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May 31, 2022

Ms. Liane Randolph, Chair
California Air Resources Board
1001 I Street
Sacramento, CA 95814

Re: Comment on Proposed Advanced Clean Cars II Regulations

Dear Chair Randolph:

ChargePoint thanks the Board and Staff for their work to develop the proposed Advanced Clean Cars II regulations (Proposal). California has been a global leader developing, deploying, and supporting accelerated adoption of zero emission vehicles (ZEV). ChargePoint recommends several modifications to the Proposal to align any final regulations adopted by the Board with current best practices for electric vehicle charging, reducing emissions from power generation, incorporating renewable energy, and ensuring the safe deployment of electric vehicle charging equipment.

About ChargePoint
Since 2007, ChargePoint has been creating the new fueling network to move all people and goods on electricity. ChargePoint is committed to making it easy for businesses and drivers to go electric, with a world leading electric vehicle (EV) charging network and the most complete set of charging solutions available today. ChargePoint's cloud subscription platform and software-defined charging hardware is designed internally and includes options for every charging scenario from home and multifamily to workplace, parking, hospitality, retail and fleets of all kinds. Currently there are more than 174,000 ports on the ChargePoint network across North America and Europe and an additional 300,000 ports accessible via roaming agreements.

Minimum Technical Requirements for ZEVs - Charging
The Proposal includes several modifications or additions to the current minimum technical requirements for ZEVs to become effective beginning in model year 2026. The proposed minimum technical requirements require each BEV sold to "be equipped with a 20-foot Underwriter Laboratory (UL) 2594-certifed charging cord capable of both Level 1 and Level 2 electrical charging."[1]

[1] Initial Statement of Reason at 47

Specifically, the proposed regulations in Subsection 1962.3 read:

(3) Charging Cord. Beginning in the 2026 model year, each vehicle must be supplied with a charging cord that meets the following specifications:

(A) Minimum of 20 feet in length.

(B) Dual amperage capabilities compatible with AC Level 1 and Level 2 charging:

1. AC Level 1 minimum amperage capabilities shall be 12 amps.

2. AC Level 2 minimum amperage capability shall be 24 amps.

3. The cord shall be configurable by the user, without the use of tools, to facilitate plugging into an appropriate National Electrical Manufacturers Association standard outlet to facilitate Level 1 and Level 2 charging.

(C) User-selectable, without the use of a tool, to downgrade the amperage during charging:

1. For AC level 1 charging, selectable by the user to charge using 12 amps or 8 amps.

2. If the cord supports amperage above 24 amps for AC level 2 charging, selectable by the user to charge at 24 amps.

3. The user selection feature must either be integrated into the cord or in the vehicle itself (e.g.., via a charging configuration menu or setting in the vehicle).

(D) Tested and listed by a NRTL as meeting requirements for electric vehicle supply equipment in Underwriter Laboratory (UL) 2594, "Standard for Electric Vehicle Supply Equipment", December 2016, which is incorporated herein by reference.

ChargePoint agrees with CARB that "[i]ncreasing the ease of home charging is crucial in electrical vehicle uptake and retention" and that access to Level 2 charging at a driver's place of residence and other locations creates a superior driver experience compared to Level 1 charging. However, due to the increased electrical loads on the grid, conflicts with the National Electrical Code (NEC), a wide range of home electrical infrastructure capabilities, and a desire to integrate new EV load with renewables and demand response programs, ChargePoint is concerned that the proposed Subsection 1962.3 if not modified could do more harm than good.

Level 2 Charging is an Aftermarket Product

ChargePoint believes that automakers, new car dealers, charging providers, and local electrical contractors are in the best position to provide a wide range of charging solutions to meet needs of EV drivers. For their part, automakers and dealers are already providing charging cables as either standard or optional equipment. Use of these charging cables may vary by automaker, make, model, and consumer preference. Allowing EV drivers to match their preferences for charging with the appropriate solution given their unique electrical system should be the primary goal. Mandating a particular style of

charging cable to be sold as standard equipment with EVs does not allow for consideration of unique needs of particular EV drivers and does not allow sufficient flexibility to automakers to provide solutions based on use and user feedback. Level 2 charging in particular is better suited as an add-on or aftermarket product that can be tailored to the specific driver's needs.

Charging providers such as ChargePoint are also offering a variety of solutions to meet the needs of EV drivers. Leading charging providers have residential and multifamily charging options that are UL listed, ENERGY STAR certified, and have the ability to be managed to ensure charging benefits the electrical grid. Charging providers are also partnering with automakers to provide easy access to Level 2 charging options for purchasers of new vehicles.[2,3]

Finally, electrical contractors play an important role in ensuring charging takes place in accordance with the NEC and other best practices. While ChargePoint understands the desire to make charging easier for EV drivers, it is critical that CARB understand that each driver's electrical system will have different characteristics and ensuring that charging is done in accordance with the NEC and the manufacturer's guidelines is critical to ensuring that EVs are safely adopted at scale.

ChargePoint recommends that CARB modify its proposed requirement for automakers to provide a "charging cord capable of both Level 1 and Level 2 electrical charging" by removing the Level 2 requirement in 1962.3 (B) and 1962.3 (C). Focusing on providing access to 110-volt, Level 1 charging as standard equipment will be more cost effective for automakers and consumers. Additionally, automakers, new car dealers, charging providers, and electrical contractors will still be available to assist consumers with the correct Level 2 charger, if desired, to meet their needs and fit their unique electrical system.

Variable Amperage

While ChargePoint understands the desire to empower consumers to utilize, in a simple way, the electrical infrastructure at their place of residence, ChargePoint is concerned that the specifications of CARB's "charging cord" (or "convenience cord" as described in the Initial Statement of Reason) could put consumers, property, and vehicles at risk. Specifically, the user-selectable ability to adjust the amperage during (and presumably before) charging could be confusing to EV drivers unfamiliar with the electrical system at their place of residence or other location and appears to conflict with provisions of the NEC.

The Purpose and Rational states "by allowing the consumer to select a lower amperage for charging, the need to modify the home's electrical circuit to be compatible with the cord is virtually eliminated."[4] While the need to modify the home's electric circuit may be virtually eliminated, this statement assumes that an average consumer will have enough knowledge of their existing electrical system to choose the appropriate amperage for their situation. ChargePoint is concerned that the average consumer does not have the expertise to evaluate the electrical system at their home and choose the appropriate amperage for the charging cord. This problem would be more acute at multi-family residences or other locations where the driver may not have access to the electrical panel to determine the appropriate amperage for the circuit. If the EV driver were to select an improper amperage, damage could be done to the charging

[2] Toyota and ChargePoint Enhance EV Driving Experience with Home and Public Charging, accessed 5/31/2022.
[3] ChargePoint and Volvo Cars Team Up to Offer Charging Solutions for US and Canadian Drivers, accessed 5/31/2022
[4] Purpose and Rational, Appendix F-4, at 4.

cable, electrical infrastructure used by the charging cable, and possibly further upstream in the electrical system.

Subsection 1962.3 of the proposed regulations may also violate Article 625.42 of the National Electrical Code (2020).[5] Article 625.42 states (*emphasis added*):

> **Rating**. The power transfer equipment shall have sufficient rating to supply the load served. Electric vehicle charging loads shall be considered to be continuous loads for the purposes of this article. Service and feeder shall be sized in accordance with the product ratings. Where an automatic load management system is used, the maximum equipment load on a service and feeder shall be the maximum load permitted by the automatic load management system.
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> *Adjustable settings shall be permitted on fixed-in-place equipment only*. If adjustments have an impact on the rating label, those changes shall be in accordance with manufacturer's instructions, and the adjusted rating shall appear with sufficient durability to withstand the environment involved on the rating label. Electric vehicle supply equipment with restricted access to an ampere adjusting means shall be permitted to have ampere ratings that are equal to the adjusted current setting. Sizing the service and feeder to match the adjusting means shall be permitted. Restricted access shall prevent the user from gaining access to the adjusting means. *Restricted access shall be accomplished by at least one of the following:*
> *(1) A cover or door that requires the use of a tool to open*
> *(2) Locked doors accessible only to qualified personnel*
> *(3) Password protected commissioning software accessible only to qualified personnel*

The proposed charging cord in subsection 1962.3 of the proposal conflicts with two important aspects of the NEC. First, the NEC clearly states that "[a]djustable settings shall be permitted on fixed-in place equipment only." The specifications outlined in subsection 1962.3 are clearly for a mobile charging cord that would violate Article 625.42 of the NEC. Second, the NEC states that adjustable settings must have "restricted access" and "shall be accomplished by at least one of the following: (1) A cover or door that requires the use of a tool to open, (2) Locked door accessible only to qualified personnel, (3) Password protected commission software accessible only to qualified personnel. The specifications in Subsection 1962.3 of the Proposal stating that "the cord shall be configurable by the user, without the use of tools" is in direct conflict with the NEC."

ChargePoint recommends that CARB modify its proposed requirements by removing the user selectable, variable amperage requirements in 1962.3(C).

Grid Integration and Smart Charging

The current Proposal does not consider grid impacts of unmanaged charging through the use of a convenience cord. Electrifying the transportation sector has the opportunity to both clean the air and benefit the electrical grid, but only if charging is properly managed. To ensure the opportunity for vehicle electrification to be beneficial to the grid, best practices for electric vehicle charging (in particular for Level 2) are that charging equipment should be ENERGY STAR certified and be smart (have the ability to manage charging with consideration of local grid characteristics). Additionally, the grid value of managed charging is location specific and wall mounted Level 2 EV chargers, unlike vehicles, have a fixed location with respect to the grid. This makes wall mounted EV chargers the most

[5] National Electrical Code (NFPA 70), Current Edition (2020), accessed 5/31/2022

straightforward points to calculate the load relief achieved at the service, feeder, or local network level. Further, energy management organizations typically manage charging at each charger or at a site-level, not at a vehicle level, thus making it easier for them to participate in the program.

While charging equipment meeting these criteria may be more expensive, beyond what would likely make sense to offer as standard equipment, the benefits to the grid should be considered by CARB. ENERGY STAR certified Level 2 chargers use 40 percent less electricity while in standby mode.[6] As electric vehicles increase in popularity, ensuring that chargers use a minimal amount of electricity when they are in standby mode will benefit the grid and save consumers money. Additionally, ensuring that the charging can be managed will be important to California's utilities, grid operators, and all those receiving electric service.

ChargePoint reiterates its first recommendation that CARB modify its proposed requirement for automakers to provide a "charging cord capable of both Level 1 and Level 2 electrical charging" by removing the Level 2 requirement in 1962.3 (B) and 1962.3 (C).

Conclusion

ChargePoint thanks the Board and Staff for the opportunity to make these comments. In summary, ChargePoint recommends that:

- CARB modify its proposed requirement for automakers to provide a "charging cord capable of both Level 1 and Level 2 electrical charging" by removing the Level 2 requirement in 1962.3 (B) and 1962.3 (C) and,
- CARB modify its proposed requirements by removing the user selectable, variable amperage requirements in 1962.3(C).

Sincerely,

Justin Wilson
Director, Public Policy
ChargePoint, Inc.

[6] https://www.energystar.gov/products/other/ev_chargers