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The Honorable Dick Mazza, Chair  
Senate Committee on Transportation  
Vermont State House  
115 State Street  
Montpelier, VT 05633

March 21, 2019

**Re: 19-0462 - An act relating to the Public Utility Commission's jurisdiction over electric vehicle charging stations and electric vehicle charging tariffs**

Dear Chair Mazza:

ChargePoint appreciates the opportunity to provide testimony on the above-referenced legislation, which we could support with the amendments identified below.

#### **Background on ChargePoint**

ChargePoint is the nation's largest electric vehicle ("EV") charging network, with charging solutions for every charging need and all the places EV drivers go: at home, work, around town and on the road. With more than 60,000 independently owned charging spots, ChargePoint drivers have completed more than 50 million charging sessions, saving upwards of 49 million gallons of gasoline and driving more than 1.1 billion gas-free miles. Over 400 of these charging spots are deployed in Vermont.

ChargePoint designs, develops, and deploys residential and commercial AC Level 2 ("L2") and DC fast charging ("DCFC") electric vehicle charging stations, cloud-based software applications, data analytics, and related customer and driver services aimed at creating a robust, scalable, and grid-friendly EV charging ecosystem.

ChargePoint sells EV charging supply equipment ("EVSE") and network services that enable EV charging station owners to provide charging services. In almost every case, ChargePoint does not own or operate the equipment. ChargePoint sells charging solutions to a wide variety of customers, including residential EV owners, employers, commercial and industrial businesses, cities and public agencies, ports, schools, public transit, delivery truck fleet operators, and multi-unit dwelling owners. ChargePoint offers a broad array of products and services that can serve light, medium or heavy-duty electric vehicles.

The site host network services offered by ChargePoint enable customers to manage their charging infrastructure using cloud-based software tools. These tools provide the station owner

or operator with everything needed to manage and optimize utilization of their charging stations, including online management tools for data analysis, billing and payment processing, load management and access control. Stations connect to ChargePoint over a secure, cellular data network (or Wi-Fi in the case of single-family residential) allowing station owners to manage all their charging operations from a single dashboard.

Maintenance and customer service are a priority for our company. ChargePoint offers a comprehensive set of support services, including: a 24/7/365 hotline for station users, parts and labor warranty, site qualification, installation and validation services, and a helpline for site host specific questions.

### **Background on EV Charging and EV Charging Business Models**

The nature of “refueling” a vehicle at an AC Level 2 station is inherently different than refueling an internal combustion engine (“ICE”) vehicle, and the business models for site hosts of both types of technologies are likewise different. Whereas refueling an ICE vehicle takes a matter of minutes and does not result in longer-term parking with the driver absent from the vehicle, charging an EV at an AC Level 2 station has a longer timeframe and often results in a parked, unattended vehicle. The combination of charging and parking services associated with EV charging infrastructure is unique.

EV charging typically takes place when drivers arrive at their destination, rather than as a pit stop on the way there. In other words, drivers charge where they park. One analysis conducted through the Idaho National Labs found that EV drivers charged their vehicles at home 64% of the time, with about 30% of charging taking place at work.<sup>1</sup>

Publicly-available EV charging stations are also vitally important and are installed by a range of different owners and operators of EV charging stations (“site hosts”) to provide charging services to customers, employees, tenants and other EV drivers. Site hosts provide EVSE for a wide variety of reasons. Private businesses, including retailers, grocery and convenience stores, hotels, multi-unit dwelling (“MUD”) owners, among others, may install EVSE to attract new customers or tenants with a valuable amenity. State and local governments may install EVSE to support their emission reduction goals, electrify their own fleet vehicles, attract visitors, and provide a valuable amenity to the community. A wide variety of site hosts may also find it valuable to demonstrate their commitment to sustainability.

Site hosts provide EV charging services as an amenity that creates direct and indirect value streams. Site hosts need to have flexibility to optimize the station utilization and encourage a desired charging behavior specific to each site and use case.

### **General Position on the Bill**

ChargePoint is largely supportive of the legislation and welcome the Committee’s leadership in ensuring that electric transportation creates widespread benefits for all Vermonters. We

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<sup>1</sup> Smart, John. *Lessons Learned About Workplace Charging in the EV Project*. Idaho National Labs. 2015.

particularly appreciate the regulatory certainty provided by clarifying the Public Utility Commission's ("PUC") jurisdiction and efforts to ensure consumer protection. ChargePoint applauds the Committee for ordering a thorough study to evaluate the feasibility of implementing a per-kWh fee on EV charging in advance of implementation.

We respectfully wish to express the following concerns and recommend amendments:

**Concern: Mandating "Plug-and-Go" Technology**

Issue: The Committee Bill would require EV chargers to provide "universal plug-and-go technology"<sup>2</sup> at an unspecified future date. Artificially picking one preferred communication standard, payment methodology, or network roaming protocol could limit the available charging options in Vermont and impose increased costs on drivers, riders, and site hosts.

Background: States around the country are considering how to increase equitable access to electric transportation. Three frequently-considered issues are (i) forms of payment accepted at EV charging stations, (ii) the ability for drivers to roam seamlessly between EV charging networks, and (iii) communication protocols used in EVs, EVSE, and cloud-based networks.

- (i) Communication Protocols: Communication between EVs, EVSE, cloud-based networks, and the grid can be incorporated into a variety of different applications. From a communications standpoint, ChargePoint's stations already have the capability of communicating through standardized communication protocols (e.g., OpenADR2.0b, OCPP). Advanced vehicle-to-grid ("V2G") applications are being explored through the utilization of other protocols, such as ISO 15118. California's Vehicle Grid Integration ("VGI") Communication Protocol Working Group identified more than 70 different V2G applications that were possible through the use of ISO 15118.

It is critically important to note that the final report from California's VGI Working Group in November 2018 concluded that "it is not advisable to require the investor-owned utilities to only use a single protocol, or specific combination of protocols, for their infrastructure investments at this time."<sup>3</sup>

- (ii) Payment Methods: In the event that a fee is set for charging services at a public EV charging station, drivers can pay for their usage in a number of different ways that include, but are not limited to: RFID cards; tap-to-charge, which opens network app for payment through membership; contactless credit cards; payment via credit card (or free unlocking) through 1-800 number; third party app linked to credit card or bank account (e.g., Apple Pay, Android Pay); payment through third party network with roaming agreement; vehicle-based credentialing; text to pay (similar to text to pay for parking).

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<sup>2</sup> See Committee Bill p. 2 lines 10-13 and p. 4 line 20

<sup>3</sup> See California Public Utilities Commission Energy Division Staff Report at <http://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=6442460144>

- (iii) Network Roaming: The EV charging industry is delivering solutions that make it easy for drivers to charge wherever they go. Peer-to-peer roaming between EV charging networks allow drivers to charge at stations on either network with either credential. Peer-to-peer roaming does not impose any surcharges or additional fees on drivers, eliminates any middleman, and provides access to more drivers without any additional effort for station owners. Drivers are not required to sign up for any additional accounts or networks and everything is taken care of by their existing network. This makes it convenient for the driver to charge their EV, gives them confidence in being able to drive electric and increases their choice of where they charge.

ChargePoint entered into the first ever peer-to-peer roaming agreement in 2018 with EV-Box, which was quickly followed by similar roaming agreements with Flo and Greenlots.

Solution. ChargePoint respectfully recommends that the Committee strike references to “plug-and-go technology” on Page 2 lines 10-13 and Page 4 line 20. Failure to remove this proposed mandate would create uncertainty in the market about whether site hosts would be required to install new equipment at an unspecified future date or impose additional costs on drivers.

We further recommend that the Committee consider inserting “Open Access” provisions in place of a specific technology mandate. Several New England states have already adopted statutory requirements that would increase access to public charging by implementing “Open Access” provisions for publicly available charging stations.

Open access provisions stipulate that publicly available charging stations may not exclusively allow for access on condition of membership or subscription, though it does allow for subscriptions and membership models to exist alongside open access models. Such provisions also stipulate that multiple payment options be permitted, which increases access to charging while remaining flexible as payment technologies evolve. Further detail and sample language are included in Attachment A.

| State | Year | Citation                                    | Payment Requirement   |
|-------|------|---|---|
| CT    | 2016 | <a href="#">Public Act No. 16-135</a>       | The owner or operator of a public electric vehicle charging station, as defined in section 16-19f of the general statutes, as amended by this act, that requires payment of a fee <i>shall provide <b>multiple payment options</b> that allow access by the public.</i> |
| MA    | 2016 | <a href="#">Ch. 448 of the Acts of 2016</a> | The owner or operator of a public electric vehicle charging station <i>shall provide <b>payment options</b> that allow access by the general public.</i>  |
| NH    | 2018 | <a href="#">SB 575</a>                      | The owner or operator of a public electric vehicle charging station that requires payment of a fee <i>shall provide <b>multiple payment options</b> that allow access by the public.</i>  |

### **Concern: Unintended Limitations on Setting Appropriate Prices for EV Charging**

Problem: The Committee Bill as drafted could inadvertently limit site hosts to solely setting pricing on a per-kWh basis, which would lead to underutilized and inefficient use of stations and limit access to EV charging for drivers.

Background: Pricing for charging services is typically set to incentivize charging behavior in addition to being a means to generate supplemental direct revenue. While site hosts can utilize driver revenues to help offset costs, such revenue is not the sole value stream site hosts consider when operating charging stations. Prices can be set in a number of ways, including, for example: a free charging session; a fixed price per session; an hourly price; an energy price on a per kilowatt-hour (“kWh”) basis; a time-of-use (“TOU”) price; a length-of-stay price charged during the first hour or two and then a higher price for every hour thereafter; a minimum and/or a maximum price per session; a combination of the above (e.g., a flat session fee followed by an hourly rate); a driver group price (e.g., unique prices for different classifications of drivers, such as employees and visitors).

Different pricing policies have significantly different effects on EV charging behavior. An analysis by the Luskin Center at UCLA of 400,000 Level 2 charging sessions found that the least efficient use of EV charging stations took place at stations where the price for EV charging was either (i) set at a flat, per-kWh rate or (ii) free. Conversely, EV charging stations were most efficiently and predictably used when the price for EV charging services consisted of a combination of (i) an hourly or kWh rate and (ii) a fee that was specifically targeted to incentivize turnover once charging is complete.

In other words, EV drivers remained plugged in long after their charging sessions were complete in the absence of receiving a price signal to move once their vehicle was charged. Limiting site hosts to setting a static, per-kWh rate to drivers would lead to underutilized and inefficient use of stations and limit access to EV charging for drivers.

Solution: We recommend that the Committee Amend new subsection (7) on pages 3-4 as follows:

(7) ...These companies ~~may charge by the kWh for owned or operated electric vehicle charging stations but~~ shall not be treated as an electric distribution utility just because an electric vehicle charging station charges by the kWh...

### **Concern: Inadvertent Technological Restrictions on Utilities**

Issue: The Committee Bill exempts meters used to calculate EV charging services from being considered a meter operated in a public utility system. This could inadvertently restrict the PUC from considering proposals by utilities to leverage the metering capabilities of EVSE.

Background: Residential EV charging programs can take advantage of embedded metrology in a charging station, which provide equivalent accuracy as today’s traditional form-factor utility meters. This design eliminates the added cost, complexity, and time to install a separate revenue meter on the circuit while still providing the same interval level data which can be used



to offer off-peak charging rates or incentives. However, use of such embedded device sub-metering for utility bill adjustments raises many regulatory questions that have yet to be addressed and thus may dissuade utilities from pursuing such designs.

ChargePoint is currently providing a networked charging solution for Green Mountain Power's managed home charging program. This program includes both demand response and an off-peak charging plan that leverages embedded metering within the EVSE to then compare against total premise metered data from the utility meter.

**Solution:** We recommend that the Committee seek input from the PUC and utilities as to whether the following language (Page 4 lines 3-5) inadvertently restricts technological options:

A meter used to measure the amount of electricity sold or to calculate charges at the point of charging shall not be considered a meter operated in a public utility system for the purposes of 9 V.S.A. § 2651(14).

#### **Conclusion**

ChargePoint appreciates the opportunity to provide testimony on these important issues. Thank you for your consideration, and please let me know if I can provide additional information.

Sincerely,

A handwritten signature in black ink, appearing to read "Kevin Miller", written over a light blue horizontal line.

Kevin George Miller  
Director, Public Policy  
ChargePoint

## **Attachment A: Open Access Requirements**

### **Purpose of Policy:**

EV drivers should be able to access any publicly available EV charging station, regardless of the system provider.

### **Requirements:**

- (1) A person shall not be required to pay a subscription fee to use a public electric vehicle charging station or be required to obtain a membership in a club, association or organization as a condition of using the station; provided, however, that owners and operators of public electric vehicle charging stations may have separate price schedules conditional on a subscription or membership
- (2) The owner or lessee of a publicly available parking space, whose primary business is not electric vehicle charging services, may restrict the use of that parking space, including by limiting use to customers and visitors of the business.
- (3) The owner or operator of a public electric vehicle charging station shall provide payment options that allow access by the general public.

### **Necessary Definitions**

“Public electric vehicle charging station”- An electric vehicle charging station located at a publicly available parking space.

“Publicly available parking space”- A parking space that has been designated by a property owner or a lessee to be available to and accessible by the public and may include on-street parking spaces and parking spaces in surface lots or parking garages; provided, however, that publicly available parking space shall not include a space that is part of or associated with a private residence or a parking space that is reserved for the exclusive use of an individual driver or vehicle or for a group of drivers of vehicles including employees, tenants, visitors, or residents of a common interest development or residents of an adjacent building.

### **Citations**

Connecticut: [Public Act No. 16-135](#)

Massachusetts: [Ch. 448 of the Acts of 2016](#)

New Hampshire: [SB 575](#)

California: [SB 454](#)