] Gabel Associates, Inc. (2018), *Long Island Cost and Benefits*, https://www.psegliny.com/saveenergyandmoney/solarrenewableenergy/electricvehicles/-/media/2C0D0CC8E48648ECBB38463CD0405826.ashx (and related presentation to the Long Island

As each utility investment will require a unique approach to fit the desired use case, the costs and benefits of each program design should be assessed individually, taking into account ratepayer and competitiveness impacts. Program designs that seek to include elements that optimize use of the increased load, tend to maximize the value of utility investment. For example, make-ready investments that set functional requirements for networked equipment capable of participating in smart charging programs will maximize benefits to ratepayers by encouraging smart charging behaviors, ultimately creating longer term grid benefits.

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

As noted in ChargePoint's response to question #2, there are important program design elements that can help utilities minimize the risk of stranded assets. ChargePoint describes these elements below:

- Leveraging private investment – When utility investment is leveraged by private investment, the third-party site host bears most of the stranded asset risk. Leveraging private investment in the deployment of charging stations (e.g., utility rebate or make-ready investments) aligns utility investment with private investment, and ensures that site hosts are materially and financially invested in the success of deployments. Connecting site hosts to the responsibilities of charging station deployment will lead them to make decisions to maximize utilization at their sites. Further, program designs that attract private investment ensures charging station deployments are driven by demand for EV charging services.
- Investments that are flexible to technology change – Make-ready infrastructure investments are not likely to experience significant cost reductions over time. Investments in make-ready infrastructure are, by nature, flexible to technology changes over time. Make-ready investments support the necessary electrical infrastructure required to deliver power to the connection point of a charging station; they do not include the charging equipment itself. As charging technology changes, the make-ready infrastructure remains in place, requiring little, if any, additional cost to upgrade. Further, make-ready investment that includes "future-proofing" ensures that sites can easily accommodate future growth and innovation in the market. For example, future proofed sites that overbuild initial electrical capacity are easily able to accommodate technologies with increased vehicle battery and charging station power with little additional make-ready cost.
- Future-proofing charging equipment – Much like future-proofing sites with make-ready investments, selecting charging equipment that is future-proofed will help minimize risk and ensure that equipment can easily accommodate future demand or new vehicle technologies. For example, modular charging equipment that can increase the power delivered to a charger or a bank of chargers with minimal electrical infrastructure investment, avoids significant costs and ensures flexibility to technological changes over time.

Power Authority Board of Trustees, https://www.lipower.org/wp-content/uploads/2018/10/EV-Study-LIPA-Board-Presentation-Oct-24-2018-FINAL.pdf).

As noted in question #4, the BCUC evaluation of project cost recovery will ultimately include an assessment of a range of cost and benefit factors, including factors that seek to minimize risk. Therefore, the BCUC should assess utility EV investment proposals on a case-by-case basis, perhaps using principles such as those suggested in Section II to guide its evaluation.

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

As noted in question #4, regulatory reviews and studies have found that utility investment in EV charging can create sufficient incremental load to create net benefits for all ratepayers, and thus investments in EV charging do not necessarily reflect cross subsidization. Again, applying principles like those outlined by ChargePoint above help produce net benefits for all ratepayers.

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

Yes. EV investments help transition towards lower vehicle-based greenhouse gas emissions, and therefore advance the BC energy objectives set by the *Clean Energy Act.* The *Utilities Commission Act* requires the Commission to consider if proposed utility investments, whether by way of Certificates of Public Convenience and Necessity (CPCN), or expenditure schedules, will further BC's energy objectives (ss. 44.2-46). Likewise, when setting a rate the Commission may consider "all matters that it considers proper and relevant" under s. 60. Greenhouse gas reductions are a relevant consideration when setting rates. However, the Commission remains appropriately constrained to ensure that all rates are just and reasonable.

The legislative scheme accordingly requires the Commission to carefully balance the social objectives identified by the legislature, and their potential costs, with traditional, fairness-based rate-setting criteria such as cost causation. Several US states also consider non-economic benefits along with other criteria in EV charging program evaluation. For example, states, such as Oregon, Massachusetts and California, include consideration of non-economic benefits alongside ratepayer and competitiveness impacts in the evaluation of program design:

- Legislation in Oregon and California require evaluation of impacts on both ratepayers and competition, and
- Legislation in Massachusetts requires consideration of public interest as well as impacts on the competitive market.

In British Columbia, improving access to EV charging will help overcomer barriers to EV adoption and support the advancement of the Province's Zero Emissions Vehicle (ZEV) target of 100% ZEV sales by 2040 and its greenhouse gas emissions reduction target of 40% emissions reduction by 2030. Investments in EV charging infrastructure, at home as well as in public and workplace charging settings, have been shown to support increased adoption of

EVs.[24] For example, a recent review of over 60 studies looking at the interaction of EV charging access and consumer preferences for EVs found that charging access increases EV uptake.[25] Utility investment, therefore, has the potential to expand access to charging infrastructure across a variety of use cases (e.g. home, workplace, public, highway) and vehicle types (light, medium and heavy duty) and could have a material impact on EV uptake and emissions reductions in British Columbia.

While these non-economic benefits are important and could be considered in the Commission's program evaluation, they should not be the only evaluation criteria. Utility programs should be evaluated holistically and include careful review of both ratepayer and competitiveness impacts. Ignoring either could lead to perverse impacts and could potentially diminish environmental benefits. For example, a program design that restricts competition by limiting customer choice in equipment and network services may result in poor driver experiences and underutilized stations, diminishing both the environmental and ratepayer benefits of the program.

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

No. Utilities have an obligation to provide power to site hosts but do not have an obligation to serve EV charging customers. As determined by the Commission in its Phase 1 final report (Exhibit A-36), charging services do not reflect a natural monopoly.

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

While the Commission may wish to maintain some oversight of utilities' investments in EV charging services to ensure that the competitive market is not harmed, ChargePoint otherwise recommends that utilities be exempt from regulation over pricing to drivers. Based on its experience installing over 60,000 charging stations across North America, allowing site hosts to determine pricing to drivers supports a flexible, robust, and competitive market, and is fundamental to supporting the long-term sustainability of the market.

[24] E.g., Bloomberg New Energy Finance (2018), *Electric Vehicles*, https://bnef.turtl.co/story/evo2018?teaser=true, found that charging infrastructure access is critical to EV use and projected EV uptake; Axsen et al. (2015), *Electrifying Vehicles*: *Canadian PEV Study*, https://sustainabletransport.ca/the-canadian-plug-in-electric-vehicle-study-cpevs/, found that home charging access is a key factor in EV uptake; A recent Angus Reid Institute poll, https://www.jwnenergy.com/article/2018/9/5-insights-about-canadians-and-electric-cars/, found that 62% of Canadian would be more likely to buy an EV if there was better access to public charging infrastructure; US Department of Energy (2016), *Workplace Charging Challenge*, https://www.energy.gov/sites/prod/files/2017/01/f34/WPCC_2016%20Annual%20Progress%20Report.pdf found that employees with charging at work were six times more likely to drive an EV.

[25] Hardman et al. (2018). *A review of consumer preferences of and interactions with electric vehicle charging infrastructure*. https://phev.ucdavis.edu/wp-content/uploads/a-review-of-consumer-preferences-and-interactions-with-electric-vehicle-charging-infrastructure.pdf.

Having the Commission control pricing to drivers could also have negative effects on overall market sustainability by creating an uncompetitive environment in which utilities could potentially provide charging services to drivers at prices far below the basic costs site hosts need to recover. Because the market and the Commission make pricing decisions in very different contexts, the Commission, through the rate-making process, may not be able to take into account the key factors that site hosts use to make pricing decisions (e.g., maintenance, operating expenses, location, demand charges, utilization). This creates an uneven playing field, and if prices to drivers are set at rates far below cost recovery, an uncompetitive environment.

For example, if utility rates to drivers are lower than basic energy recovery costs, third-party-owned stations are at a significant disadvantage. This could prevent site hosts such as retail outlets, workplaces, and gas stations, who wish to invest in charging stations, from entering the market as they would have to unfairly compete for drivers and charging station utilization with utilities.

As mentioned in ChargePoint's initial evidence (Exhibit C25-2), there are over 25 North American jurisdictions that have clarified either through legislation or statutory amendment that charging services are exempt from utility regulation.

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

Not at this time.

Wholesale rate

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

EV-specific tariffs can be designed to promote use of EVs, facilitate grid management or encourage investment in EV charging services. To that end, if a utility seeks to achieve these outcomes, EV-specific tariffs may be appropriate. A number of utilities in the U.S. have developed or piloted EV-specific time of use rates to promote the use of EVs or facilitate grid management for home and workplace charging.[26] For example, Southern California Edison offers three new commercial EV rates with a winter super off-peak period of 8:00 a.m. to 4:00 p.m. and a summer off-peak period of 9:00 p.m. to 4:00 p.m. They offer five residential time of use rates with varying off-peak periods that generally begin at 8:00 or 9:00 p.m. and run into the next afternoon. ConEdison offers a low rate residential EV rate (1.54 cents USD/kWh) for charging that occurs between midnight to 8 am.

[26] E.g., Pacific Gas and Electric EV Time-of-Use Rate: https://www.pge.com/en_US/residential/rate-plans/rate-plan-options/electric-vehicle-base-plan/electric-vehicle-base-plan.page; Southern California Edison EV Time-of-Use Rate: https://www.sce.com/residential/rates/residential-rates;
Xcel Energy EV Time-of-Use Rate:
https://www.xcelenergy.com/energy_portfolio/innovation/electric_vehicles/electrical_vehicle_rate; Rock Mountain Power, Utah EV Time-of-Use Pilot: https://www.rockymountainpower.net/env/ev/utah-ev-time-of-use-rate.html; Consolidated Edison Company of New York EV Time-of-Use Rate:
https://www.coned.com/en/save-money/energy-saving-programs/time-of-use.

Other utilities have introduced reformed demand charges to address the cost impacts of demand charges on DC fast charging stations with low utilization, i.e., where demand charges can represent a significant portion of operating costs when utilization is low, potentially creating barriers to investment. For example, Hydro Quebec, Pacific Gas and Electric, Southern California Edison, Pacific Power, Nevada Energy, and PECO Pennsylvania have all introduced reformed demand charges or eliminated demand charges, specifically to address barriers to DC fast charging investments associated with high operating costs and low utilization.

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

ChargePoint does not suggest a particular rate that a utility should charge, but does recommend that rate design carefully consider both the charging context and the goals of the utility. For example, time-of-use rates may be appropriate for residential charging for Level 2 stations but may not be appropriate for public DC fast charging stations where it is more difficult for drivers to plan their routes or change charging behavior. A utility may also wish to consider which model of rate design is most appropriate for achieving its goals. Utilities across the US have been approved for a wide range of time-of-use rates for EV-only energy use, as well as for residential and commercial energy use. In the case of EV-only rates, it may be appropriate and cost-effective to consider use of the meters embedded in charging station to track EV charging energy use rather than a separate utility meter (which could cost EV drivers thousands of dollars to install). For example, Xcel in Minnesota was recently approved for a pilot EV-only residential time-of-use rate using the meters embedded in EV charging stations.

Safety

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

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

EV charging equipment provides specialized battery charging services, and not does not distribute electricity for a wide range of applications like traditional utility distribution equipment. As noted in ChargePoint's initial evidence (Exhibit C25-2, p.8):

- Whereas electric utilities transmit and distribute electricity over systems of wires

> and circuits, capable of powering a near-infinite variety of activities, EVCS deliver services via specialized cords and connectors, specific to the activity of charging. The single service that EVCS owners and operators provide to EV drivers is charging an EV battery in a convenient location.

ChargePoint submits that all EV charging equipment (regardless of ownership) are not distribution equipment, and should therefore be regulated under BC's *Electrical Safety Regulation*. This determination was also made by the BC Government, as stated in the Ministry of Energy Mines and Petroleum Resources' initial evidence (Exhibit C19-2) and the Vancouver Electric Vehicle Association, as stated in its Final Argument (Exhibit 30-8). ChargePoint, therefore, submits that oversight of EV charging equipment should remain with Technical Safety BC and not the Commission.

Greenhouse Gas Reduction Regulation

14. In Phase 2, the Panel invites submissions from Interveners on whether amendments to the Greenhouse Gas Reduction Regulation to allow 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.

As indicated in ChargePoint's Phase 1 reply argument (Exhibit 25-11, p. 7), ChargePoint supports accelerating EV charging investments and reducing uncertainty for utilities. An alternative to amending the *Greenhouse Gas Reduction Regulation (GGRR)* is to clearly identify the threshold for prudent utility investment in EV charging equipment and network services. The Commission can smooth utilities' path by issuing guidelines. Massachusetts, Oregon, and California offer ready examples of related principles.

In particular, the BCUC should consider:

- the impact on competition in the EV charging market, including the ability for non-utilities to operate and grow sustainably;
- consumer choice to ensure site hosts are empowered in the selection of equipment and network services, and pricing to drivers, when utilities invest in EV charging services; and
- ratepayer and/or system-wide grid benefits to ensure that investments result in a material benefit to all ratepayers and are being made in areas that will support the EV charging market at large.

GGRR amendments remain an option, and should also include consideration of the elements noted above.