

July 14th 2021

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

Attention: Patrick Wruck, Commission Secretary

**RE: BRITISH COLUMBIA HYDRO AND POWER AUTHORITY – PUBLIC ELECTRIC
VEHICLE FAST CHARGING RATE APPLICATION – PROJECT NO. 1599190**

Please find attached ChargePoint's Response to Information Requests (IRs) from the BC Utilities Commission (Section 1), Strata Plan VR2673 (Section 2), and BCOAPO et al. (Section 3). A revised evidence submission is also included as an appendix to this document.

During the review of data for ChargePoint's IR responses, two errors were detected in the data provided to ChargePoint from the CoV. These errors have since been correct in ChargePoint's revised evidence and are reflected in ChargePoint's IR responses.

The materiality of the errors is small, amounting to a slight change in average utilization, operating costs, and net revenue.

Please contact me if you have any questions.

Respectfully,

Suzanne Goldberg
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**BRITISH COLUMBIA HYDRO AND POWER AUTHORITY – PUBLIC ELECTRIC VEHICLE
FAST CHARGING RATE APPLICATION – PROJECT NO. 1599190**

**CHAREGPOINT
RESPONSE TO IR NO.1 FROM BC UTILITIES COMMISSION**

Section 1

- 1.0 Reference: City of Vancouver Data
Exhibit C4-3 (ChargePoint’s evidence), Tables 1, 3, p. 3
British Columbia Public Light-Duty Zero-Emission Vehicle
Infrastructure Study¹,
dated May 2021
Exhibit A2-3, Geotab Energy, EV growing pains: The evolution of
electric vehicles and their growing impact on the electric grid², dated
April 22, 2020
Utilization Rates**

On page 3 of ChargePoint’s evidence, it states that the City of Vancouver (CoV) owns and operates “nine DC fast chargers...” It also states:

Across a fleet of eight of the CoV’s DC fast chargers, the CoV has reported that average capital and operating costs per site (with two stations per site) are \$324,359 and \$941 per month, respectively. The CoV has also reported that utilization has been 172 sessions per month, on average, to date.

Footnote 3 in ChargePoint’s evidence provides a map of the charging stations that are owned by the CoV, which shows five EV fast charging sites.³

- 1.1 Please confirm, or explain otherwise, that the data presented in tables 1 to 3 of ChargePoint’s evidence represents 8 out of the 9 electric vehicle (EV) fast charging stations that are owned and operated by the CoV.

Response 1.1:

Confirmed.

¹ https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/electricity-alternative-energy/transportation/bc_public_ld_zev_infrastructure_study_final_20210505.pdf

² <https://image.info.fleetcarma.com/lib/fe321171716404797c1674/m/1/002159cb-9dd1-42d9-bb22-620882710895.pdf>

³ <https://vancouver.ca/streets-transportation/electric-vehicles.aspx>

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- 1.2 Please confirm, or explain otherwise, that the CoV owns and operates EV fast charging stations at five charging sites.

Response 1.2:

Confirmed. The data provided in ChargePoint's evidence submission reflected only four sites out of the five sites.

- 1.2.1 If confirmed, please explain why ChargePoint did not include the data from the fifth site in its analysis.

Response 1.2.1:

The City did not have sufficient data readily available for the fifth site.

On page 3, Table 3, of ChargePoint's evidence shows the average monthly sessions for each of the four sites, which represents an average monthly utilization of 172 sessions for all sites.

- 1.3 Please discuss whether the CoV's EV fast charging stations are available for public use 24 hours a day and 7 days a week.

Response 1.3:

As indicated in ChargePoint's revised evidence, average monthly utilization per site, across all site is 153; a correction from the 172 reported in ChargePoint's initial submission.

For the four sites for which data was provided and that were addressed in ChargePoint's submission, the charging stations are available for public use 24 hours and seven days a week.

- 1.4 Please provide the average utilization in percentages for the CoV's EV fast charging stations. In other words, what percentage of utilization does 172 average monthly sessions represent?

Response 1.4:

As indicated in ChargePoint's revised evidence, average monthly utilization per site, across all sites is 153; a correction from the 172 reported in ChargePoint's initial submission. The data below are reflective of the corrected data.

The average utilization per site is approximately 5%, measured based on a potential 17,520 hours available for charging per site per year and an average session length of approximately 26 minutes.

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- 1.4.1 Please provide the start and end month/year to calculate the average monthly utilization of 172 sessions.

Response 1.4.1:

As indicated in ChargePoint’s revised evidence, average monthly utilization per site, across all sites is 153; a correction from the 172 reported in ChargePoint’s initial submission.

Average utilization was calculated over the duration of each site’s lifetime as noted below.

The length of time the CoV has data on for utilization per site varies based on the time the sites were activated. Site 1 has been in operation the longest, and average utilization was measured from October 2018 to June 2021. All other sites came online in March 2020, and average utilization was measured from that point through June 2021.

For reference, if one were to calculate average utilization using a common timeframe of March 2020-June 2021, the average number of monthly sessions across those four sites would be 158.

- 1.4.2 If available, please provide the utilization expressed in both monthly sessions and percentages by year.

Response 1.4.2:

See ChargePoint’s response to BCUC 1.4 for utilization percentages. CoV has calculated that there are 153 sessions per month per site, on average. To estimate annual sessions, CoV multiplied average monthly utilization by 12 months to get 1,836 sessions per site per year.

Page 3, Table 3, of ChargePoint’s evidence shows site utilization ranging on average from 142 (at site number 3) to 247 (at site number 1) monthly sessions (a difference of 74 percent⁴). Table 3 also shows the “Demand Charge Proportion of Revenue” (i.e. demand charge divided by revenues) as 67 percent for site number 3 and 71 percent for site number 1 (a difference of 4 percent).

On page 3, Table 1, of ChargePoint’s evidence shows monthly demand charges of \$451 for site number 3 and \$464 for site number 1 (a difference of 3 percent⁵).

⁴ $(247 - 142)/142$

⁵ $(\$464 - \$451)/\$451$

- 1.5 Since utilization does not appear to have a significant impact on demand charges (i.e. a 74 percent change in utilization results in a 3 percent change in demand charges) or on the demand charge proportion of revenue (i.e. a 4 percent difference), please discuss how the “high costs associated with demand charges, especially when utilization is low, can impact EV charging investment decision.”

Response 1.5:

“Demand Charge Proportion of Revenue” represents the demand charge divided by revenue, expressed as a percentage.

As reflected in the CoV’s data and ChargePoint’s experience with other customers, demand charges are impacted primarily by the peak power demand in a month, for example by a vehicle charging at a fast charging station drawing the full power at the maximum capacity of stations, rather than station utilization. Station utilization impacts the energy-based portion of commercial electricity rates but not the demand portion.

In the case of the CoV’s four sites, utilization has little to no impact on demand charges – whether stations were heavily used or not, roughly the same demand charges were applied as soon as one monthly session occurred.

It is worth noting that while we have described the number of sessions as ‘utilization’, it does not give an indication of the length of charging sessions or revenues collected per session.

Further on page 3 of ChargePoint’s evidence, it states: “Given the current rate of station utilization, the CoV’s fee to drivers cover, on average, 81% of its operating costs; this data point does not include amortized capital cost.”

- 1.6 Please provide the average costs that the CoV’s EV charging revenue would recover if the depreciation expense for the capitalized EV fast charging station costs are included.

Response 1.6:

As indicated in ChargePoint’s revised evidence, CoV’s fee to drivers cover, on average, 87% of its operating costs; this has been revised from the 81% reported in ChargePoint’s initial evidence.

Depreciation data were not available from the CoV. However, based on the total costs over a 10-year period, present average revenues would recover approximately 20% of capital plus operating costs.

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

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

Table 2. Assumed fast charging power output by year

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

** While much of the public charging infrastructure deployment currently planned for 2020/2021 still focuses on 50 kW units, the power levels in this table represent the average of all ports deployed within the province, including those deployed by industry at power levels much higher than 75 kW.*

If the typical output power of fast charging infrastructure were to exceed these assumptions, that could drive a decrease in the total number of ports needed and vice versa.

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

The impact EVs have on the grid, particularly this risk they pose to damaging distribution assets, has changed dramatically over the last 5 years. Long-range BEVs are very different from older electric vehicles: they are driven more, they consume more energy, they draw power at a higher level and they are less predictable. As the fastest-growing vehicle type, long-range BEVs continue to represent a larger proportion of new EV sales.

- 1.7 To the best of ChargePoint’s knowledge, please discuss how the CoV ensures that its EV charging station technology is kept current and competitive with other service providers. As part of the response, please discuss how the CoV accounts for the disposal and retirement of its EV charging equipment if it becomes obsolete sooner than expected.

Response 1.7:

According to information provided to ChargePoint from the CoV, the CoV is actively monitoring the EV and EV charging markets to understand future charging needs, and plan sites accordingly. Dual-standard connectors, with both non-proprietary fast charging connector types – CCS and CHAdeMO, are required at all sites. Sites are also designed with a minimum of two fast charging stations for redundancy, among other things.

The CoV does not have specific plans for early retirement of stations resulting from obsolescence. The CoV indicated that this would be a low probability event, given the due diligence conducted as part of its procurement process.

ChargePoint is a world leading electric vehicle charging network, providing scalable solutions for every charging scenario from home and multifamily to workplace, parking, hospitality, retail and transport fleets of all types. ChargePoint's cloud subscription platform and software-defined charging hardware is designed to enable businesses to support drivers, add the latest software features and expand fleet needs with minimal disruption to overall business. ChargePoint is constantly innovating and growing to respond to the market and to our customers' needs.

- 1.7.1 Please indicate whether the CoV operates any 100-kW charging stations. If not, to the best of ChargePoint's knowledge, does the CoV plan to install 100-kW stations in the near future?

Response 1.7.1:

The CoV does not operate any 100-kW stations at present and ChargePoint is not aware of any plans the CoV has to install 100-kW stations in the future.

- 1.8 In ChargePoint's view, what factors should an EV fast charging service provider consider when making future investments and deploying EV charging stations. For example, how should such a provider consider the two studies above, if at all?

Response 1.8:

In ChargePoint's view, there are several factors EV charging service providers or site hosts should consider when making decisions about current and future fast charging infrastructure investments. As the context and motivation for EV charging investments will vary significantly between site hosts, it should be noted that each investment decision will be unique.

In general, however, site hosts should consider the following with respect to current and future fast charging investment decisions:

- 1. primary goals and objectives for installing EV charging stations;**
- 2. needs of the drivers using the stations;**
- 3. types of EV drivers accessing the site (e.g. fleet, employee, public);**
- 4. availability of power at potential fast charging sites;**
- 5. cost and timelines for utility interconnection;**
- 6. energy and demand-based charges associated with commercial electricity rates;**
- 7. cost recovery approach and the rates charged to drivers;**
- 8. proximity to other stations and potential rate competition; and**
- 9. anticipated utilization at each site.**

1.8.1 Please discuss whether these considerations would be similar for a non-exempt utility service provider (e.g. BC Hydro) and all other service providers (e.g. CoV and Petro-Canada). Why or why not?

Response 1.8.1:

ChargePoint believes that site hosts install, own, and operate charging stations for a number of different reasons. Each investment decision is unique, and therefore, ChargePoint cannot comment on the specific considerations or factors weighed between exempt and non-exempt utilities, nor can it comment on the different considerations between non-exempt utilities like BC Hydro and FortisBC who have taken very different approaches to cost recovery and rate setting.

However, ChargePoint does note that regardless of the specific factor considered by exempt utilities, an uneven playing field between exempt and non-exempt utilities and resulting impacts on the competitive nature of the market could impact exempt utilities investment decisions with respect to current and future investments in stations or the number of stations an exempt utility site host invests in. Further, considerations for cost recovery, potential rate competition, and station utilization may be different for utilities who have guaranteed return on expenses and operating costs.

**2.0 Reference: City of Vancouver Data
Exhibit C4-3, Table 1, p. 3
Capital and Operating Costs**

On page 3, Table 1, of ChargePoint’s evidence is produced below:

Table 1: Capital and Operating Costs

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

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

2.1 To the best of ChargePoint’s ability, please explain why there is a large range in BC Hydro connection fees for each site (i.e. from \$2,818 to \$193,468).

Response 2.1:

Corrections to the electricity consumption and total Opex data referenced in Table 1 in questions 2.1 have been addressed in ChargePoint’s revised evidence. BC Hydro connection fee data in Table 1 remain unchanged in the revised submission.

ChargePoint is not able to explain the broad range of costs of connection fees charged to the CoV. BC Hydro is likely better positioned to provide such information.

According to the CoV, these costs are not typically known in advance of a project installation, and costs are prescriptive (i.e. non-negotiable). It is the CoV's understanding that, in some cases, BC Hydro connection fees can vary based on higher civil costs associated with location of the nearest BC Hydro interconnection point. However, these costs were not well understood by the CoV in advance of its project installations and this information has not been readily available to them post installation.

2.2 To the best of ChargePoint's ability, please explain what the \$150 per site "Other Opex" expense is for.

Response 2.2:

ChargePoint is not able to provide further information as this is proprietary information.

2.3 To the best of ChargePoint's ability, please provide the total operating costs when maintenance expense is included.

Response 2.3:

This information is not available to ChargePoint. However, the CoV did indicate that most of its fast charging stations are relatively new (see response to 1.4.1), and most units are under warranty. Therefore, the CoV has reported that maintenance costs have been minimal to date.

2.4 To the best of ChargePoint's ability, please indicate whether the operating costs include any network management services for items such as payment processing fees and customer support. If so, please specify. If not, please explain why this cost item is not included in the table above.

Response 2.4:

CoV has reported that these costs are included.

2.5 To the best of ChargePoint's ability, please indicate whether the capital costs include site preparation costs. If so, please quantify.

Response 2.5:

ChargePoint is not clear on what is meant by site preparation costs and is, therefore, not able to quantify these costs. However, the CoV has noted that its capital costs include the CoV's civil and electrical work and BC Hydro's civil work.

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- 2.6 To the best of ChargePoint's ability, please indicate whether the capital costs include costs to make the sites wheelchair accessible. If so, please quantify and discuss whether it is the CoV that pays for these costs.

Response 2.6:

CoV's current sites are not specifically designed for accessibility and, consequently, these costs were not included in ChargePoint's submission. However, as part of the CoV's Climate Emergency Action Plan⁶, design guidelines will be developed to include accessibility at fast charging sites. The CoV has indicated that costs associated with future accessible design for sites will be paid for by the CoV.

3.0 **Reference: City of Vancouver Data Exhibit C4-3, p. 3; Exhibit C20-4, pp. 7-8 Revenues**

On page 3 of ChargePoint's evidence, it states:

The CoV also charges a fee to drivers for its DC fast chargers, which vary by both location and utilization, as outlined in the CoV's June 20, 2017 Administrative Report RR-1(d) 6; these rates typically vary from \$0.21/minute - \$0.24/minute, but are periodically adjusted up or down to encourage utilization and turnover.

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

On the CoV's website,⁷ it states:

Fees are designed to promote turn-over and ensure that plugs are available to those who need them. Prices are kept as low as possible to support access and promote sharing.

We charge a time-based user fee at most charging points on City properties. Fees are blended with parking rates at on-street locations. Off-street locations require payment both at the charging station and at the parking meter.

Rates are adjusted at each location over time. Since their introduction in 2017, fees at many locations have been reduced, although some have been increased at the highest demand locations. Current rates are listed on each charging station.

⁶ City of Vancouver, *Climate Emergency Action Plan Report*, October 22 2202, <https://council.vancouver.ca/20201103/documents/p1.pdf>.

⁷ <https://vancouver.ca/streets-transportation/electric-vehicles.aspx> [Retrieved on June 28, 2021]

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Further, it states that the rate for the DC fast chargers is “\$0.26 per minute, plus any applicable parking fee.”

- 3.1 To the best of ChargePoint’s knowledge, please discuss how often the CoV adjusts its rates at each EV fast charging site.

Response 3.1:

As indicated in ChargePoint’s revised evidence, CoV’s fee to drivers cover, on average, 87% of its operating costs; this has been revised from the 81% reported in ChargePoint’s initial evidence.

According to the CoV, fast charging rates for each site are typically reviewed every three to six months. Rates are adjusted based on daytime utilization. If utilization drops below 40% between 9am and 6pm, rates are lowered by 2 to 3 cents per minute; and, if utilization increases above 75%, rates are increased.

- 3.2 Please reconcile the rates of \$0.21 to \$0.24 per minute stated in ChargePoint’s evidence and the \$0.26 per minute stated on the CoV’s website.

Response 3.2:

The lower rates presented in ChargePoint’s evidence reflect price adjustments made by the CoV as a result of low utilization according to the approach noted in ChargePoint’s responses to BCUC IR 3.1. The rate listed on the CoV’s website of \$0.26 per minute is the CoV’s stated introductory rate. As utilization influences the CoV’s fees, fees will vary between sites and as utilization changes over time.

Newer sites are presently introduced at the lower rates of \$0.21 to \$0.24 per minute based on an assumption that new stations may have similar utilization to existing stations. It should be noted that the CoV’s fees will be adjusted every three to six months based on actual utilization at each site.

- 3.2.1 Please indicate whether the rates of \$0.21 to \$0.24 per minute (or \$0.26 per minute) are inclusive of goods and services tax (GST) and provincial sales tax (PST). If so, please indicate the pre-tax rates per minute, so they are comparable to BC Hydro’s Proposed Rates.

Response 3.2.1

Rates do not include GST or PST.

- 3.3 To the best of ChargePoint’s knowledge, please discuss how the CoV determined its rates of \$0.21 to \$0.24 per minute (or \$0.26 per minute) for EV fast charging. For example, are the rates based on the rates charged by its competitors or are they set to enable the recovery of certain costs or percentage of costs?

Response 3.3:

Please see ChargePoint's response to BCUC IR 3.1. According to information provided to ChargePoint by the CoV, rates are set with the following objectives in mind. In order of priority, this includes:

- encouraging station availability,
- creating turnover at stations,
- providing costs that are lower than fossil fuels, and
- maximizing revenues for the City.

3.4 To the best of ChargePoint's abilities, please provide the rates per minute to recover, on average, 100 percent of the CoV's operating costs (i.e. to break-even), before the inclusion of depreciation expense.

Response 3.4:

ChargePoint does not have sufficient information to carry out such an analysis. However, data provided to ChargePoint by the CoV indicates that a rate of \$0.27 per minute would recover most, but not all, operating costs, exclusive of significant unforeseeable maintenance costs, if utilization did not increase or decrease significantly. This assumption does not consider the future impacts of increasing EV adoption on utilization, nor the impact of fee changes on utilization.

3.4.1 Please provide the rates per minute to recover, on average, 100% of the CoV's operating costs including depreciation expense.

Response 3.4.1:

Depreciation information was not available to ChargePoint.

Based on the data available to ChargePoint, assuming utilization at the CoV's sites remain at present levels, and assuming a 10-year amortization period, the revenues required to recover all costs would likely need to increase by a multiple of approximately 3.75 times, on average (depending on capital cost at a given site). However, this analysis does not consider the future impacts of increasing EV adoption on utilization, nor the impact of fee changes on utilization; both which are likely to have a large impact on estimated cost recovery over a 10-year period.

3.5 To the best of ChargePoint's knowledge, please discuss whether BC Hydro's proposed rates for public EV fast charging service impact the CoV's rates for providing public EV fast charging service. If so, please elaborate and quantify (if possible) what the CoV's rates would be considering that BC Hydro offered free direct current (DC) fast charging in the past and implemented fees as of May 1, 2021.

Response 3.5:

As outlined in ChargePoint's response to BCUC IR 3.1, CoV's rates are set based on utilization at each site.

The CoV has indicated that it has observed impacts on utilization when CoV sites were located close to BC Hydro sites that offered free charging either came online, or went offline.

3.6 Please indicate whether the rates charged by the CoV differ by the DC fast charging station's power capacity (e.g. 50 kW vs. 100 kW stations).

Response 3.6:

All the CoV's stations are 50 kW. The CoV has indicated that if they were to purchase stations that had higher capacity, fees would be adjusted. The CoV Parking Meter By-law sets out conditions for fee-setting. While the [Parking Meter By-law](#) (Section 5A(17)) only dictates rules for on-street charging stations, these same rules are used as guidelines at off-street locations.

3.7 Please provide the power level (e.g. 50 kW) of the stations at each of the CoV's sites (i.e. sites no. 1 to 4 as presented in tables 1 to 3 of ChargePoint's evidence).

Response 3.7:

All of the CoV's stations are 50 kW.

3.8 Please confirm, or explain otherwise, that the CoV's current or past rates for EV fast charging are all charged at \$ per minute, and not \$ per kWh.

Response 3.8:

Confirmed that all CoV charging fees are per minute. At present, there is no Measurement Canada certification for charging meters and thus \$ per kWh fees are not legal.

3.8.1 If any of CoV's current or past rates include any component that is \$ per kWh, please indicate how this energy-based rate was implemented considering the lack of Measurement Canada accredited DC meters.

Response 3.8.1:

See ChargePoint's response to BCUC IR 3.8.

3.9 Please confirm, or explain otherwise, that the CoV's current or past rates for EV fast charging do not include idling fees.

Response 3.9:

Confirmed. The rates do not include idling fees.

On pages 7 to 8 of Suncor's intervener evidence in Exhibit C20-4, Suncor states:

In Suncor's experience, the information and data collected from the Langley Station is a fair representation of a typical Suncor EV charging site located in BC. This evidence demonstrates that:

[...]

- not all energy consumed at an EV charging site is billed to an EV driver – the power draw related to power towers and charging equipment can be up to 2-4x the electricity actually sold to a consumer – this is not specifically identified or adequately considered in BC Hydro's utility cost recovery calculations. [Emphasis added]

3.10 To the best of ChargePoint's knowledge, please discuss whether the CoV's fast charging stations experience similar circumstances as Suncor in that the power draw related to power towers and charging equipment can be up to 2-4x the electricity actually sold to a customer. If the CoV experiences a different level, please specify and explain.

Response 3.10:

ChargePoint cannot confirm. ChargePoint cannot speculate on how Suncor conducted its analysis.

3.10.1 Given the level of difference between power draw and the electricity sold to a consumer, please explain whether ChargePoint believes that this ratio is applicable to all DC fast charging operators in BC, including BC Hydro's fast charging stations.

Response 3.10.1:

See ChargePoint's response to BCUC IR 3.10.

4.0 Reference: Demand Charge Exhibit C4-3, pp. 4–6; BC Hydro Fleet Electrification Rate Application Proceeding, Reasons for Decision dated March 26, 2020 to Order G-67-20,⁸ p. 3 Demand Charges for EV Service Providers

On page 6 of ChargePoint's evidence, it states:

In ChargePoint's experience, high costs associated with demand charges, especially when utilization is low, can impact EV charging investment decisions. Several utilities in North America have addressed barriers associated with traditional demand charge rate structures by designing EV-specific rates to encourage EV investment, while balancing utility costs and rate payer interests. Introducing EV-specific rates to support municipal and private sector DC fast charging investment in BC for non-fleet stations, similar to what BC Hydro has introduced for fleets, would remove a barrier to DC fast charging investment in the province.

In the Executive Summary of the Reasons for Decision to BC Hydro's Fleet Electrification Rate Application, the BCUC approved two new optional services:

- 1) An Overnight Rate - intended for in depot and overnight charging of electric fleet vehicles and vessels, effective as an ongoing rate as of April 1, 2021; and
- 2) A Demand Transition Rate - designed for in route charging during fleet operating hours, effective as a time-limited rate from April 1, 2020 to March 31, 2032.

The Executive Summary also states:

Absent a new rate design, the anticipated load associated with charging fleet vehicles or vessels would be billed under BC Hydro's Large General Service Rate. BC Hydro states that potential fleet charging customers, such as public transit providers, have indicated that the Large General Service Rate demand charge is a barrier to converting their fleets to electric operation.

[...]

The Demand Transition Rate will be effective as a time-limited rate from April 1, 2020 to March 31, 2032. This rate is designed for in route charging during fleet operating hours where vehicles will charge for approximately 10 minutes at stops on a route equipped with chargers. No demand charge applies for the first six years that the Demand Transition Rate is proposed to be offered, after which the demand charge transitions to the Large General Service Rate demand charge over a subsequent six-year period.

⁸ [BC Hydro Fleet Electrification Rate Application, Reasons for Decision dated March 26, 2020.](#)

- 4.1 Please clarify whether BC Hydro's Overnight Rate or Demand Transition Rate, would eliminate the investment barriers for site hosts, such as the CoV.

In ChargePoint's experience, the demand transition rate is a short-term solution that may or may not alleviate investment barriers for site hosts in the medium- to long-term; it will depend on the use case. ChargePoint recommends, for future potential rate design, that rather than implementing short-term temporary rate designs, such as a demand charge holiday, the rates designed to encourage EV charging investment seek to establish long-term stable alternatives to existing demand-based rates for medium and large general service commercial customers. Such rates could be designed to balance utility costs, with the goals of encouraging EV charging investment and EV adoption, and the benefits of increased demand for electricity resulting from increased EV adoption.

- 4.1.1 Please quantify the financial impact to site hosts, such as the CoV, if an Overnight Rate similar to the rate approved for BC Hydro was offered. As part of the response, please discuss whether it would result in the charging sites recovering at least their full cost of providing the service (i.e. break-even) holding all else equal (i.e. the rate or price charged by the CoV is unchanged). Please provide any assumptions used.

Response 4.1.1:

ChargePoint does not have sufficient data from the CoV to conduct such analysis.

- 4.1.2 Please quantify the financial impact to site hosts, such as the CoV, if a Demand Transition Rate similar to the rate approved for BC Hydro was offered. As part of the response, please discuss whether it would result in the charging sites recovering at least their full cost of providing the service (i.e. break-even) holding all else equal (i.e. the rate or price charged by the CoV is unchanged). Please provide any assumptions used.

Response 4.1.2:

ChargePoint does not have sufficient data from the CoV to conduct such analysis.

- 4.2 Under a scenario where non-fleet EV fast charging service providers are eligible for BC Hydro's Overnight Rate or Demand Transition Rate, please discuss whether this would have an impact on the rates proposed in the Application for BC Hydro to provide EV fast charging services (e.g. higher, lower, or no change). Why or why not?

Response 4.2:

In ChargePoint's experience, public chargers are typically used during the day, so the Overnight Rate would likely have no or minimal impact on demand charge costs, and could in fact increase overall costs as energy charges in the Overnight

rate are higher than under the standard Large General Service Rate. Further, unlike fleet charging station owners who commonly control where and when EVs charge, public charging station owners typically do not have such control over EV drivers and therefore have limited ability to switch EV drivers' charging activity to the overnight period when there is no demand charge.

In ChargePoint's experience, the Demand Transition Rate would eliminate demand charges for public site hosts in the short-term. This would improve a site host's ability to recover costs in the short-term, but may or may not support longer-term benefits if utilization remains low. As noted in ChargePoint's response BCUC IR 4.1, alternative rate design can support more sustainable approaches to removing barriers to EV charging investments and cost recovery.

On pages 4 to 6 of ChargePoint's evidence, it provides a list of EV specific demand charge rates that have been designed by other utilities in North America. ChargePoint also states that some of these EV specific demand charge rates were directed by government.

- 4.3 Of the utilities provided in ChargePoint's evidence, please provide a table that separates the utilities where EV specific demand charge rates were directed by government and the ones where the utility made the proposal without government direction.

Response 4.3:

ChargePoint is not able to complete a comprehensive analysis of all rates presented in its submission but does note that the Massachusetts Government passed a state law that would require its utilities to file alternative rates to encourage investment and EV adoption by reducing barriers associated with demand charges.⁹

- 4.4 Please provide a table that groups the utilities provided in ChargePoint's evidence into common categories (e.g. utilities who have designed EV specific demand charge rates that have deferred the demand charge, utilities who have reduced the demand charge and utilities who have eliminated the demand charge).

Response 4.4:

ChargePoint is not able to complete a comprehensive analysis of all rates presented in its submission but does note the utilities listed in its evidence have taken a diversity of approaches to address barriers associated with demand-based charges. ChargePoint notes that, given the diversity of use cases for EV charging, there is no "one-size-fits-all" alternative to traditional demand-based rates, and utilities should have flexibility in developing alternative solutions for its customers. Further, across this diversity of use cases, utilities have developed sustainable solutions to adapt demand charge rate structures that scale with

⁹ Shemus, Sarah, *Massachusetts asks utilities for ways to avoid bill spikes from EV fast-charging*, Energy News Network, February 1 2021, <https://energynews.us/2021/02/01/massachusetts-asks-utilities-for-ways-to-avoid-bill-spikes-from-ev-fast-charging/>.

utilization.

On page 4 of ChargePoint's evidence, it states:

However, there are alternative ways to structure these demand charges to encourage EV investment from all entities including municipalities and private businesses. A number of utilities across North America have introduced alternative rates, and have incorporated designs which accomplish the goals of the utility (i.e. compensation for providing energy), rate payers and EV charging investors.

- 4.5 Since this proceeding is with respect to BC Hydro's request for approval of rates to provide public EV fast charging services, please discuss whether it would be more appropriate to review BC Hydro's demand charges in a separate proceeding. Why or why not?

Response 4.5:

ChargePoint submits that a discussion of demand charges is relevant to this proceeding as demand charges are a key factor in cost recovery calculations and in discussions related to competitiveness impacts.

A review of BC Hydro's Large and Medium General Service Rates within the context of BC Hydro and the province's goals of encouraging EV adoption would be more appropriate in a separate proceeding.

- 4.6 Please clarify whether ChargePoint is proposing that public charging rates should be higher than the ones proposed in the Application because it would offset the investment barriers associated with demand charges.

Response 4.6:

ChargePoint makes no submission on the specific rates BC Hydro should charge EV drivers. ChargePoint notes that BC Hydro is recovering a portion of its costs from EV drivers and the remaining costs from the general rate base. Exempt utilities do not have a rate base and therefore cannot apply the same cost recovery approach as BC Hydro. This creates an uneven playing field between BC Hydro and exempt utilities.

Demand charges are a key component of a site host's operating costs and when utilization is low, it is challenging to recover these costs, along with other operating and capital costs, from drivers when there is no rate base to pass costs on to. This can be a barrier to EV charging investment, and several utilities in North America have addressed this barrier by introducing alternative commercial electricity rates for site hosts operating charging stations.

**BRITISH COLUMBIA HYDRO AND POWER AUTHORITY – PUBLIC ELECTRIC VEHICLE
FAST CHARGING RATE APPLICATION – PROJECT NO. 1599190**

**CHARGE POINT
INFORMATION REQUEST NO. 1 TO CHARGEPOINT ON CHARGEPOINT'S EVIDENCE
RESPONSE TO STRATA PLAN VR2673**

SECTION 2

A. COV DATA

On page 3, paragraph 2 refers to 172 sessions per month, on average.

1. Can you please provide the average length of a session?

Response 1:

CoV data suggest that average session length is approximately 28 minutes.

2. Is there an identifiable trend line in usage? i.e. Is there growth, or possibly decline, month over month? Can this information be provided in a graph or table?

Response 2:

According to the CoV, with the exception of the first few months of the pandemic, the number of sessions has been roughly stable.

On page 3, Tables 1 – 3

3. Are the sites in the tables all consisting of 2 DC fast chargers?

Response 3:

Yes. All sites in the revised data tables contained in the appendix are DC fast chargers. ChargePoint's original submission erroneously included data from L2 chargers.

4. Are all the numbers in the tables only for the DC fast chargers?

Response 4:

Yes. All numbers in the revised tables are for DC fast chargers. As noted in ChargePoint's response 3 above, ChargePoint's original submission erroneously included data from L2 chargers

Section 2: ChargePoint Response to IR No. 1 from Strata Plan VR2673

5. Are the capital costs in Table 1 net of funding from other levels of government, or are they before such funding?

Response 5:

Costs are not net of funding.

**BRITISH COLUMBIA HYDRO AND POWER AUTHORITY – PUBLIC ELECTRIC VEHICLE
FAST CHARGING RATE APPLICATION – PROJECT NO. 1599190**

**CHARGE POINT
INFORMATION REQUEST NO. 1 TO CHARGEPOINT ON CHARGEPOINT'S EVIDENCE
RESPONSE TO BCOAPO et al.**

Section 3

1.0 Reference: Exhibit C4-3 page 3 preamble

The Evidence states:

“Across a fleet of eight of the CoV’s DC fast chargers, the CoV has reported that average capital and operating costs per site (with two stations per site) are \$324,359 and \$941 per month, respectively. The CoV has also reported that utilization has been 172 sessions per month, on average, to date.”

- 1.1 Are the CoV’s DC fast charging stations 50 kW stations, 100 kW stations or do they have some other “rating”?

Response 1.1:

As indicated in ChargePoint’s revised evidence, average operating costs per site per month are \$876; corrected from the \$941 value reported in ChargePoint’s initial evidence. Average sessions per month per site has also been revised to 153 from 172.

See ChargePoint’s response to BCUC IR 3.7.

- 1.1.1 If the ratings vary by site, please provide a breakdown for each of the sites in Table 1.

Response 1.1.1:

See ChargePoint’s response to BCUC IR 3.7.

- 1.2 Over what period of time was the 172 sessions per month calculated?

Response 1.2:

As indicated in ChargePoint’s revised evidence, data on average sessions per month per site has been revised to 153 from 172.

See ChargePoint’s response to BCUC IR 1.4.1.

- 1.2.1 If the time frame varies by site, please indicate for each site the period of time used to determine the 172 sessions per month average.

Response 1.2.1:

As indicated in ChargePoint's revised evidence, data on average sessions per month per site has been revised to 153 from 172.

See ChargePoint's response to BCUC IR 1.4.1.

- 1.3 If the 172 sessions per month average is based on more than one year, has there been an increase in the number of sessions per year over time?

Response 1.3:

As indicated in ChargePoint's revised evidence, data on average sessions per month per site has been revised to 153 from 172.

According to the CoV, the number of sessions is roughly stable, although there was a significant decrease for a brief period at the beginning of the COVID-19 pandemic.

- 1.4 What was the average length (i.e., in minutes) of the charging sessions based on the same data as used to determine the 172 sessions per month average.

Response 1.4:

See ChargePoint's response to BCUC IR 1.4.

- 1.4.1 If the charging stations do not all have the same kW rating, please provide a breakdown the average length of the charging sessions broken down by station kW rating.

Response 1.4.1:

All stations have the same kW rating.

- 1.5 What is the average utilization rate (i.e., number of actual minutes the charging stations were in use per month divided by the number of minutes per month) for the period over the period used to determine the 172 sessions per month average?

Response 1.5:

As indicated in ChargePoint's revised evidence, data on average sessions per month per site has been revised to 153 from 172.

See ChargePoint's response to BCUC IR 1.4 and 1.4.1.

- 1.5.1 If the charging stations do not all have the same kW rating, please provide a breakdown of the average utilization rate by station kW rating.

Response 1.5.1:

All stations have the same kW rating.

- 1.6 With respect to Table 3, for the most recent 12 month available, what has been the average number of charging sessions per month for: i) each of the four sites and ii) overall?

Response 1.6:

According to the CoV, for sites 2-4, the data in Table 3 reflect the most recent 15-month period. For site 1, the data reflects the most recent 12-month period and the average number of sessions per month is 206. See ChargePoint's response to BCUC IR 1.4.1 for additional details.

- 1.6.1 If the charging stations do not all have the same kW rating, please provide a breakdown the average length of the charging sessions broken down by station kW rating.

Response 1.6.1:

All stations have the same kW rating.

- 1.7 For the most recent 12 month available, what is the average utilization rate (i.e., number of actual minutes the charging stations were in use per month divided by the number of minutes per month) for the four sites?

Responses 1.7:

According to the CoV, over the past 12 months, average session length was 27:29, with 9,762 total sessions, for a total duration of 4,471:33:44, out of a potential 70,080 hours across 8 stations. Utilization for each station was approximately 6.4%.

- 1.7.1 If the charging stations do not all have the same kW rating, please provide a breakdown of the average utilization rate by station kW rating.

Response 1.7.1:

All stations have the same kW rating.

- 1.8 For the most recent 12 months, what was the average length (i.e., in minutes) of the charging sessions?

Response 1.8:

See ChargePoint's response to BCOAPO IR 1.7.

- 1.8.1 If the charging stations do not all have the same kW rating, please provide a breakdown the average length of the charging sessions brokendown by station kW rating.

Response 1.8.1:

All stations have the same kW rating.

- 1.9 With respect to Table 3, is there something unique/different about Site #1 that would account for the significantly higher utilization (relative to the other three stations)

Response 1.9:

The CoV has reviewed the data and identified an error in what was originally provided to ChargePoint for Sites 1 and 4. An updated Table 3 is provided as an appendix to this submission and in ChargePoint's revised evidence submission. The utilization over the period in question is an average of 170 sessions per month, which is approximately aligned with the other three sites.

- 1.10 With respect to Tables 1, please explain why the average monthly cost of electricity consumption cost is materially higher for Site 4 than the other three sites. In particular why is it higher than that for Site 1 which has a higher utilization rate? One would expect electricity consumption (i.e. kWh) to increase,in relative terms, as the number of charging sessions per month increases.

Response 1.10:

The CoV has reviewed the data and identified an error in what was originally provided to ChargePoint for Sites 1 and 4. An updated Table 1 is provided as an appendix to this submission. The average monthly consumption charge for Site 1 over the period in question is \$322, which is approximately aligned with the other three sites.

- 1.11 With respect Tables 1 and 3, please explain why for Site 1 the electricity consumption cost is only 9% higher than that of Site 2 even though the utilizationof Site 1 is 69% higher than that of Site 2. One would expect electricity consumption (i.e. kWh) to increase, in relative terms, as the number of charging sessions per month increases.

Response 1.11:

See ChargePoint's responses to BCOAPO IRs 1.9 and 1.10. The COV has also indicated that electricity consumption and number of sessions aren't necessarily correlated, since there is significant variability between session lengths.

2.0 Reference: Exhibit c4-3, page 3

2.1 With respect to Table 1, over what period of time were the monthly operating costs for each site calculated?

Response 2.0:

See ChargePoint's response to BCUC IR 1.4.1.

2.2 For each of the four charging sites, please indicate on which BC Hydro rate schedule the site is billed.

Response 2.2:

CoV has indicated that this information is not readily available for all sites, as some sites are not on a dedicated service.

2.3 Do the costs shown for monthly Electricity Consumption include the Basic Charge (i.e., the daily charge) as well as the Energy Charges (i.e., the kWh charges)? If not, where are the Basic Charges included in the costs set out in Table 1?

Response 2.3:

Basic charges were not included.

2.4 Is there additional electricity use at each site over and above that delivered to EV owners via the charging stations?

Response 2.4:

This question is not clear to ChargePoint. The CoV has indicated that some sites are connected to a meter that has other end uses other than charging. ChargePoint also notes that a small amount of energy is consumed by the charger itself.

2.4.1 If yes, what is the additional electricity used for?

Response 2.4.1:

See ChargePoint's response to BCOAPO IR 2.4.

2.4.2 If yes, are the costs for this additional electricity included in Table 1?

Response 2.4.2:

The costs associated with other electrical loads are not included in Table 1. The costs associated with other basic functions are included in Table 1.

2.4.3 If yes, how much does this add to: i) the monthly billing demand (i.e., kW) for a site and ii) the monthly kWh usage for a site?

Response 2.4.3:

ChargePoint does not have these data.

3.0 Reference: Exhibit c4-3, page 3, Tables 2 and 3

Preamble: It is noted that the average revenue per charging session varies across the four sites as follows

- Site #1: \$2.66/session (\$656.56/247)
- Site #2: \$5.90/session (\$862.00/146)
- Site #3: \$4.75/session (\$674.64/142)
- Site #4: \$5.41/session (\$834.94/155)

3.1 Please explain the material variation in average revenue per charging session. In doing so please discuss the extent to which it is due to differences between sites in the average minutes per charging session and the rates (per minute) charged at each charging station.

Response 3.1:

Please see above responses to BCOAPO IRs 1.9, 1.10, and 1.11. The updated data in ChargePoint's revised submission indicate that revenue per charging site for Site 1 is \$3.86/session (\$656.56/170). Utilization in this context does not account for length of session, which does have an impact on costs and revenues.

4.0 Reference: Exhibit C4-3, page 3

Preamble:

The Evidence states:

“The CoV also charges a fee to drivers for its DC fast chargers, which vary by both location and utilization, as outlined in the CoV's June 20, 2017 Administrative Report RR-1(d) 6; these rates typically vary from

\$0.21/minute - \$0.24/minute, but are periodically adjusted up or down to encourage utilization and turnover.”

4.1 Please confirm that CoV's EV charging rates can vary not only by level of utilization but also by time of day.

Response 4.1:

See ChargePoint's response to BCUC IR 3.1.

4.2 Please confirm that COV's EV charging rates can vary across the four sites at the same point in time.

Response 4.2:

See ChargePoint's response to BCUC IR 3.1.

4.3 Please provide a schedule that sets out, for each of the four sites, the EV charging rates (cents/minute) that have been in effect since January 1, 2021 and the related periods of time for which of the applicable rates have been applied.

Response 4.3:

See ChargePoint's response to BCUC IR 3.2.

5.0 Reference: Exhibit c4-3, page 3 (Table 3) and page 4

Preamble: The Application states: "In the case of EV charging, a station may not be used for most of a month and then get used once, causing a spike in energy usage and thus a demand charge."

5.1 For each of the four charging sites please provide the highest and lowest utilization values (i.e., monthly charging sessions) used in the calculation of the averages set out in Table 3 (last column).

Response 5.1:

ChargePoint does not have this data from the CoV.

5.2 For the most recent 12 months available, please provide (for each of the four sites): i) the average utilization (i.e., average number of monthly sessions), ii) the highest monthly utilization and iii) the lowest monthly utilization.

Response 5.2:

ChargePoint does not have this data from the CoV.

Appendix: ChargePoint's Revised Evidence Submission

July 14th

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

Attention: Patrick Wruck, Commission Secretary

RE: BRITISH COLUMBIA HYDRO AND POWER AUTHORITY – PUBLIC ELECTRIC VEHICLE FAST CHARGING RATE APPLICATION – PROJECT NO. 1599190

Please find attached ChargePoint's **revised** (emphasis added) submission of evidence in this proceeding.

During the review of data for ChargePoint's IR responses, two errors were detected in the data provided to ChargePoint from the CoV. The errors include:

- Session counts for Site 1 included Level 2 sessions.
- Electricity consumption for site 4 (sub-metered data) included Level 2 sessions.

These errors have since been correct in ChargePoint's revised evidence below.

Please contact me if you have any questions.

Respectfully,

Suzanne Goldberg
Director, Public Policy – Canada
ChargePoint
Phone: 1 866-480-2936
Email: suzanne.goldberg@chargepoint.com

**BRITISH COLUMBIA HYDRO AND POWER AUTHORITY – PUBLIC ELECTRIC VEHICLE FAST
CHARGING RATE APPLICATION – PROJECT NO. 1599190**

**CHARGE POINT
EVIDENCE SUBMISSION
TO BRITISH COLUMBIA HYDRO AND POWER AUTHORITY (BC HYDRO)**

June 24th 2021

Further to Exhibit A-7, ChargePoint provides its evidence in this proceeding.

A. Introduction

ChargePoint's primary business model is providing charging equipment and services to site hosts who own and operate stations. Since 2007, ChargePoint has been creating the new fueling network and is a leading provider of charging solutions.

ChargePoint's evidence is organized as follows: Section B provides a brief description and analysis of the City of Vancouver's funding model, capital and operating costs, and station utilization. Sections C identifies investment barriers associated with demand charges. Finally Sections D and E identify some rate designs that have been implemented in other jurisdictions in North America to reduce investment barriers posed specifically by demand charges.

B. Case Study: City of Vancouver's Model

One of ChargePoint's customers is the City of Vancouver ("**CoV**"). ChargePoint's network and equipment are used by CoV for its public charging stations; however, the CoV owns and operates the charging stations.

In order to support its climate goals and 2030 target of 50% of all vehicle kilometers travelled being electric, the CoV has implemented a number of policies and programs to support the use of electric vehicles, including EV-ready requirements for all new construction, curbside permitting for chargers, reduced fees for zero emissions car share and ride hailing vehicles, supporting the installation of charging stations in rental buildings and the deployment of Level 2 and DC fast charging infrastructure.¹ Another component of its effort is supporting private investment in EV charging by removing barriers to the deployment of EV charging stations, including addressing barriers at the provincial and utility level.²

ChargePoint provides details on operating and cost data on the DC fast chargers owned by the CoV, in order to provide context for its discussion in Section C and potential rate design models to alleviate barriers to EV adoption. The data below have been collected by the CoV and shared with ChargePoint for use in this submission.

¹City of Vancouver, Climate Emergency Action Plan – How we move, available at: <https://vancouver.ca/green-vancouver/how-we-move.aspx>.

² City of Vancouver, EV Ecosystem Strategy, available at: <https://vancouver.ca/files/cov/EV-Ecosystem-Strategy.pdf>, see p.ii.

CoV Data

The CoV owns and operates over 75 public chargers, including nine DC fast chargers that the CoV has operated for up to four years in some locations.³

Across a fleet of eight of the CoV's DC fast chargers, the CoV has reported that average capital and monthly operating costs per site (with two stations per site) are \$324,359 and **\$941 \$876**, respectively. The CoV has also reported that utilization has been 172 sessions per month, on average, to date.

On average, 20% of the CoV's capital costs⁴, are directly attributable to utility interconnections fees, and on average 60% of monthly driver revenue is attributed to demand charges (see Tables 1-3 below).

Table 1: Capital and Operating Costs

Site #	Capital Costs			Operating Costs			
	BC Hydro Connection Fee	Construction, Other Capital	Total Capital	Electricity Consumption (monthly)	Demand Charge (monthly)	Other Opex	Total Opex (excl maintenance)
1	\$193,468	\$198,846	\$392,314	\$322	\$464	\$150	\$936
2	\$2,818	\$305,731	\$308,549	\$295	\$428	\$150	\$873
3	\$31,888	\$262,921	\$294,809	\$235	\$451	\$150	\$836
4	n/a	\$301,764	\$301,764	\$522-\$260	\$448*	\$150	\$1,119 \$858

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

Table 2: Revenue

Site #	Revenues (monthly)	Net revenue (monthly)	Revenues as proportion of cost (%)
1	\$656.56	-\$279.22	70%
2	\$862.00	-\$11.07	99%
3	\$674.64	-\$161.49	81%
4	\$834.94	-\$284.48 -\$23	75%-97%

Table 3: Demand Charge Analysis

Site #	Demand Charge Fraction of Operating	Connection Charge Fraction of Capital	Demand Charge Proportion of Revenue	Utilization (Avg Monthly Sessions)
1	50%	49%	71%	247-170
2	49%	1%	50%	146
3	54%	11%	67%	142
4	40%-52%	0%	54%	155

The CoV has multiple sources of funding for municipal charging infrastructure capital and operating costs, including its municipal tax base, fees charged to DC fast charger customers, and funding from other levels of government. For example, the CoV has leveraged funding from Natural Resources Canada and CleanBC, which combined, offer funding of up to \$75,000 per station to offset capital costs.⁵

The CoV also charges a fee to drivers for its DC fast chargers, which vary by both location and utilization, as outlined in the CoV's June 20, 2017 Administrative Report RR-1(d)⁶; these rates typically vary from \$0.21/minute - \$0.24/minute, but are periodically adjusted up or down to encourage utilization and turnover.

Given the current rate of station utilization, the CoV's fee to drivers cover, on average, **81% 87%** of its operating costs; this data point does not include amortized capital cost.

³ A map of City owned stations can be found here: <https://vancouver.ca/streets-transportation/electric-vehicles.aspx>.

⁴ As noted in Table 1, interconnection costs vary significantly between sites.

⁵ Please see Natural Resources Canada's website for funding details: <https://www.nrcan.gc.ca/energy-efficiency/transportation-alternative-fuels/electric-and-alternative-fuel-infrastructure/22823>.

⁶ City of Vancouver, User Fees for City Owned and Operated Public Electric Vehicle Charging Stations, available at: <https://council.vancouver.ca/20170627/documents/rr1d.pdf>.

C. Demand Charges and EV Charging Investments

In ChargePoint's experience, higher costs, such as the case where demand charges represent a large portion of operating costs, can impact businesses' decisions related to charging infrastructure. This includes the decision to invest, expand infrastructure or increase prices to drivers.

Demand charges were originally designed to enable utilities to compensate for the cost of providing energy when their customers' loads exceeded certain levels of utilization. These charges are based on demand as electricity consumption can vary widely over a month. In the case of EV charging, a station may not be used for most of a month and then get used once, causing a spike in energy usage and thus a demand charge.

In the case of a business considering offering EV charging services, if the overall utilization is low, the cost of a high demand charge cannot be paid off by directly billing drivers for charging, so the station becomes a costly proposition. As a result, these charges can be a significant barrier to investment.

However, there are alternative ways to structure these demand charges to encourage EV investment from all entities including municipalities and private businesses.⁷ A number of utilities across North America have introduced alternative rates, and have incorporated designs which accomplish the goals of the utility (i.e. compensation for providing energy), rate payers and EV charging investors.

C. Other Models in North America

Several utilities across North America, some directed by government, have designed EV-specific demand charge rates. Implementing appropriate rate designs that eliminate, defer, or reduce demand charges is integral to unlocking increased investment in the EV charging infrastructure needed to support EV drivers in the CoV, as well as those transiting through British Columbia.

A list of models that have been employed by utilities in other states are listed below.

- **Hydro Quebec (Quebec):** Offers an experimental rate for commercial EV customers, which is based on peak power and load factor.⁸
- **ATCO (Alberta):** ATCO offers an Electric Vehicle Fast Charging Services Rate (rate D23) which balance utility costs with EV charging investor costs with higher energy rates.⁹
- **Eversource Energy (Connecticut)** offers customers an EV Rate Rider (EVRR) which converts any demand charges that might otherwise apply to an equivalent \$/kWh charge.¹⁰

⁷ Also noted by Tesla in Exhibit E-141, https://www.bcuc.com/Documents/Proceedings/2021/DOC_62691_E-141-TeslaMotorsCanada-Letter-of-Comment_Redacted.pdf, see p.2 "opt-in rates".

⁸ See Hydro Quebec Experimental BR Rate: <https://www.hydroquebec.com/business/customer-space/rates/rate-br-experimental-rate-fast-charge-stations.html>.

⁹ See ATCO rate D23, available at: <https://www.atco.com/content/dam/web/for-home/electricity/egbu-2020-08-01-atco-price-schedules-q4.pdf>.

¹⁰ This rate rider was approved by the Connecticut Public Utilities Regulatory Authority in a decision dated March 6, 2019 in Docket No. 17-10-46RE01, available at [http://www.dpuc.state.ct.us/dockcurr.nsf/8e6fc37a54110e3e852576190052b64d/78a25b4e83776981852583b50057c9d1/\\$FILE/171046RE01-030619.pdf](http://www.dpuc.state.ct.us/dockcurr.nsf/8e6fc37a54110e3e852576190052b64d/78a25b4e83776981852583b50057c9d1/$FILE/171046RE01-030619.pdf) (approving rate available to all public EV charging stations for a term of 3 years) ("In the EV RATE Rider, the rate calculation for EV charging stations is based on a per-kWh equivalent to the demand charges applicable to the Company's general service rate schedule that would otherwise apply to the load being served."). This is a successor rate to the EVRR Pilot rate originally approved in Docket No. 13-12-11, by decision dated June 4, 2014. The current Eversource-Connecticut EVRR rate is available at https://www.eversource.com/content/docs/default-source/rates-tariffs/ct-electric/ev-rate-rider.pdf?sfvrsn=e44ca62_0. For reference, this rider has been appended to this filing as Attachment I.

- **PECO (Pennsylvania):** EV DCFC Pilot Rider: A monthly bill credit representing a percentage of the nameplate demand associated with installed charging stations behind a commercial customer's metered service.¹¹
- **Dominion (Virginia):** GS-2 rate is a technology-neutral, low-load factor rate applicable to customers with a load factors below 200 kWh per kW.¹²
- **Pacific Power (Oregon):** Schedule 45 provides a demand charge transition discount paired with an on-peak energy charger transition discount.¹³
- **Pacific Power (Oregon):** Schedule 29 combines a Time of Use (TOU) rate with a demand charge based on utilization in which the average energy price declines as utilization increases.¹⁴
- **Public Service Company of Colorado,** a unit of Xcel Energy, offers a low-load-factor rate with a lower demand charge and higher TOU volumetric rates.¹⁵
- **Madison Gas & Electric (Wisconsin)** offers a low-load-factor rate which provides a 50% discount in the demand charge for customers with load factors below 15%. This technology-neutral rate is targeted not only DCFC facilities, but also other types of low-load-factor customers.¹⁶
- **Xcel Energy (Minnesota)** offers a low load factor rate which forgives a portion of billed demand.¹⁷
- **NVEnergy (Nevada)** has implemented Schedule EVCCR-TOU in its Northern and Southern Nevada service territory.¹⁸ This rate is applicable to separately metered DC fast chargers by utilizing a 10-year demand rate reduction period which starts at 100% reduction and phases back in at 10% each year. The demand rate reduction is offset with TOU dollar per kWh transition rate adders that are in addition to the normal billed TOU volumetric rates for commercial customers.
- **Tacoma Power (Washington State):** EV-F rate has a similar structure to NVEnergy's rate above.¹⁹
- **SCE (California):** TOU-EV-8, provides TOU rates for the initial 5 years with demand charges phased back in during years 6-10.²⁰
- **SDG&E (California):** TOU-M is an interim rate, under which sites can switch to a rate with a \$2.50/kWh demand charge and the cap is waived.²¹

¹¹ See EEI, *EV Trends and Key Issues* at 2 (Mar. 2019) ("On December 20, 2018... the Pennsylvania Public Utility Commission approved PECO's five-year EV DCFC Pilot Rider (EV-FC). This rider...will provide a demand credit to the customer's billed distribution demand. The credit...will be equal to 50 percent of the combined maximum nameplate capacity rating for all DCFCs connected to the service. Eligible customers will receive the credit for up to 36 months or until the pilot ends, whichever comes first. (Docket R-2018-3000164).") at https://www.eei.org/issuesandpolicy/electrictransportation/Documents/EV_Trends_and_%20Key%20Issues_Mar2019_WEB.pdf. See also <https://www.peco.com/SiteCollectionDocuments/ThirdPartyEV.pdf>.

¹² See Schedule GS-2, available at <https://cdn.dominionenergy-prd-001.azureedge.net/-/media/pdfs/virginia/business-rates/schedule-gs2.pdf?la=en&rev=65c74050107549f299d48689f738e948&hash=7CBE70107AE10C66B8EB5C5A1E248D12>.

¹³ See Pacific Power, Oregon Schedule 45, Public DC Fast Charger Optional Transitional Rate Delivery Service at https://www.pacificpower.net/content/dam/pccorp/documents/en/pacificpower/rates-regulation/oregon/tariffs/rates/045_Public_DC_Fast_Charger_Optional_Transitional_Rate_Delivery_Service.pdf. Approved in Oregon PUC Docket No. 485 on May 16, 2017.

¹⁴ See In the Matter of PACIFICORP, dba PACIFIC POWER, Request for a General Rate Revision, Oregon PUC Docket No. UE 374 (Proposed), available at <https://apps.puc.state.or.us/edockets/DocketNoLayout.asp?DocketID=22279>.

¹⁵ See <https://www.xcelenergy.com/staticfiles/xel/PDF/Regulatory/CO-Rates-&Regulations-Entire-Electric-Book.pdf>, at Sheet No. 44.

¹⁶ See <https://www.mge.com/MGE/media/Library/pdfs-documents/rates-electric/E32.pdf>.

¹⁷ See Xcel-MN Tariff, available at https://www.xcelenergy.com/staticfiles/xel/Regulatory/Regulatory%20PDFs/rates/MN/Me_Section_5.pdf.

¹⁸ See https://www.nvenergy.com/publish/content/dam/nvenergy/brochures_arch/about-nvenergy/rates-regulatory/electric-schedules-south/EVCCR-TOU_South.pdf.

¹⁹ See Schedule FC, available at https://www.mytpu.org/wp-content/uploads/FC_July_2020.pdf.

²⁰ See CPUC Decision 18-05-040, Ordering Paragraph 45, and SCE Advice Letter 3853-E (filed August 29, 2018) to implement the new commercial EV rates approved in that order. The decision is available at <https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M215/K783/215783846.PDF>. See also https://library.sce.com/content/dam/sce-doclub/public/regulatory/tariff/electric/schedules/general-service-&-industrial-rates/ELECTRIC_SCHEDULES_TOU-EV-8.pdf.

²¹ See San Diego Gas & Electric, Interim Rate Waiver, available at <https://www.sdge.com/interim-rate-waiver>.

- **Ameren (Illinois):** offers a multi-phase “rate limiter” designed to limit the average monthly cost for customers who limited their total kWh usage during the four summer billing periods of June through September to 20% or less of their annual kWh consumption.²²
- **DTE (Michigan):** GS-D3 is a low load factor rate where the 1000 kW demand cap for this non-demand general service rate is waived for DC fast chargers through June 1, 2024.²³
- **Hawaiian Electric (Hawaii):** offers Schedule EV-F for separately metered public EV charging facilities with peak demands for EV charging not exceeding 100 kW.²⁴ The rate is an all-volumetric rate, with no demand charges. The lowest rate is in the midday TOU period when output from the state’s high penetration of rooftop solar is greatest.

E. Conclusion

The evidence above illustrates the economic challenges that site hosts like municipal and private investors face when operating fast charging stations. In ChargePoint’s experience, high costs associated with demand charges, especially when utilization is low, can impact EV charging investment decisions. Several utilities in North America have addressed barriers associated with traditional demand charge rate structures by designing EV-specific rates to encourage EV investment, while balancing utility costs and rate payer interests. Introducing EV-specific rates to support municipal and private sector DC fast charging investment in BC for non-fleet stations, similar to what BC Hydro has introduced for fleets, would remove a barrier to DC fast charging investment in the province.

²² See Ameren Tariff, available at <https://www.ameren.com/-/media/rates/files/illinois/aie14rt4.pdf>.

²³ See https://www.michigan.gov/documents/mpsc/dtee1cur_579203_7.pdf.

²⁴ Schedule EV-F was established in Hawai’i PUC Final Decision and Order No. 35545 in Docket No. 2016-0328, filed on June 22, 2018, available at <https://puc.hawaii.gov/wp-content/uploads/2018/06/DO-No.-35545.pdf>.