

**DOCKETED**

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**PIA Comments on Electric Vehicle Charging Infrastructure  
Reliability**

*Additional submitted attachment is included below.*



November 11, 2022

Mr. Dustin Shell  
Air Resources Engineer  
California Energy Commission  
1516 Ninth Street  
Sacramento, CA 95814  
Docket #: 22-EVI-04

**Re: Electric Vehicle Charging Infrastructure Reliability Standards**

Dear Mr. Schell,

Thank you for the opportunity to comment on the California Energy Commission's (CEC) October 2022 reliability workshop and the proposed requirements for electric vehicle (EV) charging infrastructure. As we represent the voice of the consumer, Plug In America considers consumer experience to be of the highest priority in setting standards for EV charging infrastructure. Charging reliability, or lack thereof, is one of the biggest barriers to EV adoption and must be improved in order to enable rapid mass EV uptake. We strongly recommend that the CEC set a standard that prioritizes the consumer and creates a reliable and convenient user experience.

Plug In America appreciates the CEC's attention to the National Electric Vehicle Infrastructure (NEVI) Formula Program minimum requirements that are still in development and plans to adjust CEC standards based on NEVI final requirements. Consistent standards will help achieve a reliable, accessible EV charging network in California and throughout the U.S.

We understand that AB 2061 requires the CEC to develop uptime recordkeeping and reporting standings applicable to chargers installed on or after Jan 1, 2024 that 'received from a state agency or through a charge on ratepayers' for a minimum of 6 years. Plug In America recommends that the target be to ensure chargers are operational for 10 years. Commercial DCFC equipment is expected to last 10 years and 10-year contracts for operations and maintenance are becoming the industry norm. There is a precedent on requiring 10-year warranties and CEC should incentivize 10-year warranties to cover the lifetime of the equipment. Ensuring successful operations for 10 years will help charging network operators and providers recoup the large investments made in the installation and initial operation of the chargers. It will also help ensure a consistent EV charging experience for EV drivers over a longer timeframe.

Plug In America finds the recordkeeping and reporting requirements to be well-crafted and functional. We especially appreciate the proposed requirement for recordkeeping on "failed

attempts to initiate charge by category” including charger/network outage, payment system failures by category (e.g., Internal Network Error, roaming/OCPI communication failure, external - credit card), and interoperability failures, including vehicle make and model when known. It’s essential that operators, owners and other stakeholders have visibility into the cause of charging failures in order to address them effectively and efficiently. Additionally, Plug In America supports requiring data collection on charger reliability and transparent reporting. This data can help diagnose and address failures with chargers and charging sessions.

We remain concerned about the cost of public charging especially for low- and moderate-income (LMI) consumers who lack access to convenient home charging. To help manage costs, we feel the aforementioned reporting and recordkeeping requirements are more than sufficient for DCFC equipment but we recommend a sample set of data collection for Level 2 equipment to help keep costs reasonable. If Level 2 reliability proves to have a similar level of reliability issues as DCFC then a more robust degree of reporting could be required. However, Level 2 EVSE with SAE J1772 connectors appear to have a better track record with interoperability between EV and EVSE and other reliability concerns.

To better understand the details of reliability issues we recommend that more than reporting is needed. Specifically we recommend additional workshops to explore the issues surrounding both data collection and reliability and to benchmark the experience in California with other countries. For example, we understand reliability is not a big issue in Japan, but would like to confirm this and, if true, understand why.<sup>1</sup> In addition, in our August comments to the Federal Highway Administration on the NEVI program, we suggested working groups to (1) better understand what type of data really needs to be reported, especially given our concerns about raising the price of charging, and (2) examine the issues surrounding charging connection standards to not only make sure EVs and EVSE and chargers can connect and operate together, but to also expand this topic to include and update other standards (e.g., cybersecurity, NIST handbooks, payment, reliability, etc.)

We believe these topics are interrelated. Further, because we believe interoperability of EVs and DCFC is a likely issue impacting charging station reliability, we recommend the CEC fund “Testathons” to help charging manufacturers, charging providers and EV manufacturers make sure that EVs, EVSEs, chargers, and charging network providers are interoperable and can actually work in practice. The number of possible combinations is daunting and we believe more action is needed to accelerate interoperability for DCFC. We believe it’s inappropriate to let industry slowly address this issue which appears to have occurred with Level 2 chargers and SAE J 1772 connectors.

Plug In America has always stressed the importance of charger and electric vehicle supply equipment (EVSE) reliability and uptime requirements as crucial to EV adoption and customer

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<sup>1</sup> See <https://www.regulations.gov/comment/FHWA-2022-0008-0362> on page 7 for mentions of 99 percent reliability in Japan and states the main reason for this is third-party certification. Also refer to: <https://www.arb.ca.gov/lists/com-attach/490-accii2022-UTxRNIQsBQIRZVnk.pdf>

satisfaction. We're concerned by recent studies (UC Berkeley)<sup>2</sup>, and in our conversations with experts such as the West Coast Clean Transit Corridor project that detail charger and EVSE failures and lack of reliability. Consumers have consistently raised this issue as a barrier to adoption and EV drivers continue to voice frustration with public charging infrastructure.<sup>3</sup>

We have not seen enough data to justify one uptime metric compared to another (e.g., measuring each charger or all chargers in plaza) or which factors should definitely be excluded. We can envision a later rulemaking that requires 99 percent uptime (or higher) for the entire plaza (or perhaps one requirement for the chargers and one for the EVSE). Our 2022 Consumer Survey Report highlights the prevalence of reliability issues experienced by drivers: "While EV owners intend to continue EV ownership, they voice frustration with public charging infrastructure, with the most common issues being "broken or nonfunctional chargers" or "too few charging locations."<sup>4</sup> We recommend requiring redundancy (multiple chargers per plaza) as a critical and a helpful safety net to improve overall location uptime; it does not solve every reliability issue but can go a long way towards improving customer experience and increasing EV adoption.

Additionally, Plug In America recommends that the CEC limit the exclusions for calculating uptime to downtime events related to the electrical grid, Wi-Fi connectivity, cellular connectivity, and vandalism, per the specific directive of AB 2061, and track total charger downtime. By limiting the exclusions and reporting total charger downtime, stakeholders will be able to ensure the data reflects real-world experience. Accurate data is fundamental to improving the charging experience for consumers.

Plug In America finds the maintenance requirements covered during the workshop—annual preventative maintenance, corrective maintenance within 5 days, and all maintenance to be done by manufacturer-certified technicians—to be on the right track. Plug In America supports the detailed requirements set out in the REACH and REV reliability agreement template<sup>5</sup>, particularly the "expectation for most repairs to be made 'within 48 hours of the initial notice' with exception for 'significant or complex issues.'"

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<sup>2</sup> In April 2022, University of California, Berkeley researchers published a study evaluating the functionality of public direct current fast charge (DCFC) charging stations in the Greater San Francisco Bay Area. Of the 657 electric vehicle supply equipment (EVSE) connectors evaluated by the study, 72.5% were found to be functional, or able to charge an EV for 2 minutes. This is much lower than the target uptime of 97%. Information on that study is as follows: Rempel, David and Cullen, Carleen and Bryan, Mary Matteson and Cezar, Gustavo Vianna, *Reliability of Open Public Electric Vehicle Direct Current Fast Chargers*. Available at SSRN: <https://ssrn.com/abstract=4077554>.

<sup>3</sup> 2022 Consumer Survey Report, Plug In America, <https://pluginamerica.org/about-us/electric-vehicle-survey/>.

<sup>4</sup> 2022 Consumer Survey Report, Plug In America, <https://pluginamerica.org/about-us/electric-vehicle-survey/>.

<sup>5</sup> Reliability Agreement Language Template for REV and REACH, CEC Workshop on EV Charging Infrastructure Reliability Standards, accompanying document. Available at:

<https://www.energy.ca.gov/event/workshop/2022-10/workshop-electric-vehicle-charging-infrastructure-reliability-standards>

Overall, we encourage the CEC to consider the recommendations included in the [comments](#) that Plug In America submitted on NEVI minimum requirements in August 2022.<sup>6</sup> These recommendations emphasize consumer experience and improving reliability.

Thank you one again for the opportunity to provide feedback and for your consideration of these comments. Please do not hesitate to reach out if you have any questions. We look forward to continuing to work with the CEC to achieve a reliable and accessible EV charging network.

Sincerely,

Joel Levin  
Executive Director, Plug In America

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<sup>6</sup> Plug In America comments on NEVI minimum requirements, submitted on Docket No. FHWA-2022-0008 via Federal Register on August 22, 2022. Available at: <https://www.regulations.gov/comment/FHWA-2022-0008-0299>.