

June 24 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 submission of evidence in this proceeding. 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](mailto: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 24<sup>th</sup> 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 CoVs 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 by 2030, the CoV has implemented a number of policies and programs to support the use of electric vehicles, including EV-ready requirements for new residential and commercial 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.<sup>1</sup> 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.<sup>2</sup>

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.

---

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

<sup>2</sup> 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.<sup>3</sup>

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.

On average, 20% of the CoV's capital costs<sup>4</sup>, 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	\$448*	\$150	\$1,119

\* 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	75%

**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
2	49%	1%	50%	146
3	54%	11%	67%	142
4	40%	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.<sup>5</sup>

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)<sup>6</sup>; 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.

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

<sup>4</sup> As noted in Table 1, interconnection costs vary significantly between sites.

<sup>5</sup> 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>.

<sup>6</sup> 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.<sup>7</sup> 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.<sup>8</sup>
- **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.<sup>9</sup>
- **Eversource Energy (Connecticut)** offers customers an EV Rate Rider (EVRR) which converts any demand charges that might otherwise apply to an equivalent \$/kWh charge.<sup>10</sup>

---

<sup>7</sup> 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](https://www.bcuc.com/Documents/Proceedings/2021/DOC_62691_E-141-TeslaMotorsCanada-Letter-of-Comment_Redacted.pdf), see p.2 "opt-in rates".

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

<sup>9</sup> 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>.

<sup>10</sup> 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](https://www.eversource.com/content/docs/default-source/rates-tariffs/ct-electric/ev-rate-rider.pdf?sfvrsn=e44ca62_0).

- **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.<sup>11</sup>
- **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.<sup>12</sup>
- **Pacific Power (Oregon):** Schedule 45 provides a demand charge transition discount paired with an on-peak energy charger transition discount.<sup>13</sup>
- **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.<sup>14</sup>
- **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.<sup>15</sup>
- **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.<sup>16</sup>
- **Xcel Energy (Minnesota)** offers a low load factor rate which forgives a portion of billed demand.<sup>17</sup>
- **NVEnergy (Nevada)** has implemented Schedule EVCCR-TOU in its Northern and Southern Nevada service territory.<sup>18</sup> 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.<sup>19</sup>
- **SCE (California):** TOU-EV-8, provides TOU rates for the initial 5 years with demand charges phased back in during years 6-10.<sup>20</sup>
- **SDG&E (California):** TOU-M is an interim rate, under which sites can switch to a rate with a \$2.50/kW demand charge and the cap is waived.<sup>21</sup>

<sup>11</sup> 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](https://www.eei.org/issuesandpolicy/electrictransportation/Documents/EV_Trends_and_%20Key%20Issues_Mar2019_WEB.pdf). See also <https://www.peco.com/SiteCollectionDocuments/ThirdPartyEV.pdf>.

<sup>12</sup> 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>.

<sup>13</sup> 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](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.

<sup>14</sup> 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>.

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

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

<sup>17</sup> See Xcel-MN Tariff, available at [https://www.xcelenergy.com/staticfiles/xcel/Regulatory/Regulatory%20PDFs/rates/MN/Me\\_Section\\_5.pdf](https://www.xcelenergy.com/staticfiles/xcel/Regulatory/Regulatory%20PDFs/rates/MN/Me_Section_5.pdf).

<sup>18</sup> See [https://www.nvenergy.com/publish/content/dam/nvenergy/brochures\\_arch/about-nvenergy/rates-regulatory/electric-schedules-south/EVCCR-TOU\\_South.pdf](https://www.nvenergy.com/publish/content/dam/nvenergy/brochures_arch/about-nvenergy/rates-regulatory/electric-schedules-south/EVCCR-TOU_South.pdf).

<sup>19</sup> See Schedule FC, available at [https://www.mytpu.org/wp-content/uploads/FC\\_July\\_2020.pdf](https://www.mytpu.org/wp-content/uploads/FC_July_2020.pdf).

<sup>20</sup> 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](https://library.sce.com/content/dam/sce-doclub/public/regulatory/tariff/electric/schedules/general-service-&industrial-rates/ELECTRIC_SCHEDULES_TOU-EV-8.pdf).

<sup>21</sup> 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.<sup>22</sup>
- **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.<sup>23</sup>
- **Hawaiian Electric (Hawaii):** offers Schedule EV-F for separately metered public EV charging facilities with peak demands for EV charging not exceeding 100 kW.<sup>24</sup> 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.

---

<sup>22</sup> See Ameren Tariff, available at <https://www.ameren.com/-/media/rates/files/illinois/aiel14rtids4.pdf>.

<sup>23</sup> See [https://www.michigan.gov/documents/mpsc/dtee1cur\\_579203\\_7.pdf](https://www.michigan.gov/documents/mpsc/dtee1cur_579203_7.pdf).

<sup>24</sup> 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>.