April 5, 2024

Federal Highway Administration
United States Department of Transportation
1200 New Jersey Ave. SE
Washington, DC 20590

RE: Docket No. FHWA-2023-0054
Request for Information on the J3400 Connector and Potential Options for Performance-Based Charging Standards
Submitted via Rulemaking Portal: http://www.regulations.gov.

On behalf of CALSTART, the Electric Vehicle Charging Association (EVCA), and the Zero Emission Transportation Association (ZETA), we thank the Federal Highway Administration (FHWA) for the opportunity to respond to its Request for Information on the North American Charging Standard (NACS) J3400 Connector and Potential Options for Performance-Based Charging Standards.[1] It is important to ensure that the minimum standards for EV charging infrastructure under the National Electric Vehicle Infrastructure (NEVI) Program and other FHWA funding programs, including the Charging and Fueling Infrastructure Program, complement current market trends and support the rapidly evolving EV landscape. Minimum standards should let charging providers decide how to adequately serve current and future EV drivers to meet their charging needs.

Given the proliferation of announcements from automotive original equipment manufacturers (OEMs) in recent months,[2] vehicles with J3400 connectors are likely to eventually make up a majority of the domestic EV fleet. However, there remains considerable short-term uncertainty about the speed and scale of the transition, as well as the implications for current CCS and J1772-compatible vehicle owners. *In response, we urge any changes to the NEVI minimum standards by FHWA prioritize three key principles: flexibility, fairness, and future-proofing.*

These themes have guided the development of these consensus-based comments with the goal of maximizing the value of the NEVI program to facilitate EVSE buildout, increase EV adoption, reduce manufacturing costs, and provide all EV drivers with reliable charging. As discussed further below, we recommend FHWA amend the minimum EV charging connector standards for

[1] 89 FR 16081 (March 6, 2024)
[2] https://www.caranddriver.com/news/a44388939/tesla-nacs-charging-network-compatibility/

the NEVI Program to more closely align with the technology-neutral requirements listed in the Infrastructure Investment and Jobs Act (IIJA) (P.L. 117-58).

1. Market Availability

We have encouraged our members to respond to these questions in their individual capacity.

2. Technical Compatibility With 23 CFR Part 680

We have encouraged our members to respond to these questions in their individual capacity.

3. Implementation Challenges and Benefits at Charging Stations

We have encouraged our members to respond to these questions in their individual capacity.

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

We have encouraged our members to respond to these questions in their individual capacity.

5. Performance-Based Standards

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

<u>Connector approaches</u>

We strongly recommend against Approach 1 to require both J3400 and CCS/J1772 connectors on each port because it would increase costs and delay the timeline for deployment of NEVI-funded chargers. Manufacturers would be required to redesign significant aspects of their products, supply chains, and manufacturing processes, incurring significant product engineering and

capital costs, slowing NEVI-compliant product availability, and ultimately delaying the deployment of NEVI-compliant chargers. Additionally, manufacturers have dutifully modified and developed charging products in direct response to the NEVI minimum standards. These products must now be deployed to recoup the costs of developing, manufacturing, and marketing those NEVI-compliant products.

Changing the minimum standards to require an additional connector per port would have significant financial impacts on the emerging domestic manufacturing base for NEVI-compliant chargers. It would unfairly penalize the companies that already invested to bring their products into NEVI compliance. Ultimately, a change in the minimum standards to require an additional connector per port would cause significant delays in the construction of NEVI-funded projects, delaying the impact of taxpayer money and the domestic transition to electric vehicles. In addition, adopting Approach 1 effectively means FHWA and state DOTs are preferencing one hardware design over others. At this still nascent stage of the charging industry, it is more appropriate for FHWA to establish design-neutral standards and enable the industry to innovate and compete on performance and reliability. We expand on this in our response to question 5b) below.

We also strongly recommend against FHWA requiring a specific ratio of connector types at each charging station. We anticipate both CCS/J1772 and J3400 connectors will continue to be deployed by industry to serve the needs of users at an individual station and it remains unclear what the exact pace of the transition to J3400 will be. Creating a one-size-fits-all solution to a problem that spans 50 states and multiple years of construction in a rapidly changing market would likely create inefficiencies in EVSE infrastructure buildout.

For example, if the pace of J3400 vehicle deployment is slower than expected, requiring a ratio of 50/50 might lead to many underutilized connectors and too few CCS/J1772 charging ports to meet demand. Conversely, if the pace of deployment of J3400 vehicles is faster than expected, then there may be too few J3400 ports to meet demand. There may be instances where multiple connector types are appropriate at an individual station, however, the ratio of different connectors needed to serve the market can vary widely depending on the vehicles sold or available in each region. Charging owners and operators have a sophisticated, "ground-up" understanding of the drivers they serve and we believe they are best able to determine what the mix of connectors should be to serve their customer base. As the appropriate ratio of connectors in a given market or region is poised to evolve more rapidly than FHWA has the ability to update their regulation, we therefore recommend FHWA preserve flexibility by not mandating multiple connector types at each site.

Lastly, we encourage FHWA to preempt state agencies from requiring more than one connector per port. This will provide EVSE manufacturers and owner/operators the regulatory certainty required to optimize their manufacturing and installation capacity to best serve the needs of EV drivers across the country, without having to redesign their products, supply chains, and

manufacturing processes to win NEVI awards in certain states. Importantly, this could significantly disadvantage smaller states that deviate from the FHWA minimum standards, as EVSE manufacturers are less likely to modify or create new products specifically designed for smaller markets.

Adapter approaches

We acknowledge that adapters between J3400 and CCS/J1772 and vice versa may be useful and can smooth the transition toward a universal connector standard. However, adapters are intended only as a bridge between two standards and should not be required permanently on new chargers. Requiring an adapter on NEVI-funded chargers would require EVSE manufacturers to delay full manufacturing transitions to J3400 because they would also have to simultaneously develop an adapter solution, increasing the unit cost of each charger sold as well as creating a disconnect between NEVI-funded and privately funded charging stations. Many vehicle OEMs will also provide their customers with adapter solutions, as Ford and Rivian have already indicated.[3,4] Therefore, we recommend against FHWA requiring adapters in any form and encourage FHWA to similarly preempt states from requiring adapters for chargers funded under NEVI program; rather, we strongly urge FHWA to consider the performance-based approaches outlined in our response to question 5b).

Adapter safety concerns

Since J3400 standards first need to be finalized prior to the finalization of standards for CCS/J1772 (vehicle) to J3400 (charger) non-permanently attached adapters, the Joint Office of Energy and Transportation expects certified adapters to become accessible on the market by late 2024.[5] To ensure a safe charging experience for the customer, we highlight the need for any non-OEM-provided adapters to be fully compliant with the latest Underwriters Laboratories (UL) certification standards. We recommend FHWA work across federal agencies to ensure third-party aftermarket adapters meet applicable industry safety standards.

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?

The manufacturers of almost all future domestic EV models have announced J3400 adoption in recent months, making clear that it is the standard of the future.[6] However, several questions remain over the pace and nature of this transition. EVSE manufacturers also face their own

[3] https://electrek.co/2024/02/29/ford-tesla-supercharger-adapter-now-available/
[4] https://www.theverge.com/2024/3/18/24104786/rivian-tesla-supercharger-access-adapter-free-r1t-r1s
[5] https://driveelectric.gov/charging-connector
[6] *Id.* at Footnote 2.

supply chain constraints due to post-pandemic challenges and with the upcoming expiration of the FHWA temporary Buy America waiver for EVSE.[7]

In light of these considerations, we urge FHWA to revert to the technology-neutral requirements articulated in the IIJA. FHWA should ensure that the minimum standards for EVSE under NEVI and other funding programs both complement and support current and rapidly evolving EV market trends. The IIJA requires the NEVI Program to deploy "non-proprietary charging connectors that meet applicable industry safety standards," that are "open to the general public or to authorized commercial motor vehicle operators from more than one company."[8] We urge FHWA to adopt this technology-neutral approach in NEVI's implementing regulations on connector types thereby providing the flexibility needed to ensure available NEVI ports meet driver expectations and needs.

The minimum NEVI standards already include many other performance and design-based requirements for uptime, communications protocols, and other key elements that will support a convenient, affordable, reliable, and equitable charging network. As such, we recommend the following language to revise the connector type requirements at 23 CFR Part 680.106(c):

> (c) *Connector type.* All charging connectors must meet applicable industry standards**, including conforming to standards from the Society of Automotive Engineers and should be certified to the appropriate Underwriters Laboratories (UL) standard.** Each DCFC **and AC Level 2** charging port **must be non-proprietary and capable of serving more than one vehicle type**~~. capable of charging any 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 AC Level 2 charging port must have a permanently attached J1772 connector and must charge any J1772-compliant vehicle.~~ **States or other direct recipients shall not require more than one connector per port, or require a permanently attached adapter, for any unobligated funds. For DCFC, connectors may include CCS1 or NACS J3400. For AC Level 2, connectors may include J1772 or NACS J3400.**

As recommended above, the minimum standards should not permit states to require multiple connectors or adapter solutions per port for remaining unobligated funds. Much of the industry is moving to a native cable design instead of an adapter solution because of improved performance, reliability, and customer experience. Multiple connector and adapter solutions required by states can increase cost and reduce uptime by adding additional points of failure to a charger.

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

[7] 88 FR 10619 (February 21, 2023)
[8] Infrastructure Investment and Jobs Act (IIJA) Public Law 117-58 Section 11129; 49 CFR 1.81.

potential to harm competition, create consumer lock in, or otherwise erect or increase entry barriers?

As explained in our response to question 5b), we strongly recommend aligning FHWA requirements with the statutory language in the IIJA, which requires that NEVI funds be used to deploy "non-proprietary charging connectors that meet applicable industry safety standards" and that are "open to the general public or to authorized commercial motor vehicle operators from more than one company."

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?

As previously discussed, the minimum NEVI standards already include many other performance and design-based requirements for uptime, communications protocols, and other key elements that will support a convenient, affordable, reliable, and equitable charging network.

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?

<u>Retrofittable charger requirements</u>

As the EV market transitions towards J3400 connectors, CCS/J1772 connectors will likely continue to be necessary in the short term to serve existing EV drivers and federal and state policies should ensure that the NEVI program does not create underutilized EVSE assets. Fortunately, CCS/J1772 chargers can be designed to be retrofittable, to change cables and connectors from CCS/J1772 to J3400 or vice versa. In addition to cable and connector swaps, these retrofits also include communication and backend updates and some additional hardware changes to account for differences between the CCS/J1772 and J3400 standards. However, these changes are entirely feasible and will enable greater flexibility for operators to change their connectors over time to meet evolving market demands.

FHWA, or individual states, should consider a potential future requirement that CCS/J1772 charging units installed through the NEVI program be retrofittable by design, allowing EVSE stock to adjust efficiently to changing EV fleet connector ratios and adoption of personal adapters. In the development of such a requirement, we encourage FHWA or relevant states to consult with industry when developing an implementation timeline to allow EVSE manufacturers and owner/operators enough time to redesign and implement new manufacturing processes. This would help ensure that the finalized retrofittable CCS/J1772 chargers are fully safety-compliant without reliability issues that could impact uptime.

<u>Future-proofing for high-voltage infrastructure</u>

We encourage FHWA to consider future market demand for and availability of high-powered EVSE infrastructure and to consider updating relevant requirements in ways that allow for future flexibility should the market move in that direction. Additionally, for medium and heavy-duty (MHD) EV charging infrastructure, the proposed minimum standards may not be applicable. FHWA should separately evaluate best practices, including connector types for MHD applications.

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

We have encouraged our members to respond to this question in their individual capacity.

Conclusion

We thank the FHWA for the opportunity to respond to this Request for Information. It is important to ensure that the minimum standards included for EV charging infrastructure under the NEVI program and other federal funding programs are complementary to current market trends and support the rapidly evolving EV landscape while prioritizing flexibility, fairness, and future-proofing. Most importantly, the minimum standards should let charging providers decide how to adequately serve current and future EV drivers.

We appreciate FHWA's attention to these comments and are available should you have any additional questions.

Sincerely,

Trisha DelloIacono
Head of Policy
CALSTART

Reed Addis
Governmental Affairs
Electric Vehicle Charging Association (EVCA)

Albert Gore
Executive Director
Zero Emission Transportation Association (ZETA)