2910-22-P

DEPARTMENT OF TRANSPORTATION

Federal Highway Administration

[Docket No. FHWA-2023-0054]

Request for Information on the J3400 Connector and Potential Options for Performance-Based Charging Standards

AGENCY: Federal Highway Administration (FHWA), U.S. Department of Transportation (DOT).

ACTION: Notice; request for information (RFI).

SUMMARY: The FHWA issued regulations establishing minimum standards and requirements for certain electric vehicle (EV) chargers. Subsequent to the publication of this final rule, the Society of Automotive Engineers (SAE) published a Technical Information Report for a new connector standard, known as J3400, which multiple automakers have announced an intention to adopt in the coming years. To ensure the effective implementation of programs that are subject to the minimum standards and requirements and to inform a potential update to the minimum standards, FHWA, in coordination with the Joint Office of Energy and Transportation, is seeking additional information in five areas: on the expectations surrounding market availability for J3400 within EVs and EV chargers; on the technical compatibility of J3400 with existing regulations and safety considerations; on considerations regarding challenges and benefits of the implementation of J3400 at charging stations; on market demands for the continued availability of Combined Charging System (CCS) and J1772 connectors; and potential options for performance-based standards that can reduce the need for future regulatory updates or changes as technology evolves.

DATES: Comments must be received on or before [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE **FEDERAL REGISTER**]. Late-filed comments

will be considered to the extent practicable.

ADDRESSES: To ensure that you do not duplicate your docket submissions, please submit comments by only one of the following means:

- *Federal eRulemaking Portal:* Go to www.regulations.gov and follow the online instructions for submitting comments;
- *Mail*: Docket Management Facility, U.S. Department of Transportation, 1200 New Jersey Avenue SE., West Building Ground Floor, Room W12-140, Washington, DC 20590;
- *Hand Delivery*: West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590, between 9 a.m. and 5 p.m. E.T., Monday through Friday, except Federal holidays. The telephone number is (202) 366-9329;
- *Instructions*: You must include the agency name and docket number at the beginning of your comments. Except as described below under the heading "Confidential Business Information," all submissions received, including any personal information provided, will be posted without change or alteration to www.regulations.gov. For more information, you may review the U.S. Department of Transportation's complete Privacy Act Statement published in the Federal Register on April 11, 2000 (65 FR 19477).

FOR FURTHER INFORMATION CONTACT: For questions about this notice, please contact Ms. Suraiya Motsinger, FHWA Office of Natural Environment, (202) 366-4287, or via email at suraiya.motsinger@dot.gov. For legal questions, please contact Ms. Dawn Horan, FHWA Office of the Chief Counsel, (202) 366-9615, or via email at Dawn.M.Horan@dot.gov. Office hours for FHWA are from 8 a.m. to 4:30 p.m., E.T., Monday through Friday, except Federal holidays.

SUPPLEMENTARY INFORMATION:

Electronic Access and Filing

A copy of this notice, all comments received on this notice, and all background material may be viewed online at www.regulations.gov using the docket number listed above. Electronic retrieval assistance and guidelines are also available at www.regulations.gov. An electronic copy of this document also may be downloaded from the Office of the Federal Register's Website at: www.FederalRegister.gov and the U.S. Government Publishing Office's Website at: www.GovInfo.gov.

Confidential Business Information

Confidential Business Information (CBI) is commercial or financial information that is both customarily and actually treated as private by its owner. Under the Freedom of Information Act (FOIA) (5 U.S.C. 552), CBI is exempt from public disclosure. If your comments responsive to this notice contain commercial or financial information that is customarily treated as private, that you actually treat as private, and that is relevant or responsive to this notice, it is important that you clearly designate the submitted comments as CBI.

You may ask FHWA to give confidential treatment to information you give to the Agency by taking the following steps: (1) Mark each page of the original document submission containing CBI as "Confidential"; (2) send FHWA, along with the original document, a second copy of the original document with the CBI deleted; and (3) explain why the information you are submitting is CBI. The FHWA will protect confidential information complying with these requirements to the extent required under applicable law. Information collected in this RFI may also be shared with the Joint Office of Energy and Transportation and Department of Energy (DOE) consistent with Congressional direction that the minimum standards and requirements for EV chargers be developed in coordination with DOE. The Joint Office of Energy and Transportation will protect any such shared information in accordance with applicable DOE standards. If DOT receives

a FOIA request for the information that the applicant has marked in accordance with this notice, DOT will follow the procedures described in its FOIA regulations at 49 CFR 7.29. Only information that is marked in accordance with this notice and ultimately determined to be exempt from disclosure under FOIA and 49 CFR 7.29 will not be released to a requester or placed in the public docket of this notice. Submissions containing CBI should be sent to: Ms. Suraiya Motsinger, FHWA, 1200 New Jersey Avenue SE., HICP-20, Washington, DC 20590 via mail, or suraiya.motsinger@dot.gov via email. Any comment submissions that FHWA receives that are not specifically designated as CBI will be placed in the public docket for this matter.

Background

On February 28, 2023, FHWA published a final rule[1] establishing minimum standards and requirements for projects funded under the National Electric Vehicle Infrastructure (NEVI) Formula Program and projects for the construction of publicly accessible electric vehicle (EV) chargers that are funded with funds made available under Title 23, United States Code, including any EV charging infrastructure project funded with Federal funds that is treated as a project on a Federal-aid highway. As outlined in statute, the purpose of the NEVI Formula Program is to "provide funding to States to strategically deploy EV charging infrastructure and to establish an interconnected network to facilitate data collection, access, and reliability." This purpose is satisfied by creating a convenient, affordable, reliable, and equitable network of chargers throughout the country. Prior to the establishment of this rule, there were no national standards for the installation, operation, or maintenance of EV charging stations, and wide disparities exist among EV charging stations. The final rule enables States or other designated

[1]On November 15, 2021, the Bipartisan Infrastructure Law (BIL) was enacted as the Infrastructure Investment and Jobs Act (IIJA), Public Law 117-58. To ensure standardization for a nationwide network of EV chargers, the BIL mandated the creation of a set of minimum standards and requirements for electric vehicle chargers which were finalized under 23 CFR 680 by FHWA on February 28, 2023, at 88 FR 12724.

recipients to implement federally funded charging station projects in a standardized fashion in order to build a convenient, accessible, reliable, and equitable charging network across the country that can be utilized by all EVs regardless of vehicle brand. Such standards provide reliable expectations for travel in an EV across and throughout the United States.

As part of this rule, FHWA regulates the connector type used on EV chargers through 23 CFR 680.106(c) which states, "All charging connectors must meet applicable industry standards. Each Direct Current Fast Charger (DCFC) charging port must be capable of charging any Combined Charging System (CCS) -compliant vehicle and each DCFC charging port must have at least one permanently attached CCS Type 1 connector. In addition, permanently attached CHAdeMO (www.chademo.com) connectors can be provided using only FY2022 NEVI Funds. Each Alternating Current (AC) Level 2 charging port must have a permanently attached J1772 connector and must charge any J1772-compliant vehicle." The final rule allows permanently attached non-proprietary connectors to be provided on each charging port so long as each DCFC charging port has at least one permanently attached CCS Type 1 connector and is capable of charging a CCS-compliant vehicle.

Subsequent to the publication of 23 CFR part 680, the Society of Automotive Engineers (SAE) published a Technical Information Report (TIR)[2] in December 2023 which provided information on the J3400 EV charging connector standard (also known as the North American Charging Standard Electric Vehicle Coupler). J3400 utilizes the same connector and pins for AC and DC charging; the publication of a new connector standard has implications for both vehicles and chargers. To date, J3400 has only been utilized in a proprietary implementation by one auto manufacturer and its charging network. However, several additional auto manufacturers have announced an intention to

[2] https://www.sae.org/news/2023/12/sae-j3400-tir-released

adopt J3400 with full vehicular integration beginning in 2025, and through adapters as early as 2024. Multiple charging equipment manufacturers have also publicly committed to adopting the J3400 connector on chargers. The FHWA, in coordination with the Joint Office of Energy and Transportation, seeks information to better understand how the introduction and adoption of J3400 will impact the EV charging industry, automakers, and EV charging consumers and to inform potential updates to the minimum standards.

To ensure FHWA has the most comprehensive and current information available, FHWA is specifically seeking detailed comments on the expectations surrounding market availability for J3400 within EVs and EV chargers, on the technical compatibility of J3400 with existing regulations, on considerations regarding challenges and benefits of the implementation of J3400 at charging stations, on market demands for the continued availability of CCS and J1772 connectors, and on potential options for performance-based standards that can reduce the need for future regulatory updates or changes as technology evolves. The FHWA is also interested in obtaining more information on the impact of the publication of the J3400 TIR in order to assess how the minimum standards and requirements for EV charging can address the evolving needs of EV charging consumers and industry.

The FHWA additionally requests information on what performance-based standards would best facilitate competition and innovation in EV markets, consistent with the Office of Information and Regulatory Affairs "Guidance on Accounting for Competition Effects When Developing and Analyzing Regulatory Actions."[3] The term "performance-based standards" in this context refers to standards that specify a level of service and types of vehicles a charger must support without specifying specific connectors.

Request for Comments and Information

[3] https://www.whitehouse.gov/wp-content/uploads/2023/10/RegulatoryCompetitionGuidance.pdf

To ensure the effective implementation of programs that are subject to the minimum standards and requirements, FHWA requests information from the public, auto manufacturers, charger manufacturers, and others involved with or impacted by EV charging regarding the impact of the publication of the J3400 TIR. The FHWA is seeking additional information in five areas: (1) on the expectations surrounding market availability for J3400 within EVs and EV chargers, (2) on the technical compatibility of J3400 with existing regulations and safety considerations, (3) on considerations regarding challenges and benefits of the implementation of J3400 at charging stations, (4) on market demands for the continued availability of CCS and J1772 connectors, and (5) on options for performance-based standards.

1. Market Availability
    a. What is the expected commercial availability and timeframe of J3400 EVSE products such as connector and cable assemblies, EV chargers, and adapters? Please be as specific (to month/year, anticipated volumes) as possible.
    b. What safety standards will J3400 EVSE products need to be certified to and when will that certification occur? Are there any concerns with obtaining appropriate electrical and mechanical safety certifications for the J3400 connector?
    c. What is the commercial availability and timeframe of vehicles with (i) J3400 inlets, and (ii) 800V system architecture? Please be as specific (to month/year, anticipated volumes) as possible.
    d. Will future 800V vehicles be backwards compatible with 400V charging stations? If yes, for how long?
    e. What, if any, opportunities do you see to commercial availability and use of J3400 connectors and chargers?

f. What, if any, barriers do you see to commercial availability and use of J3400 connectors and chargers?

g. Is there existing domestic manufacturing capacity to meet anticipated demand for J3400 connectors and chargers? If not, when do you expect this capacity to be available? How many companies have capability to ramp up production of J3400 ports, connectors, and/or adapters?

h. How might the ownership and exercise of intellectual property rights impact the development of J3400 EVSE products?

2. Technical Compatibility with 23 CFR part 680

a. Do you foresee any challenges with J3400 specifically meeting the power delivery requirements in 23 CFR 680.106(d)? Please elaborate on these challenges with specific examples, data, etc.

b. Do you foresee any challenges with J3400 specifically meeting the interoperability requirements in 23 CFR 680.108? Are there any challenges with J3400 meeting other aspects of interoperability, including compatibility, safety, and performance of connectors/inlets/adapters, communications or security protocols, or support of vehicles designed to charge using CCS/J1772 connectors? Please elaborate on these challenges with specific examples, data, etc.

c. Do you foresee any other challenges with J3400 meeting other existing requirements in 23 CFR part 680? Please elaborate on these challenges with specific examples, data, etc.

d. Have any issues been identified or foreseen using a combined connector that accommodates both CCS Type 1 and J3400 connectors with one cable (as an example, combined connector designs such as Tesla's Magic

Dock)? Is there a difference in performance or durability between the use of a combined cable with multiple connectors and the use of two separate cables (each with their own connector)? Please comment specifically about power level and reliability.

3. Implementation Challenges and Benefits at Charging Stations
    a. Is there a need to include J3400 connectors on all federally-funded chargers? Is there a difference between the use of J3400 connectors for DCFC or AC Level 2 charging?
    b. Is it practical to retrofit an existing DCFC with a J3400 or other connector either in addition or as a replacement to an existing connector? What is the cost of installation to retrofit an existing charger with a J3400 or other connector in addition or as a replacement to an existing connector? Would retrofitted or added J3400 connectors on DCFC ports suffer from performance loss relative to natively installed CCS connectors? Are there other challenges with retrofitting an existing charger? If so, please describe challenges.
    c. What is the cost of a DCFC with a CCS Type 1 connector? What is the anticipated cost of a DCFC with a J3400 connector? What is the anticipated cost of a charger that provides both CCS Type 1 and J3400 at each port? Are there differences in maintenance considerations between these different types of DCFCs?
    d. What is the cost of an AC Level 2 charger with a J1772 connector? What is the anticipated cost of an AC Level 2 charger with a J3400 connector? What is the anticipated cost of a charger that provides both J1772 and J3400? Are there differences in maintenance considerations between these different types of AC Level 2 chargers?

e. What, if any, equity-related challenges or benefits may result from use of J3400 connectors? What are the benefits or challenges for persons with disabilities between using J3400 and CCS/J1772 connectors? What strategies could increase those benefits or mitigate the challenges? If each charging station has a specified number of each type of connector (J3400 and CCS Type 1/J1772), should accessible spots be required to have both connectors?

f. What are workforce needs associated with retrofitting or installing chargers to be J3400 compatible and maintaining those chargers once installed? Will existing training and certification programs need to be updated or amended to cover J3400 installation, operations, and maintenance?

g. Are there any compatibility, reliability, or safety concerns about charging vehicles that are designed to charge using CCS/J1772 connectors at new J3400 AC level 2 chargers or at J3400 DCFCs with an adapter?

h. What are the challenges, if any, in ensuring that J3400 will utilize ISO15118 cyber physical security protections such as TLS authorization and authentication?

4. Market Demands for the Continued Availability of CCS, J1772, and J3400 Connectors

a. Over time, what will be the expected continued demand for CCS/J1772 connectors?

b. Over time, what will be the expected market adoption of J3400 in new vehicle models? Please be specific in regard to the anticipated percentage of J3400 and CCS/J1772 vehicles by model year.

c. Over time, what will be the expected demand for J3400 connectors? Are new connector types (other than CCS, J1772, and J3400) likely to enter the market?

d. What is the anticipated useful life of the CCS, J1772, and J3400 connectors and cables that are currently in use (or that will be installed in the near future)?

e. What is the expected impact of the TIR to the market for vehicle models that were manufactured to utilize CCS/J1772 connectors?

5. Performance-based standards[4]

a. If there is a need to include J3400 connectors on chargers, what are the advantages and disadvantages of the following design-based approaches?

Approach 1: Include both J3400 and CCS Type 1/J1772 connectors on each port.

Approach 2: Include a specified number of each type of connector (J3400 and CCS Type 1/J1772) at each charging station.

Under Approach 2, what is the optimal ratio of J3400 connectors to CCS/J1772 connectors? Why?

If there is not a need to include J3400 connectors on chargers, what are the advantages and disadvantages of the following design-based approaches to including J3400, CCS/J1772, or other connectors alongside cables?

Approach 1: Provide at least one adapter for J3400 connectors at each charging station.

Approach 2: Customers must provide their own adapters for use.

[4] As noted above, the term "performance-based standards" in this context refers to standards that specify a level of service and types of vehicles a charger must support without specifying specific connectors.

Are there alternative design-based approaches to accommodate J3400 and CCS/J1772 equipped vehicles?

b. Are there performance-based alternatives to specifying charging standards and communication standards (such as J3400, J1772, or ISO 15118) by reference that would support a convenient, affordable, reliable, and equitable EV charging network while reducing the need for future refinement to federal regulations?

c. Which performance-based alternative (i.e., standards that specify a level of service and types of vehicles a charger must support without specifying specific connectors) would best facilitate competition and innovation in EV markets? Which performance-based alternatives have the potential to harm competition, create consumer lock in, or otherwise erect or increase entry barriers?

d. Should performance-based standards include requirements for achieving Key Performance Indicators most important to EV customers? If so, what should those Key Performance Indicators be?

6. Other Considerations

a. Is there anything additionally that should be considered related to EV charging connector standards and technologies that is not covered in the above questions?

b. Are there any supply chain issues for EVs and EVSEs related to support for 800V architectures?

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