



January 15, 2024

California Air Resources Board
1001 I Street
Sacramento, CA 95814

Re: Comments on Advanced Clean Cars II Amendment Rulemaking

To Staff of the California Air Resources Board (“ARB” or the “Board”),

Thank you for the opportunity to submit comments on potential updates to the Advanced Clean Cars II (“ACC II”) regulations while the scope of the ACCII amendment rulemaking is established. We the undersigned organizations represent an array of auto manufacturers and charging providers with many different business models and a collective interest in the advancement of zero emission vehicles (ZEVs) in California.

We submit this letter to request that the Board review 13 CCR § 1962.3(c)(3) (the “Electric Vehicle Charging Requirements”) in this rulemaking. Among other charging requirements established for ZEVs, the Electric Vehicle Charging Requirements stipulate that, starting from the model year (MY) 2026, all ZEVs must be equipped with a “convenience cord,” a dual-amperage charging cord featuring user-selectable capabilities for both AC Level 1 and AC Level 2 charging.

Studies indicate that Level 2 charger access is one of the biggest contributors to satisfaction with EV ownership.¹ It is our understanding that the Board intends for the convenience cord requirement to deliver the benefits of home Level 2 charging for all drivers. While we agree with the Board’s intent, we find that the requirement for ZEVs starting MY 2026 to be sold with a convenience cord will not meaningfully improve Level

¹ JD Power, “Electric Vehicle Owners Have Higher Satisfaction with “Next Level” Home Chargers, J.D. Power Finds,” February 24, 2022, <https://www.jdpower.com/business/press-releases/2022-us-electric-vehicle-experience-evx-home-charging-study>

2 charging access for drivers and will culminate in broadly underutilized equipment, with the unintended consequence of applying upward price pressure on ZEVs.

Convenience cords do not alleviate the need for on-site electrical work.

Greater access to convenience cords is not sufficient to address the barrier of home charging access. For most drivers, using the Level 2 element of a convenience cord necessitates electrical modifications to their homes, which at a minimum, includes the installation of a 240-volt receptacle within cable reach of their parking space. Particularly for older homes and multi-family buildings, utilizing L2 equipment may require complex electrical work, such as service upgrades to support higher amperage, additional panel space, and running conduit. A study of multifamily units by the California Energy Commission determined that 93% of sites studied did not have sufficient panel capacity or breaker space for Level 2 and would require upgrades.² It is the electrical work required to make a parking space “Level 2 ready” that is prohibitively costly and serves as the primary barrier to widespread home charger access.

The problem of home electrical infrastructure is most acute for renters, residents of multi-family housing, and other Californians who do not have the ability to make electrical modifications to their residence. Cables with user-selectable amperage do not address this issue, as the ability to select lower current output is unhelpful when the cost of installing a Level 2 receptacle is the limiting factor, as it often is. For the same reason, the convenience cord requirement also fails to alleviate the challenge of charging access for drivers who lack consistent access to a receptacle due to their parking arrangement, such as for urban dwellers who park their vehicles on the street.

All else being equal, as ZEV adoption reaches renters and multi-family residents, the percentage of ZEVs charged at home is expected to decrease.³ For these drivers, workplace and public chargers will likely be the most accessible and affordable charging option, neither of which will be served by greater access to convenience cords. While we appreciate the spirit of improving access to Level 2 charging at home, the requirement for convenience cords to be sold with ZEVs is misguided because it will not meaningfully address the underlying infrastructure problem that inhibits home charger installation.

² California Energy Commission, “Overcoming Barriers to Electric Vehicle Charging at Multi-Unit Dwellings: A Westside Cities Case Study” at pg. 35, May 2021, <https://www.energy.ca.gov/sites/default/files/2021-05/CEC-600-2021-027.pdf>

³ National Renewable Energy Laboratory, “There’s No Place Like Home: Residential Parking, Electrical Access, and Implications for the Future of Electric Vehicle Charging Infrastructure,” at pg. 25, October 2021, <https://www.nrel.gov/docs/fy22osti/81065.pdf>

Convenience cords are likely to be broadly underutilized.

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 the needs of EV drivers. In our experience designing and delivering these solutions to customers, there are a variety of driver needs and preferences related to Level 2 charging equipment. This variability makes Level 2 charging equipment well-suited as an after-market or add-on product, where drivers may assess the trade-offs of price, function, and quality to select the right option for them, either while they purchase their vehicle or after the fact.

Allowing EV drivers to match their preferences for charging with the appropriate solution given their unique electrical system should be the primary goal to reduce total costs for drivers. There is no “one size fits all” for Level 2 equipment, and given drivers unique charging needs, convenience cords if provided standard with every ZEV, will go largely underutilized. Driver considerations when selecting their preferred equipment include:

- **Amperage.** Level 2 home charging equipment may deliver as much as 60 amps. Drivers with range anxiety, long commutes, or a desire to futureproof will opt to purchase charging equipment to maximize charging speed.
- **Wall-mounting and cable management.** Drivers may seek to purchase equipment with longer cables to reach their charge port based on their parking configuration or prefer equipment with built-in cable management systems to minimize cable wear-and-tear. These functions may be particularly valuable for homes with small garages, shared parking areas, and parking areas with space constraints.
- **Hardwiring.** Drivers who park their vehicles outdoors or in exposed areas may elect to install hardwired equipment because portable convenience cords are not fixed in place and therefore are an easy target for theft.
- **Plug type.** There are several receptacle types that can support Level 1 and 2 charging, most commonly NEMA 14-50 and NEMA 6-50. In the situation that a driver has existing access to such a receptacle, they would select equipment to match it. It would be impractical and highly costly for standard convenience cords to provide a cable to match every receptacle type to meet every possible combination. Drivers expect to purchase the equipment that matches their available receptacle.
- **Data monitoring, remote charge management, and vehicle-grid integration.** Drivers may purchase WiFi-enabled L2 chargers with advanced functionality to track home charging data, including cost, energy used, and distance traveled. Drivers may also use their charging equipment to schedule charging times, remotely override pre-set charging times, and remotely start or end sessions as needed, especially to respond to TOU rates or utility

programs that lower the cost of refueling an EV. Advanced vehicle-grid integration (VGI) strategies, such as dynamic load ramping, would generally not be possible on receptacles using basic cables.

With the growing number of public and shared private chargers deployed in California, many drivers will opt to utilize charging equipment provided by their workplace or apartment building, or at public chargers, rather than use their own equipment. Because convenience cords are likely to go unused by many EV drivers, the convenience cord requirement may have the unintended consequence of pushing vehicle costs up with no corresponding benefit. It is worth noting that in this scenario, a tremendous amount of electronic waste will be created by the unused cords.

On the other hand, giving drivers the option of purchasing a mobile charging cord at the point of sale will improve vehicle affordability, reduce waste, and increase customer choice. By providing equipment as an option to those who need and want it, the most cost-sensitive car buyers stand to benefit both by the reduction in vehicle prices and by opting not to purchase additional equipment and primarily leverage workplace or public charging.

Conclusion

We believe it is in the best interest of drivers, the industry, and California's ZEV adoption goals for automakers to have the option to offer convenience cords as an accessory, rather than a requirement, for vehicles MY 2026 and later. As the Board explores amendments to the ZEV Assurance Measures in this rulemaking, we respectfully urge reconsideration for whether the benefits of convenience cords will outweigh the costs.

Thank you for the opportunity to submit this comment. We appreciate Staff's commitment to engage with stakeholders, and we look forward to participating in constructive dialogue throughout the amendment process after the scope of this rulemaking is established.

Sincerely,

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