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ChargePoint Comments on Medium- and Heavy-Duty Zero-Emission Vehicle Public Charging RFI

See attached comments.

Additional submitted attachment is included below.



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Elizabeth John
California Energy Commission
715 P Street
Sacramento, CA 95814

Subject: ChargePoint Response to RFI 19-TRAN-02: Medium- and Heavy-Duty Zero-Emission Vehicle Public Charging

Dear Elizabeth John,

ChargePoint, Inc. (ChargePoint) respectfully submits this response to the California Energy Commission (CEC) Request for Information (RFI) regarding Medium- and Heavy-Duty Zero-Emission Vehicle Public Charging.

The CEC has long been a champion for climate change in California by reducing carbon emissions through a history of programs including the Clean Transportation Program (CTP), which has provided hundreds of millions of dollars in funding to critical programs to transition the state's transportation sector to zero-emission. We appreciate the chance to provide feedback to assist CEC in creating implementation strategies for this essential forthcoming program to build out publicly accessible charging infrastructure for medium- and heavy-duty zero-emission vehicles.

We thank you for the opportunity to submit this response and look forward to continued collaboration with CEC on the development guidelines and implementation of the resulting program to reduce carbon emissions through the continued electrification of California's transportation sector.

Sincerely,

A handwritten signature in cursive script that reads 'Claire Garcia'.

Claire Garcia
Fleet Grant Development Manager
ChargePoint, Inc.

Background, ChargePoint:

Founded in 2007, ChargePoint is a leading global electric vehicle charging network headquartered in Campbell, California. To date, we have delivered 295 million charges, thus enabling 12.9 billion electric miles and avoiding 499 million gallons of gasoline. At ChargePoint, EV charging is all we do, and we do it all. Passenger cars, delivery vehicles, buses, and more—we charge any EV, anywhere it goes. We have built a fully integrated portfolio of hardware, cloud services and support with the best technology in the industry. We offer solutions for home, government, multi-family, commercial, and fleet electric vehicle charging infrastructure. Additionally, ChargePoint has successfully deployed both level two and fast charging infrastructure along major highway corridors and within communities across the country while working in tandem with industry and government to enable a more accessible electric future.

ChargePoint's hardware offerings include AC or Level 2 and DC fast charging (DCFC) products, and ChargePoint provides a range of options across those charging levels for specific use cases including light duty, medium duty, and transit fleets, multi-unit dwellings, residential (multi-family and single family), destination, workplace, and more. ChargePoint's software and cloud services enable EV charging station site hosts to manage charging onsite with features like access control, charging analytics, and real-time availability. With modular design to help minimize downtime and make maintenance and repair more seamless, all products are UL-listed, and CE (EU) certified, including ENERGY STAR® certified options across both our AC and DC product portfolios.

ChargePoint's primary business model consists of selling smart charging solutions directly to businesses and organizations and offering tools that empower station owners, or site hosts, to deploy EV charging designed for their individual application and use case. ChargePoint provides charging network services and data-driven, cloud-enabled capabilities that enable site hosts to better manage their charging assets and optimize services. For example, with those network capabilities, site hosts can view data on charging station utilization, frequency and duration of charging sessions, set access controls to the stations, and set pricing for charging services. These features are designed to maximize utilization and align the EV driver experience with the specific use case associated with the specific site host. Additionally, ChargePoint has designed its network to allow other parties, such as electric utilities, the ability to access charging data and conduct load management to enable efficient EV load integration onto the electric grid.

Response

1. What does the CEC need to consider when developing “public” / en route charging eligibility criteria for CEC funding opportunities?

ChargePoint recommends CEC consider a variety of eligibility criteria for upcoming funding opportunities related to developing public/en-route charging for medium- and heavy-duty (MHD) zero-emission vehicles (ZEVs), including project location types, minimum charging power levels, and minimum per-site port totals. Eligibility criteria for project locations should require sites to be of adequate size to accommodate MHD vehicles, including the largest kind (Class 8) that may have trailers. Such vehicles require more space to maneuver and a larger turning radius than smaller electric vehicles (EVs) that have been the focus of recent public charging corridor grant programs. The increased height of MHD vehicles must also be considered; for sites having or proposing to have canopies, consideration must be given to the height of the canopy so as to allow the largest vehicles, including those pulling trailers, to access the charging site. Charging stalls must be designed to accommodate vehicles with heavy loads by including pull-through stalls that make it easier for large vehicles to exit a charging station without needing to reverse and potentially block incoming traffic. Site proximity to corridors heavily traveled by MHD vehicles should also be taken into consideration. It may be beneficial to require project sites to be no more than a few miles (for example, 5 or fewer) from a priority corridor to ensure that the greatest number of MHD EVs are served. Additionally, charger cables should have a minimum required length for eligibility in order to ensure that even the largest EVs can park and charge comfortably regardless of the location of the charging port on the vehicle.

For sites designed to serve both MD and HD EVs, we recommend a minimum charger power level of at least 50 kW. For sites designed to primarily serve HD EVs, a higher power level may be more suitable (150 kW or more, at a minimum). Incorporating minimum power levels as an eligibility criterion will ensure that project sites are truly designed to serve larger EVs, whose battery packs, on the higher end, can be upwards of 750 kWh. In addition to minimum power levels, minimum port counts should also be a factor of eligibility. We recommend that each project site be required to deploy at least 10 charging ports to accommodate as many MHD EVs as possible. This will reduce the chance of drivers arriving at a site to charge only to find that no chargers are currently available. Port count is especially important for sites in close proximity to corridors that are heavily traveled by MHD vehicles.

2. How should the CEC plan for the state’s future MDHD charging needs to both accommodate fleets that will need access to chargers while en route to a destination (similar to the diesel truck stop model where the ports are fully publicly accessible first-come-first-served) vs. fleets that need certainty that charging will be available and accessible when it comes time to charge (the reservation system model)?

ChargePoint strongly recommends that all chargers at a site be simultaneously capable of reservation/waitlist and first-come first-served charging. To best execute this strategy, we advise that roughly 75% of all chargers at a site be “designated” as reservation/waitlist chargers, while the remaining 25% of chargers be “designated” as first-come first-served chargers (keeping in mind that all chargers, regardless of designation, will be capable of both reservation/waitlist and first-come first-served charging). This ratio in favor of reservation/waitlist-based chargers will be especially important in these early days of MHD electrification, when many new EV drivers may be unfamiliar with a charging reservation system and instead may prefer a system similar to the existing “diesel truck stop model” where they can simply pull into a stall and begin charging. The flexibility of having each charger capable of both types of charging allows the ratio to be adjusted over time, and as-needed depending on driver preference, site demand, and other factors.

3. Is a reservation system for use of public chargers needed to meet the needs of the trucking industry?

Reservation- or waitlist-based systems for use of public chargers is needed to meet the needs of the trucking industry as it electrifies. There is a need for a charging site, and individual chargers, to be capable of implementing reservation systems in the form of a driver waitlist when charging demand exceeds charger availability. Such a waitlist can assist with queue management and help drivers secure their place in line while they wait for a charger to become available. However, as explained in our response to Question 2, just because chargers must be capable of implementing a waitlist does not mean that they should be incapable of first-come first-served charging. This flexibility is needed when charger demand is low, when drivers have a need to be able to pull into a stall and begin charging without reservation, and particularly in the early days of MHD electrification as drivers become accustomed to a new way of fueling. This flexibility will also help reduce a charging site host’s costs by allowing hosts to serve the same number of drivers with fewer chargers.

4. What reservation systems exist that could allow use by more than one trucking company?

ChargePoint’s existing reservation system, or waitlist feature, allows for use by any driver. Drivers planning to charge at a specific station can join a waitlist to reserve their place in line if there are multiple drivers waiting their turn to charge. Once the charger becomes available to the driver, they will be notified and have 15 minutes to begin their charging session. If they decide not to move forward with their charging reservation within those 15 minutes, then the station becomes available to the next waiting driver. This system helps manage charger availability when demand is high. Idle fees can also help facilitate efficient use of chargers when demand exceeds charger availability. Idle fees can be imposed once a vehicle has been fully charged to encourage the driver to vacate the charging space. This allows for the next driver to arrive and begin charging sooner, reducing their wait time. Idle fees can also be imposed on any driver, just as the waitlist

feature can be used by any driver. A combination of our waitlist feature and idle fees are typically used to tackle queue management at sites where charging demand is high.

5. Does a “Trucking-as-a-Service” (TaaS) model in which trucks are leased and guaranteed chargers by a site operator provide enough public opportunities for trucks that are not leased through the site operator?

A TaaS model in which trucks are leased and guaranteed chargers by a site operator will not have an effect on other trucks that are not leased through the site operator; such a site that is designed to host public charging stations is typically deployed to serve as many drivers as possible so as to generate revenue.

**6. Should there be a certain percentage of chargers available to the public at all times?
Should there be a certain percentage of chargers available for reservation at all times?**

See response to Question 2; to reiterate, although we recommend a specific ratio of waitlisted chargers to first-come first-served chargers, we advise that all chargers be capable of implementing both a waitlist system and first-come first-served charging to accommodate the flexibility needed to meet changes in driver demand.

7. What is the ideal reservation system or process for MDHD truck charging?

See response to Question 4; ChargePoint’s existing waitlist feature already offers a reservation system for when charging demand exceeds charger availability. Additionally, we recommend that an ideal reservation system include the ability to access the waitlist feature via an app and potentially a toll-free number as well, to be accessible to as many drivers as possible. In the future, as more MHD vehicle original equipment manufacturers (OEMs) begin to integrate the charging experience into their vehicle models through in-dash features, we recommend that charging waitlist capabilities also be integrated in-dash. As charging reservation becomes more sophisticated, advanced features may also be incorporated to improve the waitlist experience for drivers. For example, drivers may want to be able to reserve a charger long in advance of their arrival (such as days or even weeks), which may be beneficial to drivers with regular, predictable routes. For such drivers, reserving a charger far in advance could open up the opportunity for advance payment prior to charging, unlocking the possibility of reserving favorable electricity prices. To facilitate this feature, sophisticated reservation systems may also want to consider implementing “no-show charges” whereby a driver is charged a fee if they do not arrive to their scheduled charging reservation. This would encourage drivers to only reserve a charger if they are certain of their arrival, helping to avoid a situation where multiple drivers miss out on charging opportunities because an earlier driver did not honor their previously scheduled charging reservation.

8. If a portion of chargers must remain first-come-first-served, what ratio for reservation vs. first-come-first-served chargers would you recommend?

See response to Question 2; to reiterate, although we recommend a specific ratio of waitlisted chargers to first-come first-served chargers, we advise that all chargers be capable of implementing both a waitlist system and first-come first-served charging to accommodate the flexibility needed to meet changes in driver demand.

9. Which configuration would be preferred:

- a. **A site where all chargers can be reserved but can also be used on a first-come-first-served basis if a charger is not reserved or in use?**
- b. **A site where a portion of the chargers are reservation only and another portion first-come-first-served only? In this configuration, is there an optimal percentage of chargers that are always available (not available for reservation)?**

Option A would be preferred because it aligns with our recommendation that all chargers be capable of implementing both a waitlist system and first-come first-served charging to accommodate the flexibility needed to meet changes in driver demand. See our response to Question 2 for more information.

10. If a truck is charging at a first-come-first-served charger at a site that also allows reservations, and a scheduled reservation arrives while the charger is still in use, what is the protocol?

ChargePoint recommends that features such as idle fees be implemented to encourage drivers to vacate the charging stall once they are done charging. This will help avoid a situation where the next driver arrives only to find that the charger is still in use. To help facilitate this, each charging site and charging stall's specific use-case must be considered – for example, whether a particular site or charger is designed to serve overnight charging, en-route charging, reservation-based charging, first-come first-served charging, etc. For complex management of larger charging sites, site hosts may need to be involved to help avoid misuse of chargers and to streamline operations. Depending on the site type, amenities are necessary and attendants may be helpful. For overnight charging sites, amenities such as lodging and/or entertainment may be ideal. For en-route charging sites, amenities such as restaurants and restrooms may be more appropriate. These and other amenities, such as generalized vehicle parking that does not include charging, will allow drivers an opportunity to leave their vehicles while charging, and to engage in other activities when they are done charging if they wish to rest or recreate.

11. The CEC's Clean Transportation Program administers public funding, which must provide a benefit to the state. How does a project with a reservation system benefit the state of California?

A project with a reservation and/or waitlist system benefits the state of California by, above all, providing certainty for MHD EV drivers. A reservation/waitlist system allows a driver to be certain that a charger will be available to them at the moment that they need to charge. This confidence promotes electrification by helping drivers feel comfortable to switch to EVs. As more drivers transition to zero emissions, harmful pollutants will be reduced throughout the state, improving air quality and health outcomes for Californians. The benefits are enormous. Reservation/waitlist systems also provide the benefit of queue management, which helps streamline charging site operations. Such a system also promotes charger utilization by managing charger demand, which provides economic benefits for charging site hosts, encouraging others to host charging stations too. This means that each Clean Transportation program dollar invested leads to many more dollars of economic activity in the state.

12. Are there driver safety or equipment protection issues that the CEC must consider when determining whether a charger should be "public"? Could a charging site be open to the public without attendees on site?

CEC may want to consider whether the charger OEM offers safety features that help protect charging equipment from damage and vandalism. For example, ChargePoint currently leads the way in solving EVSE industry challenges with innovative vandalism prevention solutions. We have developed cut-resistant cables using proprietary, patent-pending technology to mitigate the growing issue of theft. Additionally, ChargePoint® Protect offers advanced real-time protection by detecting cable cutting, triggering audible and visual alarms, and notifying station owners via SMS and email. These features work together to minimize repair costs, reduce downtime, and safeguard charging equipment. We are committed to providing the best charging experience for drivers, ensuring long-term reliability and peace of mind for drivers and charging site hosts alike.

CEC may also want to consider whether the proposed charging site has amenities to ensure driver safety. For example, adequate lighting that remains on at all hours of the night to make sure drivers feel safe and to deter vandalism, and security cameras to record any safety incidents that may occur. For added protection, attendees may be present on site, but are not always necessary depending on the specifics of the charging site. Many public charging sites today remain open to the public without any attendants on site.

13. Are there standardization or communication protocol issues that the CEC needs to consider when developing "public" / en route charging eligibility criteria for CEC funding opportunities?

CEC may want to consider the following standardization and communication protocols when developing public/en-route charging eligibility criteria:

- **Station to Cloud Interface (OCPP):** In addition to manufacturing and selling our own EV charging equipment, ChargePoint has over 8 years of experience with integrating EVSEs from other manufactures onto our network. The ChargePoint Network supports the OCPP v1.6J and 2.0.1, protocol making it possible to integrate any charging station that communicates via the protocol onto our network. ChargePoint has developed a robust integration program with a dedicated team to facilitate this process to adequately conduct integration and ensure stations works as expected.
- **OCPI:** The OCPI open protocol that governs the communications between charging networks allowed ChargePoint to be a founding member of the industry effort to enable “roaming,” which provides seamless EV driver access, including payment, to multiple charging networks via one native account. Using OCPI, ChargePoint has entered into agreements with all of the major charging networks to help simplify the EV driver experience.
- **Utility System Interface:** ChargePoint was one of the first charging networks to be certified as OpenADR 2.0b compliant to help support the broadcasting of price signals and demand response events from utilities to charging station operators.
- **ISO-15118:** Many of ChargePoint’s products, both Level 2 and DC, are ISO-15118 hardware-ready.

14. Please describe your optimal public charging network that is a mix of first-come-first-served and reservation systems throughout CA.

See response to Question 2; to reiterate, although we recommend a specific ratio of waitlisted chargers to first-come first-served chargers, we advise that all chargers be capable of implementing both a waitlist system and first-come first-served charging to accommodate the flexibility needed to meet changes in driver demand.

15. Please describe your optimal site configuration. It may be 100% first-come-first served, 100% reservation system, or a combination of the two.

See response to Question 2; to reiterate, although we recommend a specific ratio of waitlisted chargers to first-come first-served chargers, we advise that all chargers be capable of implementing both a waitlist system and first-come first-served charging to accommodate the flexibility needed to meet changes in driver demand.

16. If using a reservation system, please describe your optimal set of rules and parameters of how a reservation system would work.

See responses to Question 4 and Question 7; ChargePoint's existing waitlist feature already offers a reservation system for when charging demand exceeds charger availability. We recommend that an optimal reservation system would be similar to our waitlist feature. To further refine this feature, we may suggest that reservation systems allow for drivers to reserve any charger that first becomes available within a charging site or group of chargers, rather than simply reserving one charger in particular. This may help increase the throughput of drivers at a station and improve site operational efficiency, driver satisfaction, and site host revenue.