

DEPARTMENT OF TRANSPORTATION

[4910-22-P]

Federal Highway Administration

23 CFR Part 680

[Docket No. FHWA-2022-0008]

RIN 2125-AG10

National Electric Vehicle Infrastructure Formula Program

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

ACTION: Notice of proposed rulemaking (NPRM); request for comments.

SUMMARY: The FHWA proposes to establish regulations setting 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 funded under title 23, United States Code. The standards and requirements proposed would apply to the installation, operation, or maintenance of EV charging infrastructure; the interoperability of EV charging infrastructure; traffic control device or on-premises signage acquired, installed, or operated in concert with EV charging infrastructure; data, including the format and schedule for the submission of such data; network connectivity of EV charging infrastructure; and information on publicly available EV charging infrastructure locations, pricing, real-time availability, and accessibility through mapping applications.

DATES: Comments must be received on or before [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

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 <https://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, Washington, D.C. 20590.
- Hand Delivery: U.S. Department of Transportation, Docket Operations, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue, SE, Washington, D.C. 20590, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The telephone number is (202) 366-9329.

All submissions should include the agency name and the docket number that appears in the heading of this document or the Regulation Identifier Number (RIN) for the rulemaking. All comments received will be posted without change to <https://www.regulations.gov>, including any personal information provided.

FOR FURTHER INFORMATION CONTACT: Mr. Gary Jensen, Office of Natural Environment, (202) 366-2048, or via e-mail at Gary.Jensen@dot.gov, or Ms. Dawn Horan, Office of the Chief Counsel (HCC-30), (202) 366-9615, or via e-mail at Dawn.M.Horan@dot.gov. Office hours are from 8:00 a.m. to 4:30 p.m., E.T., Monday through Friday, except Federal holidays.

SUPPLEMENTARY INFORMATION:

Electronic Access and Filing

This document and all comments received may be viewed online through the Federal eRulemaking portal at www.regulations.gov using the docket number listed above. Electronic retrieval help and guidelines are also available at www.regulations.gov. An electronic copy of this document may also be downloaded from the Office of the Federal Register's Website at www.FederalRegister.gov and the Government Publishing Office's Website at www.GovInfo.gov.

All comments received before the close of business on the comment closing date indicated above will be considered and will be available for examination in the docket at the above address. Comments received after the comment closing date will be filed in the docket and will be considered to the extent practicable. In addition to late comments, FHWA will also continue to file relevant information in the docket as it becomes available after the comment period closing date and interested persons should continue to examine the docket for new material. A final rule may be published at any time after close of the comment period and after FHWA has had the opportunity to review the comments submitted.

Executive Summary

The FHWA proposes to establish regulations that would set minimum standards and requirements for projects funded under the NEVI Formula Program and projects for the construction of publicly accessible EV chargers funded under title 23, United States

Code.¹ The FHWA is directed by Paragraph (2) under the Highway Infrastructure Program heading in title VIII of division J of the Bipartisan Infrastructure Law (BIL) (enacted as the Infrastructure Investment and Jobs Act) (Pub. L. 117-58) (Nov. 15, 2021) to create minimum standards and requirements for NEVI-funded projects. 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 would be satisfied by creating a convenient, affordable, reliable, and equitable network of chargers throughout the country. Currently, there are no national standards for the installation, operation, or maintenance of EV charging stations, and wide disparities exists among EV charging stations in key components, such as operational practices, payment methods, site organization, display of price to charge, speed and power of chargers, and information communicated about the availability and functioning of each charging station. The FHWA is directed by Section 11129 of BIL, which amends 23 U.S.C. 109, by adding a requirement that EV charging station standards apply to all projects that install EV charging infrastructure using funds provided under title 23, United States Code. This proposed rule does not conflict with or supersede other title 23, United States Code statutory requirements or their implementing regulations. This regulation would enable States to implement federally-funded charging station projects in a standardized

¹ Refer to “DOT Funding and Financing Programs with EV Eligibilities” chart on pages 10-11 in the NEVI Formula Program Guidance, found at:
https://www.fhwa.dot.gov/environment/alternative_fuel_corridors/nominations/90d_nevi_formula_program_guidance.pdf

fashion across a national EV charging network that can be utilized by all EVs regardless of vehicle brand. Such standards would provide consumers with reliable expectations for travel in an electric vehicle across and throughout the United States and support a national workforce skilled and trained in EVSE installation and maintenance.

The BIL specifically required that minimum standards and requirements be developed related to six areas:

(1) Installation, operation, and maintenance by qualified technicians of EV infrastructure.

The FHWA proposes to require general consistency with regard to the installation, operation, and maintenance and technician qualifications of the NEVI Formula Program projects and projects for the construction of publicly accessible EV chargers that are funded under title 23, United States Code. In terms of standards for the installation, operation, and maintenance of EVSE, charging stations would be required to contain a minimum number and type of chargers capable of supplying electrical charge through prescribed standard charging ports. This regulation would further specify the required minimum density of provided chargers, payment methods, and requirements for customer support services. In terms of technician qualifications, the guidance would provide minimum skill, training, and certification standards for technicians installing, operating, and maintaining EVSE to ensure consistency around quality installation and safety across the network. These proposed requirements would provide the traveling public with reliable expectations for their EV charging experience anywhere that NEVI

Formula funds or title 23, United States Code funds are used to construct EV charging infrastructure. In addition to proposed requirements that would be customer-facing, a series of additional proposed requirements would provide less visible, yet critical, standardization and uniformity for how charging stations would be installed, maintained, and operated. These types of proposed requirements would address topics such as the certification of charging equipment, security, long-term stewardship, the qualifications of technicians installing and maintaining charging stations, and the privacy of customer data conveyed. There is also proposed language to explain what the NEVI program income can be used for when there is net income from the sale, use, lease, or lease renewal of real property acquired with NEVI Formula Program funds, or when there is income or revenue earned from the operation of the EV charging station.

(2) Interoperability of EV charging infrastructure.

The proposed requirements relating to interoperability similarly address less visible standardization along the national EV charging network. The FHWA proposes a seamless national network of EV charging infrastructure that can communicate and operate on the same software platforms from one State to another. The FHWA proposes interoperability requirements for charger-to-EV communication to ensure that chargers are capable of the communication necessary to perform smart charge management and Plug and Charge.

(3) Traffic control devices and on-premise signs acquired, installed, or operated.

The FHWA proposes to address requirements about traffic control devices and on-premise signs by cross-referencing other existing requirements contained in the Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD) found at 23 CFR part 655 and the Highway Beautification regulation at 23 CFR part 750.

- (4) Data requested related to a project funded under the NEVI Formula Program, including the format and schedule for the submission of such data.

The FHWA proposes to outline quarterly and annual data submittal requirements that are applicable only to projects funded under the NEVI Formula Program. States would be required to submit quarterly data to identify charging station use, reliability maintenance, and installation cost information. On an annual basis, States would be required to submit identifying information about organizations operating, maintaining, or installing Electric Vehicle Supply Equipment (EVSE) along with information about any certifications of these entities through State or local business opportunity certification programs. Finally, States would be required to submit an annual report describing the community engagement activities conducted in accordance with their approved State EV Infrastructure Deployment Plans.

The proposed regulation would serve an important coordination role by standardizing submissions of large amounts of data from charging stations across the U.S. while providing the Joint Office with the data needed to create the public EV charging database outlined in BIL. The FHWA specifically requests comments on whether the

proposed data collection language creates an undue burden on the States with the amount and types of data to be collected and the frequency in which it is to be reported.

(5) Network connectivity of EV charging infrastructure.

The FHWA proposes to outline network connectivity requirements for charger-to-charger network communication, charging network-to-charging network communication, and charging network-to-grid communication. These proposed requirements address standards meant to allow for secure remote monitoring, diagnostics, control, and updates. The FHWA believes these proposed requirements would help address cybersecurity concerns while mitigating against stranded assets (whereby any provider abandons operations at any particular charging station). Proposed network connectivity requirements also would specifically require chargers to be capable of smart charge management and Plug and Charge capabilities by requiring the ability to communicate through Open Charge Point Protocol (OCPP) in tandem with ISO 15118.

(6) Information on publicly available EV charging infrastructure locations, pricing, real-time availability, and accessibility through mapping applications.

The FHWA proposes requirements to standardize the communication to consumers of price and availability of each charging station. Specifically outlined in the proposed regulation, States would be required to ensure that basic charging station information (such as location, connector type, and power level), real-time status, and real-time price to charge would be available free of charge to third-party software developers through application programming interface. The FHWA believes these requirements

would enable effective communication with consumers about available charging stations and help consumers make informed decisions about trip planning and when and where to charge their EVs. The FHWA also proposes requirements for public transparency when EV charging prices are to be set by a third party. The FHWA believes that this will protect the public from price gouging.

The proposed rule would apply to the 50 States, the District of Columbia, and Puerto Rico, consistent with the definition of the term “State” in 23 U.S.C. 101(a). These proposed regulations would apply to projects funded under the NEVI Formula Program and projects for the construction of publicly accessible EV chargers that are funded with funds made available under title 23, United States Code, with the prioritization of projects along Interstates during the first year in order to create a reliable national network of EV charging infrastructure for those travelling long distances or for multiple hours at a time.

The FHWA requests comment on the proposed approach summarized above and described in detail below to establish a set of minimum standards and requirements for NEVI Formula Program projects and projects for the construction of publicly accessible EV chargers that are funded under title 23, United States Code.

The FHWA requests comment on the consideration, options, and use of information to account for the analysis of the proposed rule, as described in detail in the “Preliminary Regulatory Impact Analysis (PRIA)” available in the docket. The PRIA supports this proposed regulation and estimates the costs and benefits associated with

establishing minimum standards and requirements, derived from the costs of implementing the proposed regulation for each provision of the rule. All of the topics for the minimum standards and requirements are required under Paragraph (2) under the Highway Infrastructure Program heading in title VIII of division J of BIL. To estimate these costs, the PRIA compares the costs and benefits of proposed provisions to the costs and benefits of the options States would likely choose for their own EVSE programs in the absence of the rule. In many cases, the analysis found that States would likely choose the same requirements that are found in the proposed rule.

Background

Creation of the NEVI Formula Program

The BIL included two new programs with a total of \$7.5 billion in dedicated funding to help make EV chargers and alternative fueling facilities accessible to all Americans for long-distance trips. As one of these two new programs, the NEVI Formula Program provides \$5 billion as the first major Federal funding program that focuses on a nationwide development of EV charging infrastructure. The FHWA has released program guidance for the NEVI Formula Program, available at https://www.fhwa.dot.gov/environment/alternative_fuel_corridors/nominations/90d_nevi_formula_program_guidance.pdf, as was required by BIL within 90 days of enactment.

This program guidance outlined funding features, information about required State EV Infrastructure Deployment Plans, project eligibility provisions, program administration, and technical assistance and tools. The program guidance also outlined potential topics

for these proposed minimum standards and requirements for projects implemented under the NEVI Formula Program.

EV Funding Options

Several additional DOT funding and finance programs are also available to plan for and build EV chargers; support workforce training for new technologies; and integrate EVs as part of strategies to address commuter, freight, and public transportation needs.

For more information see the *Federal Funding is Available for Electric Vehicle Charging Infrastructure on the National Highway System* released April 22, 2022.²

Statutory Authority for NEVI Formula Program Minimum Standards and Requirements

The BIL required FHWA to release a set of minimum standards and requirements for the implementation of the NEVI Formula Program:

Provided further, That not later than 180 days after the date of enactment of this Act, the Secretary of Transportation, in coordination with the Secretary of Energy and in consultation with relevant stakeholders, shall, as appropriate, develop minimum standards and requirements related to:

- (1) the installation, operation, or maintenance by qualified technicians of electric vehicle charging infrastructure under this paragraph in this Act;*
- (2) the interoperability of electric vehicle charging infrastructure under this paragraph in this Act;*

² [Federal Funding is Available For Electric Vehicle Charging Infrastructure on the National Highway System \(dot.gov\)](https://www.transportation.gov/funding/electric-vehicle-charging-infrastructure-national-highway-system-dot-gov)

- (3) any traffic control device or on-premises sign acquired, installed, or operated under this paragraph in this Act;
- (4) any data requested by the Secretary related to a project funded under this paragraph in this Act, including the format and schedule for the submission of such data;
- (5) network connectivity of electric vehicle charging infrastructure; and
- (6) information on publicly available electric vehicle charging infrastructure locations, pricing, real-time availability, and accessibility through mapping applications (Paragraph (2) under the Highway Infrastructure Program heading in title VIII of division J of the BIL).

This proposed regulation directly addresses the requirements in BIL. This proposed regulation also directly addresses the EV Charging Stations standards requirement added to 23 U.S.C. 109 by Section 11129 of BIL for projects using title 23, United States Code funds for EV charging infrastructure. Through the provision of minimum standards and requirements, the NEVI Formula Program would help set reliable expectations for the experience of EV charging across the nation. Nothing in this regulation is intended to be construed to prevent States from establishing more stringent EV charging infrastructure requirements towards building a convenient, affordable, reliable, and equitable national charging network.

The BIL required establishment of a Joint Office of Energy and Transportation (Joint Office)³ in the Department of Transportation and the Department of Energy to study, plan, coordinate, and implement issues of joint concern between the two Agencies. The DOT and DOE coordinated on both the NEVI Formula Program Guidance and development of the minimum standards and requirements found in this proposed rule.

Reasoning for NEVI Formula Proposed Regulations

There are no existing national standards for EV charging stations, although there may be some State standards that exist. For any given charging station, the charger manufacturer, charging network, charging network provider, charging station owner, charging station operator, and even the utility providing electricity, may all be different entities, all with different expectations for contracts, maintenance, operations, and customer response. Because EV charging is a relatively new technology, there is wide diversity in the market from small start-up companies to major multi-national corporations. This diversity of entities results in a variety of charging station operations, leaving consumers with a learning curve every time they encounter a new EV charging station. The consumer education required for each use of a new charging station, as well as unreliability of the charging station function and safety issues from the lack of standardized technician qualifications, exacerbates existing hurdles for the widespread adoption of EVs, including range anxiety and safety risks. Range anxiety is a concept whereby consumers fear that a vehicle has insufficient electrical charge to reach its

³ <https://www.driveelectric.gov>

destination or another charging station and would therefore strand the vehicle's occupants. This also includes the anxiety that chargers would not be available where and when needed. Furthermore, the lack of minimum standards for chargers reduces the reliability of a consistent charging experience (e.g., the charger meets their needs, is working and available, etc.) for consumers when they encounter a new charging station. Beyond standardizing consumer and industry expectations, the proposed regulation would outline minimum standards and requirements to ensure the appropriate use of Federal funds on a new technology and market, and greatly enhance consumer confidence and public safety.

Benefits to NEVI Formula Program Proposed Regulations

The FHWA believes that the establishment of this regulation would provide a powerful antidote to these issues, create energy independence, and encourage more widespread adoption of EVs because EV consumers would be more confident in the availability, safety, and consistency of EV charging stations.

Accordingly, by encouraging the adoption and expansion in use of EVs, title 23 investments in EV charging infrastructure have the potential to significantly address the transportation sector's outsized contributions to climate change. President Biden, American families, automakers, and autoworkers agree: the future of transportation is electric. The electric car future is cleaner, more equitable, more affordable, and an economic opportunity to support good-paying, union jobs across the installation and maintenance of the charging infrastructure as well as in American supply chains as

automakers continue investing in manufacturing clean vehicles and the batteries that power them.⁴ Currently, the transportation sector is both the largest source of U.S. carbon dioxide emissions,⁵ and is increasingly vulnerable because of the higher temperatures, more frequent and intense precipitation, and sea level rise associated with the changing climate. Much of existing transportation infrastructure was designed and constructed without consideration of these changes.

The Sixth Assessment Report by the Intergovernmental Panel on Climate Change (IPCC), released on August 7, 2021, confirms that human activities are increasing greenhouse gas concentrations that have warmed the atmosphere, ocean, and land at a rate that is unprecedented in at least the last 2000 years.⁶ According to the report, global mean sea level has increased between 1901 and 2018, and changes in extreme events such as heatwaves, heavy precipitation, hurricanes, wildfires, and droughts have intensified since the last assessment report in 2014.⁷ These changes in extreme events, along with anticipated future changes in these events due to climate change, threaten the reliability, safety and efficiency of the transportation system. At the same time,

⁴ White House Fact Sheet: The Biden-Harris Electric Vehicle Charging Action Plan (December 13, 2021), available at <https://www.whitehouse.gov/briefing-room/statements-releases/2021/12/13/fact-sheet-the-biden-harris-electric-vehicle-charging-action-plan/>

⁵ See EPA Inventory of U.S. Greenhouse Gas Emissions and Sinks, available at <https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2019>

⁶ See IPCC, 2021: Summary for Policymakers. In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, available at <https://www.ipcc.ch/report/ar6/wg1/#SPM>.

⁷ IPCC, 2021: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson-Delmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, and B. Zhou (eds.)]. Cambridge University Press. In Press.

transportation contributes significantly to the causes of climate change⁸ and each additional ton of CO₂ produced by the combustion of fossil fuels contributes to future warming and other climate impacts.

By encouraging widespread adoption of a zero-emissions transportation mode, the proposed regulation would supercharge America's efforts to lead the electric future and align with recent Executive Orders (E.O.) 13990, E.O. 14008, and a U.S. target of achieving a 50 to 52 percent reduction from 2005 levels of economy-wide net GHG pollution in 2030, on a course toward reaching net-zero emissions economy-wide by no later than 2050.⁹ Section 1 of E.O. 13990, "Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis," 86 FR 7037 (Jan. 25, 2021), articulates national policy objectives, including listening to the science, improving public health and protecting the environment, reducing GHG emissions, and strengthening resilience to the impacts of climate change. E.O. 14008, "Tackling the Climate Crisis at Home and Abroad," 86 FR 7619 (Feb. 1, 2021), recommits the United States to the Paris Agreement and calls on the United States to begin the process of

⁸ Jacobs, J.M., M. Culp, L. Cattaneo, P. Chinowsky, A. Choate, S. DesRoches, S. Douglass, and R. Miller, 2018: Transportation. In Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 479–511. doi: 10.7930/NCA4.2018.CH12.

⁹ White House Fact Sheet: The Biden-Harris Electric Vehicle Charging Action Plan (December 13, 2021), available at <https://www.whitehouse.gov/briefing-room/statements-releases/2021/12/13/fact-sheet-the-biden-harris-electric-vehicle-charging-action-plan/>; White House Fact Sheet: President Biden Sets 2030 Greenhouse Gas Pollution Reduction Target Aimed at Creating Good-Paying Union Jobs and Securing U.S. Leadership on Clean Energy Technologies (Apr. 22, 2021), available at <https://www.whitehouse.gov/briefing-room/statements-releases/2021/04/22/fact-sheet-president-biden-sets-2030-greenhouse-gas-pollution-reduction-target-aimed-at-creating-good-paying-union-jobs-and-securing-u-s-leadership-on-clean-energy-technologies/>; White House Fact Sheet: President Biden's Leaders Summit on Climate (Apr. 23, 2021), available at <https://www.whitehouse.gov/briefing-room/statements-releases/2021/04/23/fact-sheet-president-bidens-leaders-summit-on-climate/>.

developing its nationally determined contribution to global GHG reductions. 86 FR at 7620.

E.O. 14008 also calls for a Government-wide approach to the climate crisis and acknowledges opportunities to create well-paying, union jobs to build a modern, sustainable infrastructure, to provide an equitable, clean energy future, and to put the U.S. on a path to achieve net-zero emissions, economywide, no later than 2050. 86 FR at 7622. It also supports the principle set forth in section 213 of E.O. 14008 “to ensure that Federal infrastructure investment reduces climate pollution.” 86 FR at 7626. Reducing the barriers to charging infrastructure will enable the rapid expansion of zero-emission vehicles, a central component of the U.S. Long Term Strategy to reach net-zero greenhouse gas emissions by 2050.¹⁰ In line with this E.O. and addressing the climate crisis, enabling wider adoption of EVs may also have significant benefits to equity and environmental justice whereby a national network of EV charging infrastructure reduces disparities in access to transportation infrastructure and health effects.¹¹

The NEVI Formula Program presents an opportunity to advance both equity and environmental justice for communities that have been underserved by transportation infrastructure and overburdened by costs and environmental harms. When determining where EV charging stations should be located, there should be engagement with rural, underserved, and disadvantaged communities to ensure that diverse views are heard and

¹⁰ [The Long-Term Strategy of the United States, Pathways to Net-Zero Greenhouse Gas Emissions by 2050 \(whitehouse.gov\)](https://www.whitehouse.gov/the-long-term-strategy-of-the-united-states-pathways-to-net-zero-greenhouse-gas-emissions-by-2050)

¹¹ U.S. Department of Transportation Strategic Plan FY 2022-2026

considered and to ensure that the deployment, installation, operation, and use of EV charging infrastructure achieves equitable and fair distribution of benefits and services.

Historically, innovations in clean energy and transportation have not been deployed evenly across communities. This has resulted in underserved, overburdened, and disadvantaged communities being left behind.

Achieving our long-term goals requires the equitable deployment of electric vehicle infrastructure, and NEVI Formula Program funding is the opportunity to ensure these investments benefit disadvantaged communities and create safeguards to prevent or mitigate potential harms. Consideration of the benefits and harms is in accordance with E.O. 13985, which requires the Federal Government to pursue a comprehensive approach to advance racial equity for all, and E.O. 14008, which created the Justice40 Initiative, which established a goal that 40 percent of the overall benefits of certain federal investments flow to disadvantaged communities. 86 FR at 7626. OMB M-21-28 Interim Guidance provides that NEVI Formula Program funding is a Justice40 federal covered program.

Consideration for how benefits of EV charging flow to rural, underserved, and disadvantaged communities will be vital towards ensuring NEVI Formula Program funding is distributed meaningfully and equitably in accordance with E.O. 14008. In the absence of the NEVI Formula Program, the market will not prioritize the installation of important EV chargers densely populated urban communities where the cost of real estate is relatively higher or in sparsely populated rural areas lacking access to transportation

alternatives. If access to EV chargers is dictated by these market forces, then rural areas, underserved communities, and disadvantaged communities will experience delayed and diminished access to this clean energy technology and the transportation infrastructure that is vital to a healthy economy. Such outcomes would be at odds with E.O. 13985, “Advancing Racial Equity and Support for Underserved Communities Through the Federal Government,” at 86 FR 7009.

However, the proposed rule would complement the February 10, 2022, NEVI Formula Program Guidance, which encouraged EV chargers to be spaced a maximum distance of 50 miles apart along designated alternate fuel corridors (AFCs), by requiring minimum standards for the development of each station. Providing minimum standards and requirements for the development of each charging station helps to ensure equitable access to clean transportation options and the electric grid across all communities, increasing parity in clean energy technology access and adoption. Over the long-term, according to the DOE, EV ownership is usually less expensive than ownership of gasoline-powered vehicles.¹² Additionally, the low cost of operation makes some EVs less expensive on a monthly basis, compared to equivalent gasoline-powered vehicles, when vehicle purchase price is financed.¹³ Thus, increased adoption in these communities could be associated with a community-wide decrease in transportation

¹² <https://afdc.energy.gov/calc/>. This tool calculates the total cost of vehicle ownership. Selecting the 2022 Ford Mustang Mach-E RWD and an equivalent gasoline-powered vehicle, such as the 2022 Ford Explorer RWD Gasoline, shows that the EV’s total cost of ownership breaks even with the conventional vehicle after 5 years when gasoline price is set at \$4.50/gallon and the state of Ohio is selected.

¹³ [Comparing total cost of ownership of battery electric vehicles and internal combustion engine vehicles, Most Electric Vehicles are Cheaper to Own Off the Lot Than Gas Cars](#)

energy cost burdens. In communities where transportation corridors see a mode-share shift from gasoline-powered vehicles to EVs, there will be a marked reduction in environmental exposures to transportation emissions. Widespread adoption of EVs in the U.S. would also increase our energy resilience by increasing the share of vehicles that operate on energy sources that are domestically produced and regulated and assist in creating energy independence and domestic job creation.

The NEVI Formula Program also addresses the acknowledgement in E.O. 14008 that the path to a net-zero emissions economy provides opportunities to create well-paying, union jobs to build a modern sustainable infrastructure. 86 FR 7622. This proposed rule would outline minimum qualifications for technicians working on-site at charging stations. Minimum skill, training, and certification standards for technicians ensures that the deployment of charging infrastructure will support stable career-track employment for workers across the country, creating more openings for workers to pursue training in the electrical trades—critical occupations for the clean energy transition. By requiring on-site installation, maintenance, and operations to be performed by a well-qualified, highly-skilled, and certified, licensed, and trained workforce, the proposed regulation would also increase the safety and reliability of charging station function and use, and mitigate project delivery issues such as cost overruns and delays.

The proposed regulation would establish minimum standards and requirements specific to the use of NEVI Formula Program funds and funds made available under title

23, United States Code for projects for the construction of publicly accessible EV chargers with the prioritization of projects along Interstates in order to create a reliable national network of EV charging infrastructure for those travelling long distances or for multiple hours at a time. E.O. 14036 also points out that if successfully deployed an interoperable EV charging network can be expected to give EV manufacturers more space to experiment, innovate, and pursue the new ideas leading to more choices, better service, and lower prices especially with regard to the EVs themselves. 86 FR 36987.

Request for Information

The proposed regulation for minimum standards and requirements under the NEVI Formula Program required consultation with relevant stakeholders. The DOT issued a Request for Information (RFI) published in the Federal Register on November 29, 2021 (86 FR 67782). There were 483 comments received in response to the RFI. Commenters included local, State, and regional governments and included those with the full range of experiences installing and operating EV infrastructure. Industry groups and businesses involved with EV infrastructure, ranging from small businesses to trade groups and multi-national corporations, also provided comments. Some comments received were from formal trade organizations: the International Brotherhood of Electrical Workers, AFL-CIO, CLC (IBEW), American Federation of Labor and Congress of Industrial Organizations (AFL-CIO), and Laborers' International Union of North America. Nonprofit groups provided feedback as to how the NEVI Formula Program could positively or negatively impact the communities that these groups

represented. The FHWA also received comments from individual members of the public to include EV owners and others who would be impacted by the NEVI Formula Program. The FHWA considered this input in the development of this regulation. A discussion of how the most prevalent topics were considered and addressed is provided below.

In addition to the RFI, the White House sponsored 18 stakeholder meetings between November and December 2021, each with multiple organizations attending and each addressing a different stakeholder group. Input from these meetings was also considered during the development of this proposal.

The FHWA inquired to stakeholders how the Buy America provisions would impact the NEVI Formula Program and asked for comments through two Federal Register Request for Information discussed below. As stated in E.O. 14005 published on January 25, 2021, *Ensuring the Future Is Made in All of America by All of America's Workers*, Made in America laws, such as the Buy American Act¹⁴ requires the Federal government to buy domestic "articles, materials, and supplies" when they are acquired for public use, subject to exceptions for nonavailability of domestic products, unreasonable cost of domestic products, acquisitions subject to certain trade agreements, and situations where it would not be in the public interest to buy domestic products.¹⁵ The FHWA received significant feedback regarding compliance with Buy America through stakeholder engagement and comments from both the RFI published on November 29,

¹⁴ 41 U.S.C. §§ 10a-10d

¹⁵ 86 FR 7475 (January 28, 2021)

2021 (86 FR 67782)¹⁶ and a separate RFI specific to Buy America published on November 24, 2021 (86 FR 67115). Unless otherwise specified, all applicable requirements under Chapter 1 of title 23, United States Code, apply to the use of NEVI Formula Program funds and funds made available under title 23, United States Code for projects for the construction of publicly accessible EV chargers, including Buy America requirements at 23 U.S.C. 313. Additionally, the NEVI Formula Program is an infrastructure program subject to the Build America, Buy America Act (Pub. L. No 117-58, div. G §§ 70901–70927). Additionally, it is important to note that as expressed in E.O. 14005, *Ensuring the Future Is Made in All of America by All of America’s Workers* (86 FR 7475), it is the policy of the executive branch to maximize, consistent with law, the use of goods, products, and materials produced in, and services offered in, the United States.

The FHWA acknowledges that the EV charging industry expressed early concerns regarding the difficulty in procuring EV charging equipment that met Buy America compliance. The FHWA also acknowledges that the domestic EV charger manufacturing industry is rapidly adapting with announcements about U.S. manufacturers opening new plants as recently as this calendar year.¹⁷ The comment period for the Buy America RFI closed on January 10, 2022. The RFI was intended to gather information about the shifting manufacturing and assembly processes in the United States for EV chargers and the availability of EV chargers manufactured and assembled in the United States in

¹⁶ <https://www.govinfo.gov/app/details/FR-2021-11-29/2021-25868>

¹⁷ [FACT SHEET: Biden-Harris Administration Ensuring Future is Made in America | The White House](#)

compliance with Buy America. Continued review of the information received from this RFI may result in updated policy guidance or regulation, as needed.

It is important to also note that several topics raised for concern by comments received from the RFI are not applicable to this proposed regulation because they were outside the scope of the minimum standards and requirements but may be addressed through subsequent guidance.

Some responses to the RFI included various suggestions of station design, in particular vehicle size allowances and pull-through access. Minimum standards for vehicle size in station design are not proposed in this rulemaking. However, States are encouraged to consider large vehicles, including medium- and heavy-duty vehicles (such as electric school buses and delivery vehicles) and vehicles with attached trailers. Pull-through charging stations may provide better access for vehicles pulling a trailer; pull-through charging stations provide ample room to move around a vehicle that may take longer to charge, because they allow vehicles to exit the station without backing up and preclude the need to decouple the trailer to fit within the parking area adjacent to the charger. Front pull-in parking style charging stations may be appropriate in many situations as they allow vehicles to freely access the charger without the potential to be blocked into the location until another vehicle completes charging. Station design consideration is location specific and should provide the public with an efficient, safe, and convenient charging experience.

Other responses to the RFI included suggestion to address emergency situations that could arise for EVs. This proposed rule does not consider minimum standards for traffic incident management specific to emergency situations where EVs lose their charge on the roadway. The proposed minimum standards would address the development of charging stations, and it is recognized that if EVs are able to arrive at charging stations, there are no on-road emergency situations. However, if EVs lose their charge while driving on the roadway, this emergency situation could create a traffic incident. The FHWA requests comments to address this important issue. The FHWA requests specific comment on how traffic incident management, crashes, and emergency situations should be addressed.

Several commenters voiced opinions on the physical safety of the EV charging stations and the consumers as well as cybersecurity concerns. Safety is a top priority at FHWA and must be incorporated in all federally funded projects. Safety was considered throughout the development of the proposed regulations, and this proposed regulation would require States to specifically address physical safety and cybersecurity.

Other comments raised through the RFI include topics that will be addressed by each State through the development of State EV Infrastructure Deployment Plans (as outlined in the NEVI Formula Program Guidance released on February 10, 2022) rather than by the Federal Government through the proposed regulation. For example, FHWA acknowledges that the development of a cohesive reliable national EV charging network will require interstate and regional coordination across State borders. Consideration and

discussion of regional coordination is specifically outlined in the NEVI Formula Program Guidance's description of how a State EV Infrastructure Deployment Plan should be formatted. This same section of the NEVI Formula Program Guidance similarly outlines that States are expected to include a discussion of maintenance and operational strategies in their State EV Infrastructure Deployment Plans.

Questions have also arisen about the details of receiving discretionary exceptions to charger spacing requirements along and within the AFCs. Information about discretionary exceptions is included in the NEVI Formula Program Guidance and is not proposed for further discussion within this regulation.

Section-by-Section Discussion of the Proposed Changes

The FHWA invites comments on the proposed minimum standards and requirements and identifies areas where comments may be particularly useful.

§ 680.100 Purpose.

Section 680.100 would identify the purpose of the regulation to establish a set of minimum standards and requirements applicable to two types of publicly accessible EV charging projects: those funded under the NEVI Formula Program and those constructed with any funds made available under title 23, United States Code.

§ 680.102 Applicability.

The FHWA proposes that the regulation apply to all NEVI Formula Program projects and all publicly accessible EV chargers constructed using funds made available under title 23, United States Code.

§ 680.104 Definitions.

The FHWA proposes definitions for the minimum standards and requirements for this regulation. These definitions are provided to identify terms that are common in the EV charging industry but that may not be present elsewhere in 23 U.S.C. or 23 CFR and thus may be unfamiliar in the transportation industry.

§ 680.106 Installation, Operation, and Maintenance by Qualified Technicians of Electric Vehicle Charging Infrastructure.

The proposed regulation includes procurement process transparency considerations, the minimum number of chargers, connector type, and power level for each EV charging station. These minimum requirements are proposed to provide the public with a predictable user experience of the public charging infrastructure.

Section 680.106(a) explains the expectation of public transparency when EV charging prices are to be set by a third party. Under Paragraph (2) under the Highway Infrastructure Program heading in title VIII of division J of BIL, the FHWA is required to release a set of minimum standards and requirements for the implementation of the NEVI Formula Program, which includes “*information on publicly available electric vehicle charging infrastructure locations, pricing, real-time availability, and accessibility through mapping applications.*” (emphasis added). Since government funds will be, in part, subsidizing these EV charging stations, FHWA proposes there be public disclosure for the documents concerning the operations of EV charging stations where price setting is involved, including the procurement process used, the number of bids received, the

identification of the awardee, the proposed contract with the awardee and, in accordance with State law, the financial summary of contract payments (including the price and cost data) and any information describing how prices for EV charging are to be set under the contract. These items shall be made publicly available whether through an announcement, public comment period or other means. The FHWA believes this will protect the public interest in understanding how prices for charging are set or to be determined whenever a private operator is involved in the determination of price. Since the NEVI Formula Program shall be administered as if apportioned under chapter 1 of title 23, United States Code (1st proviso of paragraph (6) under the “Highway Infrastructure Program” heading in title VIII of division J of Pub. L. 117-58), States would be subject to 23 U.S.C. 112 and implementing procurement regulations for the procurement of construction and design. Additionally, any agreements for the operation and maintenance of an EV charging station are subject to the State procurement policies and procedures per 2 CFR 200.317.

This language is also consistent with FHWA guidance regarding public transparency in public-private partnership (P3) procurements. The FHWA recognizes that some State DOTs do not have the authority to enter into P3 agreements and FHWA is not requiring any State DOT to enter into a P3 for EV charging stations. The proposed requirements would be applicable to any procurement involving NEVI Formula Program funds, any time EV charging prices are to be set by a third party. The FHWA requests comment on what other actions could be proposed to improve transparency during the

procurement process in order to ensure the price of EV charging is as transparent as possible.

The proposed regulation outlines the minimum number and type of chargers required in § 680.106(b). In order to provide appropriate charging for EVs in route to their final destinations, FHWA proposes to require Direct Current Fast Chargers (DCFCs), which are the fastest chargers currently available in the public charging marketplace, when installed under the NEVI Formula Program. While DCFCs are more expensive to install and operate, by providing a faster experience, they allow for convenient charging solutions for those vehicles that will be travelling long distances or for multiple hours at a time in comparison to other chargers that would take longer to charge EVs. The FHWA has identified a need to address this type of EV charging in particular, whereby the charging station would typically provide a waypoint stop but not be the final destination of the EV trip and consider that with the consumers that would be using these types of EV charging stations, time is a premium concern. By servicing this waypoint need, FHWA recognizes that charging stations should be built to prioritize convenience over price in order to be effective and determines this is the best option for those EV charging stations located along Interstates. Convenience is also the goal in the proposed requirement for the number of charging ports at each charging station; § 680.106(b) would require a minimum of four charging ports capable of simultaneously charging four EVs. Because even DCFCs typically require a third of an hour to provide sufficient vehicle charge, long queues of EVs waiting to charge could develop at charging

stations if there are insufficient charging ports available. In practice, most current new public charging stations include 2-8 charging ports to address the growing demand, with some industry leaders adopting an internal standard minimum of 8 charging ports per station. In an effort to balance the desire to future proof these facilities in order to handle increasing demand, while creating space to avoid unduly burdens on newer entrants to the EV charging market, FHWA proposes a minimum of four charging ports per station. The FHWA proposes that the minimum number of four ports per charging station apply to projects funded with NEVI Formula Program funds only. States can still install less than four ports DCFC charging stations and AC Level 2 charging stations under non-NEVI funded programs. The FHWA requests comments on whether a different number of DCFC ports should be required at NEVI Formula Program funded charging stations.

Section 680.106(c) proposes a requirement that DCFCs connect and communicate with EVs through an industry standard charging port type called the Combined Charging System (CCS). The CCS port is a non-proprietary, accepted standard port in North America developed and endorsed by the Society of Automotive Engineers (SAE). The CCS connectors are proposed for all DCFCs to accommodate a baseline of vehicles and to accommodate use of adapters that will provide EV charging for all vehicles. The CCS ports represent the most common port type used across all manufacturers of new EVs today. As stated in the 16th proviso of paragraph (2) under the “Highway Infrastructure Program” heading in title VIII of division J of Pub. L. 117-58, until the Secretary certifies that a State is fully built out on their Alternative Fuel Corridors, NEVI funding is limited

to use on EV charging stations along Alternative Fuel Corridors. The program guidance that FHWA released for the NEVI Formula Program¹⁸, explains that fully built out is inclusive of installing four DCFCs. In an effort to provide redundancy and address different needs of EV drivers, the proposed regulation includes language allowing for the installation of additional AC Level 2 chargers only after the NEVI Formula Program requirements for DCFCs have been met for projects that use NEVI Formula Program funds. Section 680.106(c) would identify the J1772 connector as the proposed connector type requirement for AC Level 2 chargers. The FHWA acknowledges that AC Level 2 chargers may be desired for redundant installation because they are less expensive to install and operate. Section 680.106(c) would further provide for additional flexibility for the provision of charging ports after the aforementioned CCS requirement has been met. This includes adding permanently attached proprietary connectors to DCFCs. In addition, specific to the use of FY22 NEVI Formula Program funds, DCFCs may include permanently attached CHAdeMO connectors for one or more DCFC charging port. The option to install these additional charging connectors is proposed as part of the regulation to allow States the flexibility to address immediate identified needs in their communities while participating in the CCS standard which would be consistent throughout the national network. The FHWA requests comment on how other charging technologies, such as overheard catenary chargers and wireless chargers, should be addressed.

¹⁸https://www.fhwa.dot.gov/environment/alternative_fuel_corridors/nominations/90d_nevi_formula_program_guidance.pdf

Section 680.106(d) outlines proposed minimum power levels to provide a reliable DCFC experience for convenient EV charging. Requirements for minimum power level capabilities provided at each port are key to ensuring that the DCFCs are able to provide a consistent and speedy charge. Comments received through the RFI indicated that several State DOTs currently require EV charging stations to have the capability to deliver power at or above 150kW per charging port and that this is becoming the prevailing industry preference for DCFC charging. The FHWA encourages the installation of chargers with higher power levels where appropriate to support industry efforts to ensure a consumer's time to charge is at least comparable to filling a gas tank.

The inclusion of a requirement that each DCFC charging port must be at or above 150kW would benefit the charging industry primarily in communicating standards with individual utilities that may not be accustomed to EV industry preferences. Section 680.106(d) would include several such components describing power level requirements for coordination between charging station owners/operators and utility providers. This regulation would also outline minimum requirements for the participation of DCFC and AC Level 2 chargers in smart charge management programs to ensure a consistent charging experience and prioritize charging speed. This section would also outline power level requirements for any AC Level 2 ports, including a proposed requirement that all AC Level 2 chargers have the capability to deliver at least a maximum power level of 6 kW per port simultaneously across all AC ports (these charger types would only be allowed after the minimum requirement in § 680.106(b) is met). The FHWA requests

comment on how longer-dwell parking locations and locations that offer battery swapping technology should be addressed.

Section 680.106(e) would require that charging stations be available for use by the public 24 hours a day, seven days a week, and on a year-round basis, with minor exceptions. The FHWA believes the near constant availability of chargers is key for providing a convenient national EV charging network especially along long-distance travel routes. Consideration should be paid to the need of users to access EVSE during times of emergency such as evacuation from natural disasters, and the risk associated with locating EVSE in base-floodplains, as required by FHWA regulations at 23 CFR 650 Subpart A. Additional consideration may be paid to whether EVSE located in floodplains will not be at risk from their locations being within the projected future base floodplains, as described by the Federal Flood Risk Management Standard in E.O. 14030, Climate-Related Financial Risk (86 FR 27967) and 13690, Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input (80 FR 6425.) Isolated or temporary interruption to service or access for maintenance and repairs would not constitute a violation of this proposed requirement. The FHWA requests specific comment on what additional considerations should be contemplated to ensure EVSE resilience/reliability in floodplains and during natural disasters.

Section 680.106(f) outlines proposed requirements for payment methods used at EV charging stations. The proposed regulation would include requirements meant to

ensure the interoperability of EV charging stations across the national network by requiring payment methods to adhere to industry standards and also requiring that memberships not be required for use. The interoperability of charging stations is key to ensuring EV drivers can have a consistent payment experience across the country. The proposed regulation also outlines several requirements meant to ensure payment options are secure, equitable, and accessible, while still ensuring that the rule will accommodate future innovations in payment methods. This includes proposed requirements that payment options include contactless payment methods, that contactless payment be accepted from all major debit and credit cards, and that access and service are not restricted by membership or payment method type. The FHWA requests comments on whether there are other factors that could be considered to avoid an instance of creating an EV charging station that is limited to one type of EV consumer wanting to use it or benefiting from its use (sometimes also referred to as a walled garden). Plug and Charge payment capabilities are also required. The FHWA requests comment on the payment methods that are currently proposed including whether non-contactless payment options should be required. The FHWA is not requiring that the sole payment method be credit card, in order to be mindful of the needs of the unbanked and underbanked who may need to pay via another payment method such as the option to purchase a prepaid card to be used at the EV charging station. This section also would require that multilingual access and access for people with disabilities be provided in the creation of payment instructions. The FHWA specifically requests comments on whether the proposed

payment method language adequately meets the needs of the unbanked and underbanked as well as strategies to address multilingual access and access for people with disabilities in the creation of EV charging payment instructions. The FHWA also requests comments on whether other payment methods should be required beyond what is currently proposed.

Section 680.106(g) outlines proposed requirements for equipment certification. All EVSE would be required to obtain certification from an Occupational Safety and Health Administration Nationally Recognized Testing Laboratory.¹⁹ ENERGY STAR certification was considered in the development of this proposed regulation due to its established credentials in certifying energy-efficient products, thus promoting climate benefits such as low energy use and reduced emissions. For AC Level 2 EVSE ENERGY STAR certification is required. For DCFCs 50 – 350kW, while ENERGY STAR certification exists the product availability is limited therefore certification is not required at this time.

Section 680.106(h) would require States to implement physical and cybersecurity strategies consistent with their State EV Infrastructure Deployment Plans. This section also includes options for both physical security, such as lighting, siting, driver and vehicle safety, fire prevention, tampering, charger locks, and illegal surveillance of payment devices, and cybersecurity strategies that may be addressed in order to mitigate charging infrastructure, grid, and consumer vulnerability associated with the operation of

¹⁹ [OSHA's Nationally Recognized Testing Laboratory \(NRTL\) Program - Current List of NRTLs | Occupational Safety and Health Administration](#)

charging stations. The FHWA encourages States to implement policies to safeguard consumer privacy and requests comments on best practices available in the industry.

Section 680.106(i) proposes to establish a requirement for States to maintain charging infrastructure in compliance with the provisions in this proposed regulation for at least 5 years. The period of 5 years was chosen to provide a reasonable useful life while providing sensitivity to the emerging nature of this type of equipment and the fast pace of technological advancements in the EV charging arena. At the conclusion of the 5 year required maintenance period, States can choose to retire the infrastructure that has reached the end of its useful life and should consider upgrading or replacing the EVSE if necessary. However, if the EVSE is still functioning to meet its intended purpose after 5 years, States should consider maintaining, or supporting the maintenance of, the EVSE to most efficiently make use of Federal resources. The FHWA requests comments on whether 5 years is a reasonable timeframe to require States to maintain EV charging infrastructure in compliance with these proposed regulations or if another timeframe should be considered.

Section 680.106(j) requires States ensure that the installation and maintenance of EVSE is performed safely by a skilled workforce that has appropriate licenses, certifications, and training. The proposed regulation would further encourage States to utilize a diverse workforce of electricians and other laborers.

The proposed regulation also requires that, with the exception of apprentices, all electricians installing, maintaining, and operating EVSE be certified through the Electric

Vehicle Infrastructure Training Program (EVITP). The EVITP refers to a comprehensive training program for the installation of EV supply equipment. To be eligible for EVITP, a participant must be a State licensed or certified electrician or if the participant works in a States that does not license or certify electricians, the participant must provide documentation of a minimum of 8,000 hours of hands-on electrical construction experience. The EVITP was created by a collaboration of industry stakeholders from the private sector and educational institutions. For more information, refer to <https://evitp.org/>. The FHWA requests comments on whether there should be an alternative to the proposed requirement of certification through the EVITP, such as a U.S. DOL -recognized Registered Apprenticeship EVSE training program.

The FHWA is aware of both support and concerns from some portions of the EV charging industry regarding the EVITP. One concern with the EVITP (as submitted through the RFI comments) is that making it the sole provider of licensing EV technicians would serve to privatize the licensing process or impose a significant hurdle to obtaining qualified electricians to install, operate, or maintain EVSE. The FHWA has addressed this concern by providing an option that States can meet the requirement through another Registered Electrical Apprenticeship program that includes EVSE-specific training. Section 680.106(j) also requires that, for projects where more than one electrician is needed, at least one electrician be an apprentice in a registered electrical apprenticeship program. Section 680.106(j) further requires that all other, non-electrical laborers directly working on EVSE have appropriate licenses, training and certification in

support of providing a safe and quality charging station. The FHWA specifically requests comments on how best to utilize the registered apprenticeship system to ensure qualified electricians, whether EVSE-specific training should be required, whether EVITP and its associated costs will impose a significant hurdle to obtaining qualified electricians to install, operate, and maintain EVSE, and what other equivalent EVSE training programs like EVITP should be considered as meeting the requirement.

As stated in the NEVI Formula Program Guidance, FHWA recommends that States take proactive steps to work with training providers, workforce boards, labor unions and other worker organizations, community-based organizations, and non-profits to build a local workforce that will support the EV network. This includes encouraging the expansion of registered apprenticeship programs and apprenticeship readiness or pre-apprenticeship programs that prepare workers for registered apprenticeship. States are encouraged to support training pathways that are inclusive of women, Black, Latino, Asian American Pacific, Indigenous, and other underrepresented groups. There are several sources of funding that can be used to provide financial assistance to such programs, additional information can be found at

https://www.fhwa.dot.gov/environment/alternative_fuel_corridors/resources/ev_funding_report_2021.pdf. Consistent with Justice40²⁰, States should also consider how disadvantaged communities will benefit from this added job growth. The FHWA

²⁰ Section 219 of Executive Order 14008, Tackling the Climate Crisis at Home and Abroad and OMB, “Interim Implementation Guidance for the Justice40 Initiative,” M-21-28 (July 20, 2021) available at <https://www.whitehouse.gov/wp-content/uploads/2021/07/M-21-28.pdf>

requests comments regarding the availability of the workforce to meet these proposed requirements.

Section 680.106(k) outlines proposed requirements that EVSE allow for customers to report outages, malfunctions, and other issues with charging infrastructure. This section also would specify that States make these reporting mechanisms accessible and equitable by complying with the American Disabilities Act of 1990 requirements and multilingual access. The proposed regulation would provide States with flexibility to address customer service needs while recognizing the important and varied role customer service requirements could serve. In an effort to identify real-time incidents, FHWA requests comments on customer service strategies to enter any issues as part of the real-time status data that would be outlined in § 680.116(c). The FHWA would also encourage States to provide emergency response information on-site at charging stations. The FHWA also specifically requests comments on customer service strategies to connect charging stations to or provide access for traffic incident management solutions such as the provision of an emergency call box.

Section 680.106(l) proposes requirements to protect customer data privacy. The proposed regulation would require that only the information strictly necessary to provide service to the customer be collected, processed, and retained. The FHWA encourages States to implement policies to safeguard consumer privacy and requests comments on best practices available in the industry.

Section 680.106(m) proposes to explain the purposes for which State DOTs and third parties can use NEVI program income. The requirement of what the net income from the sale, use, lease, or lease renewal of real property acquired can be used for is consistent with 23 U.S.C. 156. The explanation of use for the program income or revenue earned from the operation of an EV charging station mimics the limitations on use of revenues for toll roads, bridges, tunnels, and ferries found in 23 U.S.C. 129.

§ 680.108 Interoperability of Electric Vehicle Charging Infrastructure

Proposed § 680.108 outlines minimum interoperability standards for charger communication with EVs. This section outlines and would promote industry standards for charging infrastructure consistent with standards outlined in ISO 15118, incorporated by reference in § 680.120. ISO 15118 is an international standard for EV-to-charger communication. ISO 15118 allows for several innovative techniques that are not yet widely adopted in the domestic EV charging marketplace, but that are of significant interest in the industry for future adoption such as Plug and Charge and smart charge management. As stated in the definitions section, Plug and Charge is a method of initiating charging and payment for charging upon plugging an EV into a charger. Smart charge management is another innovative technique that can provide tremendous benefits to include load management and grid resilience.

In order to address both the desire to position EV charging infrastructure for long-term success and the potential for hesitation from certain parts of the industry to invest in newer technological capabilities provided for through compliance with ISO 15118,

proposed regulations would require chargers to conform with ISO 15118 to reciprocate communications with CCS-compliant EVs that have implemented ISO 15118.

Because EV technology is relatively new and evolving across the global market landscape, the regulatory environment for EV chargers is nascent and technological advances are occurring on an international, rather than a national scale. Therefore, one of the most trusted industry and market standards for charger to EV communication is an international group of standards, ISO 15118, developed by the International Electrotechnical Commission and the International Organization for Standardization. The ISO 15118 is recognized as the standard for charger to EV communication and is already used by the many major EV and charger manufacturers with products in the United States. While it is expected that EV communication standards and protocols will be updated on an iterative basis, FHWA understands that ISO 15118 provides an important industry baseline and future versions/iterations of this standard are expected to be implemented as additional software updates are developed to accommodate future vehicles implementing future versions of the international standard. The FHWA acknowledges that there is not a history of unanimous support for ISO 15118; however, FHWA views the prevailing trend of the domestic EV market's reference for ISO 15118 as evidence that it provides an appropriate standard to reference in the proposed rule.²¹ The FHWA requests comment on the proposed reference to ISO 15118 and requests

²¹ List of automaker members of CharIN, the industry consortium implementing ISO 15118 as the basis for a variety of charging technologies, including DC and AC conductive charging: [Community – CharIN](#), List of CharIN members testing their implementations of CCS, including parts of ISO 15118, as of November 2021: [charin_festival_na_2021_press-release.pdf](#)

information about any other known standards that could be referenced in place of ISO 15118 while maintaining a seamless, uniform, and consistent experience across the national network. The FHWA also requests comment on whether a performance standard (i.e., a standard that requires outcomes rather than specifying a specific means to an end) would be more appropriate and, if so, what such a performance standard might look like.

§ 680.110 Traffic Control Devices or On-Premises Signs Acquired, Installed or Operated

This section proposes that minimum standards and requirements regarding traffic control devices and on-premise signage would be set by existing applicable regulations in 23 CFR part 655 and 23 CFR part 750 for NEVI Formula Program projects and projects for the construction of publicly accessible EV charging infrastructure funded under title 23, United States Code. These established regulations cover the traffic signs, signals, and pavement markings as well as directional and official signs adjacent to Interstates and the Federal-aid primary system (respectively). The FHWA is in the process of updating the Manual on Uniform Traffic Control Devices (MUTCD), which is governed by 23 CFR part 655, through a parallel rulemaking.²² While the MUTCD is being updated, it currently does allow for and outlines requirements for EV charging signs.

§ 680.112 Data Submittal

This section would outline the minimum data submittal requirements particular only to NEVI Formula Program projects. Section 680.112 would not apply to other EV

²² <https://www.reginfo.gov/public/do/eAgendaViewRule?pubId=202110&RIN=2125-AF85>

charging projects funded through title 23, United States Code. The proposed data submittal requirements in § 680.112 include quarterly data submittal requirements (§ 680.112(b)), annual data submittal requirements (§ 680.112(c)), and a requirement to create an annual community engagement outcomes report (§ 680.112(d)). Throughout this section, FHWA proposes that States ensure data are properly collected, maintained, and submitted in a prescribed format. The FHWA is proposing that the data collected through § 680.112 will be coordinated and maintained by the Joint Office. The FHWA will work with the Joint Office on ways to provide State DOTs with resources to facilitate the data collection and submission, which could include an online data portal, instructions for data formatting, standard reporting templates and automating data collection from charging network providers. The data management role of the Joint Office is consistent with the 26th proviso of paragraph (2) under the “Highway Infrastructure Program” heading in title VIII of division J of Pub. L. 117-585858, which states that one of the responsibilities of the Joint Office is “data sharing of installation, maintenance, and utilization in order to continue to inform the network build out of zero emission vehicle charging and refueling infrastructure.”

Section 680.112(b) proposes that charging station use, reliability, and maintenance data be collected quarterly. These proposed quarterly data submittals would include data describing basic operations and usage of each charging station such as data that identify charging station locations, charging session metrics, and how much energy has been dispensed per port. Section 680.112(b) also outlines the proposed collection of

maintenance and reliability data, such as charging station uptime, the total monthly cost of electricity that the charging station operator must pay to operate on a charging station each month (including demand charges, energy charges [\$/kWh], fixed charges, taxes, and all other fees), and the monthly maintenance and repair costs per charging station. Where monthly data is utilized, this data would be required per month for each of the previous three months, provided every quarter.

The FHWA also proposes to require the collection and submittal of charging station construction and charger installation data on a quarterly basis. The proposed regulation would require the submittal of detailed costs, such as the EVSE acquisition and installation costs, details about distributed energy resource acquisition and installation, and grid connection and upgrade costs paid by the charging station operator. Grid connection and upgrade data submittals would only be required specific to the costs on the utility side of the electric meter. Where distributed energy resources are involved, additional data is proposed for submittal regarding distributed energy resource capacity per charging station. The type of data proposed for collection through § 680.112(b) is consistent with the description in BIL of the data the Joint Office is responsible for coordinating.

Through § 680.112(c), FHWA proposes to require the collection of three datasets on an annual basis. Proposed data requirements include identifying information for the organizations that operate, maintain and install the EVSE and whether these organizations participate in State or local business opportunity certification programs

such as programs for minority-owned businesses, Veteran-owned businesses, woman-owned businesses, and/or businesses owned by economically disadvantaged individuals for private entities. These datasets are generally more static and require less frequent updates than the proposed data required through § 680.112(b).

Finally, § 680.112(d) would require the creation of a community engagement outcomes report to document, on an annual basis, the community engagement activities conducted in compliance with a State's approved State EV Infrastructure Deployment Plan (these Plans are described in the NEVI Formula Program Guidance, released February 10, 2022). This annual report would document adherence to the community engagement methodology described in approved Plans and would allow States to analyze feedback from the public regarding both successes and opportunities for improvement in NEVI Formula Program implementation. The community engagement plan would allow States to assess ways to improve future NEVI Formula Program projects, thus adapting and protecting future Federal investments.

The proposed regulation would serve an important coordination role by standardizing submissions of large amounts of data from the types of charging stations funded by the NEVI Formula Program across the United States. The proposed regulation would provide the Joint Office with the data needed to create the public EV charging database outlined in BIL. If the data proposed in § 680.112 were not submitted as requested, FHWA and States would be unable to meet intended Program implementation objectives outlined in BIL, such as the sharing of installation, maintenance, and

utilization data in order to continue to inform the network build out of zero emission vehicle charging and refueling infrastructure.

The PRIA identifies benefits and costs associated with requirements proposed through § 680.112. While the data submittals will play a key role in assisting FHWA and the Joint Office in both communicating information to consumers and monitoring the effectiveness of the NEVI Formula Program, FHWA recognizes that data collection, maintenance, and submittal can incur large costs for States. The FHWA has included an estimate of burden hours for this data collection under the Paperwork Reduction Act of 1995 section below and is requesting comment on the number of burden hours associated with this collection. The FHWA requests comment on the frequency of data collection and whether the quarterly and annual timeframes are appropriate.

§ 680.114 Charging Network Connectivity of Electric Vehicle Charging Infrastructure

The FHWA proposes to set minimum standards for the charging network connectivity of EV charging infrastructure to include charging network communication, charging network-to-charging network communication, and charging network-to-grid communication.

Section 680.114(a) outlines several minimum standards for charger-to-charging network communication. These proposed standards reference the Open Charge Point Protocol (OCPP), which is an industry standard that is designed to work in tandem with ISO 15118 to enable smart charge management and Plug and Charge communications

protocols. The Open Charge Alliance upholds OCPP specifically to address interoperable communication standards between chargers charging networks. As stated in the discussion regarding § 680.108, FHWA recognizes that smart charge management and Plug and Charge are newer technological capabilities not yet widely adopted in the industry and, as such, proposed regulations would require the capability to support these methods through compliance with OCPP, rather than requiring these methods outright. The FHWA recognizes that OCPP is a widely used industry standard for EV charger communication but solicits comments regarding the reference to OCPP and requests information on any alternative standards, including whether a performance standard would be more appropriate and, if so, what such a performance standard might look like.

Several of these minimum standards also help address cybersecurity threats for assets monitored and maintained from remote locations. Covered in this section are requirements that chargers use a secure communication method; that they can receive secure remote software monitoring, management, and updates; and that they can conduct secure real-time authentication and authorization. The standardization of communications protocols proposed through requirements in § 680.114(a) not only facilitate ease of secure remote charger station monitoring and management consistent with existing market standards, but also help mitigate against the installation of stranded assets whereby a charger installed by one company can easily be operated by another should the first voluntarily or involuntarily abandon operations of those chargers at that location. The FHWA retains a keen interest in protecting Federal investments; therefore,

by helping to avoid stranding assets, the proposed regulation helps to ensure that EVSE is usable by the public throughout the timeframe of the equipment's' useful lives.

Other charger-to-charging network minimum standards proposed under § 680.114(a) concern data collection to include a proposed requirement that chargers and charging networks securely measure, communicate, store and report real-time data to support the data submittal requirements outlined in §§ 680.112 and 680.116.

The FHWA proposes to include a requirement in § 680.114(b) that, where credential-based electric charge initiation or payment is implemented, charging networks be capable of communicating with other charging networks to enable customers to use a single credential regardless of the charging network responsible for a charging station.

Finally, § 680.114(c) proposes to require that charging networks be capable of secure communication with electric utilities, other energy providers, or local energy management systems. This proposed requirement addresses cybersecurity threats to the electric grid while facilitating a collaborative market environment across private industry and utilities to enable ease of charging. The FHWA requests information about highly regarded EV charging cybersecurity and security resources in order to identify further potential specific associated protocols and standards to include in the final rule.

§ 680.116 Information on Publicly Available Electric Vehicle Charging Infrastructure Locations, Pricing, Real-Time Availability, and Accessibility Through Mapping Applications

The FHWA proposes to establish minimum standards and requirements for chargers to communicate their status with consumers and third-party mapping applications. Section 680.116(a) proposes several requirements regarding the communication, display, and structure of the pricing for electrical charging. Chargers would be required to display and base the price of electrical charge in \$/kWh . The FHWA is aware that several States restrict the ability to display charge in \$/kWh; therefore, FHWA requests comments on how to best require the display and base the price of electrical charge in those States, seeking specific comment on whether \$/minute, \$/mile, or some other display and base should be considered. Additional pricing requirements would outline how chargers communicate real-time pricing to include proposed requirements regarding the display of pricing and access to information about price structure, including whether providers impose dwell-time fees or additional fees in addition to the price for electricity. The FHWA specifically requests comments on whether additional fees should be allowed or encouraged. These proposed minimum requirements are meant to ensure that consumers can have standard expectations for understanding pricing across the entire national EV charging network. The FHWA also requests comments on whether there are factors that could be considered to avoid an instance of charging the consumer too high a price for electric vehicle charging,

especially when demands are high and supplies are limited (sometimes also referred to as price gouging).

Section 680.116(b) also proposes a minimum annual uptime requirement of greater than 97 percent for the charging ports. Comments from the RFI indicated that a minimum uptime requirement is highly desired both from a government and a consumer perspective. Comments also indicated that minimum uptime requirements currently in place for existing EV chargers can range from not specifying a number to requiring 95-99 percent uptime. The FHWA proposes an uptime requirement of at least 97 percent in an effort to provide a reliable national network for EV charging. The FHWA proposes to require that uptime be available as a dataset submitted quarterly (see § 680.112(b)(2)(iii)) and retained for historical review (see § 680.114(a)(4)).

Uptime is calculated for the time when a charger's hardware and software are both online and available for use, or in use, and the charging port successfully dispenses electricity as expected. For the purposes of the required minimum uptime calculation, FHWA proposes that charging port uptime must be calculated on a quarterly basis for the previous 12 months. Charging port uptime percentage would be calculated using the equation $\mu = ((8760 - (T_{outage} - T_{excluded})) / 8760) \times 100$ where μ = port uptime percentage, T_{outage} = total hours of outage in previous year, and where $T_{excluded}$ = total hours of outage in previous year for reasons outside the charging station operator's control, such as electric utility service interruptions, internet or cellular service provider

interruptions, and outages caused by the vehicles, provided that the Charging Station Operator can demonstrate that the charging port would otherwise be operational.

Third-party mapping applications play an important role for consumers by communicating real-time and geolocated information. Recognizing this important role, FHWA proposes in § 680.116(c) that States ensure several data are made available, free of charge, to third party software developers, via application programming interface.

Many of the data proposed for collection through § 680.116(c) are currently being coordinated through the Alternative Fuel Data Center (AFDC).²³ The AFDC collects data through robust data mining and submission requests from a diversity of sources to include trade media, Clean Cities coordinators, the AFDC website, charging station owners, original equipment manufacturers (OEMs), and industry groups. By proposing to require these data, the proposed regulation would provide an ancillary benefit to another federally funded program by streamlining the data collection burden on the AFDC and thus enabling the AFDC services to be more immediately responsive to real-time updates to provide more accurate information to the public.

Included in this list of data are several static data entries (i.e., data entries that will rarely change), such as basic charger station descriptive information. This includes a requirement to identify the number of charging ports accessible to persons with disabilities at each charging station. The accessibility of charging ports is of particular interest to the FHWA in identifying compliance with the American Disabilities Act of

²³ [Alternative Fuels Data Center: Alternative Fueling Station Locator \(energy.gov\)](https://www.energy.gov/eere/afdc/alternative-fuels-data-center-alternative-fueling-station-locator)

1990 (ADA) and promoting equitable access to EV charging. The results of this data field will also help communicate the availability of chargers for those with disabilities through real-time internet searches.

The FHWA also proposes to require the availability to third party software developers of two real-time datasets updated at a frequency that meets reasonable expectations. The two real-time datasets proposed to be required by § 680.116(c) include real-time status of each charging port and real-time price to charge. The proposed real-time dataset requirements reference the Open Charge Point Interface (OPCI) 2.2, which defines the standardized content and format of data needed to communicate status and price. The FHWA acknowledges that there are other references that chargers could use to communicate status and price to charge, but OPCI 2.2 is widely used within the EV charging industry. The FHWA anticipates that consumers will need these real-time data to make decisions as to where and when to charge along the national EV charging network. The FHWA solicits comments regarding the reference to OCPI and requests information on any alternative standards, including whether a performance standard would be more appropriate and, if so, what such a performance standard would look like.

§ 680.118 Other Federal Requirements

This section would direct NEVI Formula Program projects and projects for the construction of publicly accessible EV charging infrastructure funded under title 23, United States Code to existing applicable requirements under Chapter 1 of title 23, United States Code, 2 CFR part 200, and 23 CFR parts 35 and 36.

§ 680.120 Reference Manuals

The FHWA recognizes the value to the EV charging community of several cited resources to include ISO 15118, Open Charge Point Protocol (OCPP), and Open Charge Point Interface 2.2. The FHWA proposes that § 680.120 would incorporate ISO 15118, Open Charge Point Protocol (OCPP), and Open Charge Point Interface 2.2 by reference.

Discussion under 1 CFR Part 51

The documents that FHWA is proposing to incorporate by reference are reasonably available to interested parties, primarily State DOTs and local agencies carrying out Federal-aid highway projects. These documents represent recent refinements that professional organizations have formally accepted. The documents are also available for review at FHWA Headquarters or may be obtained online. The specific standards and specifications are summarized below.

Open Charge Point Interface (OCPI) 2.2.1

This protocol defines communication between charging network providers, charging station operators, and other entities to improve the EV charging customer experience. The OCPI's primary purpose is to allow roaming, so EV charging customers can use a single credential at charging stations operated by different charging station operators and/or charging network providers. This requires the automated exchange of information, such as identity authentication, charging session authorization, and charging session billing, between charging network providers and charging station operators. The

OCPI also defines data content and format to allow these entities to share information about charging stations, such as price, location, and real-time status.

The OCPI is an open protocol with no cost or licensing requirements. The document describing the protocol is made accessible to the general public through the website of its sponsoring organization, EVRoaming Foundation. Changes in version 2.2.1 include addition of data fields such as country code, efficiency improvements, and addition of error messages.

International Organization for Standardization (ISO) 15118

Officially titled Electric Road Vehicles: *Road Vehicles – Vehicle to Grid Communication Interface*, this standard defines the communication between an EV and a charger to allow EV charging through the CCS connector interface or other means of coupling an EV with a charger. The standard consists of six published and active parts, named as follows: ISO 15118-1: General information and use-case definition; ISO 15118-2: Network and application protocol requirements; ISO 15118-3: Physical and data link layer requirements; ISO 15118-4: Network and application protocol conformance test; ISO 15118-5: Physical and data link layer conformance test; and ISO 15118-8: Physical layer and data link layer requirements for wireless communication. Each part is updated and published independently, following change management processes defined by ISO.

Use cases defined in the standard include automated charging customer identification and authorization via Plug and Charge²⁴, manual charging customer identification and authorization via RFID card or other method, AC and DC wired charging, and smart charge management. The ISO 15118-1 was updated in 2019 to include use cases for wireless charging, bidirectional power transfer allowing the EV to provide energy to the grid, and electric bus charging via overhead charging devices called pantographs. Charger and EV manufacturers and other industry stakeholders collaborate on the development of the standard but implement the standard independently. *Open Charge Point Protocol (OCPP) 2.0.1*

This protocol provides a method of communication between any type of charger and a charging network to allow remote monitoring and management of one or many chargers. The OCPP is an open protocol with no cost or licensing requirements. Instruction documents and software code for implementing the protocol are made accessible to the general public through the website of its sponsoring organization, Open Charge Alliance. Chargers that conform to OCPP can communicate with any OCPP-compliant charging network. This allows the charging station operators that own the chargers to choose between multiple charging network providers.

The OCPP 2.0.1 was released in March 2020. It made improvements over version 2.0 in the areas of security, compatibility with ISO 15118 related to Plug and Charge, smart charge management, and the extensibility of OCPP. Version 2.0.1 also enhanced

²⁴ [The basics of Plug & Charge | Switch \(switch-ev.com\)](https://switch-ev.com/the-basics-of-plug-and-charge/)

capabilities related to charger monitoring, transaction handling, and display of information such as pricing to customers.

Society of Automotive Engineers (SAE) J1772

This standard, officially titled *SAE Surface Vehicle Recommended Practice J1772, SAE Electric Vehicle and Plug in Hybrid Electric Vehicle Conductive Charge Coupler*, defines the charging connector interface between an EV and a charger. It specifies the physical, electrical, and communication requirements of the connector and mating vehicle inlet for both AC Level 2 and DC fast charging. The October 2017 version of the standard refined language, corrected errors found in the previous version, and updated information to reflect the addition of higher-power-capacity DC charging. The standard can be purchased from the sponsoring organization, SAE International.

Rulemaking Analyses and Notices

Executive Order 12866 (Regulatory Planning and Review), Executive Order 13563 (Improving Regulation and Regulatory Review), and DOT Regulatory Policies and Procedures

The Office of Management and Budget (OMB) has determined that the proposed rule would be a significant regulatory action within the meaning of E.O. 12866.

The preliminary regulatory impact analysis (PRIA) supports this proposed regulation and estimates the costs and benefits associated with establishing minimum standards and requirements. All of the topics for the minimum standards and requirements are required by BIL. To estimate these costs, the PRIA compared the costs

and benefits of proposed provisions to the costs and benefits of the options States would likely choose for their own EVSE programs in the absence of the rule. In many cases, the analysis found that States would likely choose the same requirements that are found in the proposed rule. While many of the costs and benefits in the proposed rule are difficult to quantify, FHWA believes that the benefits justify the costs. The full regulatory impact analysis is available in the docket.

Regulatory Flexibility Act

In compliance with the Regulatory Flexibility Act (Pub. L. 96-354, 5 U.S.C. 601-612), FHWA has evaluated the effects of this proposed rule on small entities and has determined that it is not anticipated to have a significant economic impact on a substantial number of small entities. The proposed rule would impact directly State governments, which are not included in the definition of small entity set forth in 5 U.S.C. 601. Small entities that may be impacted indirectly by a rulemaking are not subject to analysis under the Regulatory Flexibility Act, see *Mid-Tex Electric Cooperative, Inc. v. Federal Energy Regulatory Commission*, 773 F.2d 327 (D.C. Cir 1985). Therefore, FHWA certifies that the proposed rule will not have a significant economic impact on a substantial number of small entities.

Unfunded Mandates Reform Act of 1995

This proposed rule would not impose unfunded mandates as defined by the Unfunded Mandates Reform Act of 1995 (Pub. L. 104-4, 109 Stat. 48). This proposed rule would not result in the expenditure by State, local, and Tribal governments, in the

aggregate, or by the private sector, of \$168 million or more in any one year (2 U.S.C. 1532). In addition, the definition of “Federal Mandate” in the Unfunded Mandates Reform Act excludes financial assistance of the type in which State, local, or Tribal governments have authority to adjust their participation in the program in accordance with changes made in the program by the Federal Government. The Federal-aid highway program permits this type of flexibility.

Executive Order 13132 (Federalism Assessment)

This proposed rule has been analyzed in accordance with the principles and criteria contained in E.O. 13132, and FHWA has determined that this proposed rule would not have sufficient federalism implications to warrant the preparation of a federalism assessment. The FHWA also has determined that this proposed rule would not preempt any State law or State regulation or affect the States’ ability to discharge traditional State governmental functions.

Paperwork Reduction Act of 1995

Under the Paperwork Reduction Act of 1995 (PRA) (44 U.S.C. 3501, *et seq.*), Federal agencies must obtain approval from the Office of Management and Budget (OMB) for each collection of information they conduct, sponsor, or require through regulations. The FHWA has determined that this proposal contains collection of information requirements for the purposes of the PRA. This proposed rule identifies minimum standards and requirements for the implementation of NEVI Formula Program projects and projects for the construction of publicly accessible EV chargers that are

funded with funds made available under title 23, United States Code. The collection of quarterly, annual, and real-time data in support of 23 CFR 680.112(b), 23 CFR 680.112(c), 23 CFR 680.112(d), and 23 CFR 680.116(c) is covered by OMB Control No. 2125-XXXX.

The FHWA has analyzed this proposed rule under the PRA and has determined the following:

Respondents: 52 State DOTs.

Frequency: Quarterly reporting (23 CFR 680.112(b)). Annual reporting (23 CFR 680.112(c) and 23 CFR 680.112(d)). Real-time reporting (23 CFR 680.116(c)).

Estimated Average Burden per Response: Approximately 58 hours annually to complete, maintain, and submit requested data.

Estimated Total Annual Burden Hours: Approximately 3,016 hours annually.

FHWA invites interested persons to submit comments on any aspect of the information collection in this NPRM.

National Environmental Policy Act

The FHWA has analyzed this proposed rule pursuant to the National Environmental Policy Act of 1969 (NEPA) (42 U.S.C. 4321 et seq.) and has determined that it is categorically excluded under 23 CFR 771.117(c)(20), which applies to the promulgation of rules, regulations, and directives. Categorically excluded actions meet the criteria for categorical exclusions under the Council on Environmental Quality regulations and under 23 CFR 771.117(a) and normally do not require any further NEPA

approvals by FHWA. This proposed rule would establish a regulation on minimum standards and requirements for the NEVI Formula Program as directed by BIL to provide funding to States to strategically deploy EV charging infrastructure and to establish an interconnected network to facilitate data collection, access, and reliability. The FHWA does not anticipate any adverse environmental impacts from this proposed rule; no unusual circumstances are present under 23 CFR 771.117(b).

Executive Order 13175 (Tribal Consultation)

The FHWA has analyzed this proposed rule in accordance with the principles and criteria contained in E.O. 13175, “Consultation and Coordination with Indian Tribal Governments.” The proposed rule would establish a regulation on minimum standards and requirements for the NEVI Formula Program 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 measure applies to States that receive title 23 Federal-aid highway funds, and it would not have substantial direct effects on one or more Indian Tribes, would not impose substantial direct compliance costs on Indian Tribal governments, and would not preempt Tribal laws. Accordingly, the funding and consultation requirements of E.O. 13175 do not apply and a Tribal summary impact statement is not required.

Executive Order 12898 (Environmental Justice)

E.O. 12898 requires that each Federal agency make achieving environmental justice part of its mission by identifying and addressing, as appropriate,

disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minorities and low-income populations. The FHWA has determined that this proposed rule does not raise any environmental justice issues.

Regulation Identifier Number

A RIN is assigned to each regulatory action listed in the Unified Agenda of Federal Regulations. The Regulatory Information Service Center publishes the Unified Agenda in April and October of each year. The RIN contained in the heading of this document can be used to cross reference this action with the Unified Agenda.

List of Subjects in 23 CFR Part 680

Grant programs – transportation, Highways and roads, Incorporation by reference, Reporting and recordkeeping requirements, Transportation

Issued under authority delegated in 49 CFR 1.81 and 1.85 on: June 8, 2022

/s/
Stephanie Pollack
Deputy Administrator
Federal Highway Administration

In consideration of the foregoing, FHWA proposes to amend Title 23, Code of Federal Regulations by adding part 680, as set forth below:

PART 680 – NATIONAL ELECTRIC VEHICLE INFRASTRUCTURE FORMULA PROGRAM

Authority: Public Law 117-58, title VIII of division J; 23 U.S.C. 109, 23 U.S.C. 315

§ 680.100 PURPOSE

The purpose of these regulations is to prescribe 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.

§ 680.102 APPLICABILITY

Except where noted, these regulations apply to all NEVI Formula Program projects as well as projects for the construction of publicly accessible EV chargers that are funded with funds made available under title 23, United States Code.

§ 680.104 DEFINITIONS

AC Level 2 means a charger that uses a 240-volt alternating-current (AC) electrical circuit to deliver electricity to the EV.

Alternative Fuel Corridor (AFC) means national EV charging and hydrogen, propane, and natural gas fueling corridors designated by FHWA pursuant to 23 U.S.C. 151.

CHAdeMO means a type of protocol for a charging connector interface between an EV and a charger (see www.chademo.com). It specifies the physical, electrical, and communication requirements of the connector and mating vehicle inlet for direct-current

(DC) fast charging. It is an abbreviation of “charge de move”, equivalent to “charge for moving.”

Charger means a device with one or more charging ports and connectors for charging EVs.

Charging Network means a collection of chargers located on one or more property(ies) that are connected via digital communications to manage the facilitation of payment, the facilitation of electrical charging, and any related data requests.

Charging Network Provider means the entity that operates the digital communication network that remotely manages the chargers. Charging Network Providers may also serve as Charging Station Operators and/or manufacture chargers.

Charging Port means the system within a charger that charges one (1) EV. A charging port may have multiple connectors, but it can only provide power to charge one EV through one connector at a time.

Charging Station means the area in the immediate vicinity of a group of chargers and includes the chargers, supporting equipment, parking areas adjacent to the chargers, and lanes for vehicle ingress and egress. A charging station could comprise only part of the property on which it is located.

Charging Station Operator means the entity that operates and maintains the chargers and supporting equipment and facilities at one or more charging stations. This is sometimes called a Charge Point Operator (CPO). In some cases, the Charging Station Operator and the Charging Network Provider are the same entity.

Combined Charging System (CCS) means a standard connector interface that allows direct current fast chargers to connect to, communicate with, and charge EVs.

Community means either a group of individuals living in geographic proximity to one another, or a geographically dispersed set of individuals (such as individuals with disabilities, migrant workers or Native Americans), where either type of group experiences common conditions.

Connector means the device that attaches EVs to charging ports in order to transfer electricity.

Contactless Payment Methods means a secure method for consumers to purchase services using a debit, credit, smartcard, or another payment device by using radio frequency identification (RFID) technology and near-field communication (NFC).

Direct Current Fast Charger (DCFC) means a charger that uses a 3-phase, 480-volt alternating-current (AC) electrical circuit to enable rapid charging through delivering a direct-current (DC) electricity to the EV.

Disadvantaged communities (DACS) mean census tracts or communities with common conditions identified by the U.S. Department of Transportation and the U.S. Department of Energy that consider appropriate data, indices, and screening tools to determine whether a specific community is disadvantaged based on a combination of variables that may include, but are not limited to, the following: low income, high and/or persistent poverty; high unemployment and underemployment; racial and ethnic residential segregation, particularly where the segregation stems from discrimination by government

entities; linguistic isolation; high housing cost burden and substandard housing; distressed neighborhoods; high transportation cost burden and/or low transportation access; disproportionate environmental stressor burden and high cumulative impacts; limited water and sanitation access and affordability; disproportionate impacts from climate change; high energy cost burden and low energy access; jobs lost through the energy transition; and limited access to healthcare.

Distributed Energy Resource means small, modular, energy generation and storage technologies that provide electric capacity or energy where it is needed.

Electric Vehicle (EV) means an automotive vehicle that is either partially or fully powered on electric power.

Electric Vehicle Infrastructure Training Program (EVITP) refers to a comprehensive training program for the installation of electric vehicle supply equipment. For more information, refer to <https://evitp.org/>.

Electric Vehicle Supply Equipment (EVSE) See definition of a charger.

Open Charge Point Protocol means an open-source communication protocol that governs the communication between chargers and the charging networks that remotely manage the chargers.

Open Charge Point Interface means an open-source communication protocol that governs the communication between multiple charging networks, other communication networks, and software applications to provide information and services for EV drivers.

Plug and Charge means a method of initiating charging, whereby an EV charging customer plugs a connector into their vehicle and their identity is authenticated, a charging session initiates, and a payment is transacted automatically, without any other customer actions required at the point of use.

Private Entity means a corporation, partnership, company, other nongovernmental entity, or nonprofit organization.

Secure payment method means a type of payment processing that ensures a user's financial and personal information is protected from fraud and unauthorized access.

Smart Charge Management means controlling the amount of power dispensed by chargers to EVs to meet customers' charging needs while also responding to external power demand signals to provide load management or resilience benefits to the electric grid.

State EV Infrastructure Deployment Plan means the plan submitted to the FHWA by the State describing how it intends to use its apportioned NEVI Formula Program funds.

§ 680.106 INSTALLATION, OPERATION, AND MAINTENANCE BY QUALIFIED TECHNICIANS OF ELECTRIC VEHICLE CHARGING INFRASTRUCTURE

(a) *Procurement Process Transparency for the Operation of EV Charging Stations.*

(1) Applicability. This sub-section applies only to NEVI Formula Program projects for the operation of EV charging stations where price setting involves a third party.

- (2) Agencies shall ensure public transparency for how the price will be determined and set for EV charging and make available for public review the following:
- (i) Summary of the procurement process used;
 - (ii) Number of bids received;
 - (iii) Identification of the awardee;
 - (iv) Proposed contract to be executed with the awardee;
 - (v) Financial summary of contract payments suitable for public disclosure including price and cost data, in accordance with State law; and
 - (vi) Any information describing how prices for EV charging are to be set under the proposed contract, in accordance with State law.

(b) *Number of Chargers.*

- (1) Applicability. This sub-section applies only to NEVI Formula Program projects.
 - (2) Charging stations must have at least four charging network-connected Direct Current Fast Charger (DCFC) ports and be capable of simultaneously charging at least four EVs.
- (c) *Connector Type.* All non-proprietary charging connectors must meet applicable industry standards. Each DCFC charging port must have a permanently attached Combined Charging System (CCS) Type 1 connector and must charge any CCS-compliant vehicle. For NEVI projects using FY22 funds, one or more DCFC charging port(s) may also have a permanently attached CHAdeMO connector (see

www.chademo.com). Each AC Level 2 charging port must have a permanently attached J1772 (incorporated by reference, see § 680.120(d)(1)) connector and must charge any J1772-compliant vehicle. One or more DCFC charging port(s) may also have a permanently attached proprietary connector.

(d) *Power Level.*

(1) Maximum power per DCFC charging port must be at or above 150 kilowatt (kW).

Each charging station must be capable of providing at least 150 kW per charging port simultaneously across all charging ports. DCFC must supply power according to an EV's power delivery request up to 150 kW. DCFC may participate in smart charge management programs so long as each charging port continues to meet an Electric Vehicle's request for power up to 150 kW.

(2) Maximum power per AC Level 2 charging port must be at or above 6 kW and the

charging station must be capable of providing at least 6 kW per port simultaneously across all AC ports. AC Level 2 chargers may participate in smart charge management programs so long as each charging port continues to meet an Electric Vehicle's demand for power up to 6 kW.

(e) *Availability.* Charging stations must be available for use and sited at locations physically accessible to the public 24 hours per day, seven days per week, year-round. This section does not prohibit isolated or temporary interruptions in service or access due to maintenance or repairs.

(f) *Payment Methods.*

- (1) Charging stations must provide for secure payment methods, accessible to persons with disabilities, which at a minimum shall include a contactless payment method that accepts major debit and credit cards, and Plug and Charge payment capabilities using the ISO 15118 standard (incorporated by reference, see § 680.120(b)(1));
- (2) Charging station operators must not require a membership for use;
- (3) Charging stations must not delay, limit, or curtail power flow to vehicles on the basis of payment method or membership; and
- (4) Charging station payment instructions must provide multilingual access and accessibility for people with disabilities.

(g) *Equipment Certification.* States must ensure that all EVSE are certified by an Occupational Safety and Health Administration Nationally Recognized Testing Laboratory and that all AC Level 2 EVSE are ENERGY STAR certified.

(h) *Security.* States must implement physical and cybersecurity strategies consistent with their respective State EV Infrastructure Deployment Plans to mitigate charging infrastructure, grid, and consumer vulnerability associated with the operation of charging stations.

- (1) Physical security strategies may address lighting, siting, driver and vehicle safety, fire prevention, tampering, charger locks, and illegal surveillance of payment devices.

(2) Cybersecurity strategies may address user identity and access management, selection of appropriate encryption systems, intrusion and malware detection, event logging and reporting, management of software updates, and secure operation during communication outages.

- (i) *Long-Term Stewardship*. States must ensure that EVSE is maintained in compliance with NEVI standards for a period of not less than 5 years from the date of installation.
- (j) *Qualified Technician*. States shall ensure that the workforce installing, maintaining, and operating EVSE has appropriate licenses, certifications and training to ensure that the installation and maintenance of EVSE is performed safely by a qualified and increasingly diverse workforce of licensed technicians and other laborers. Further:
 - (1) Except as provided in (2), all electricians installing, operating, or maintaining ESVE must meet one of the following requirements:
 - (i) Certification from the Electric Vehicle Infrastructure Training Program (EVITP).
 - (ii) Graduation from a Registered Apprenticeship Program for electricians that includes EVSE-specific training and is developed as a part of a national guideline standard approved by the Department of Labor in consultation with the Department of Transportation.
 - (2) For projects requiring more than one electrician, at least one electrician must meet the requirements above, and at least one electrician must be enrolled in an electrical registered apprenticeship program.

- (3) All other onsite, non-electrical workers directly involved in the installation, operation, and maintenance of EVSE must have graduated from a registered apprenticeship program or have appropriate licenses, certifications, and training as required by the State.
- (k) *Customer Service.* States must ensure that EV charging customers have mechanisms to report outages, malfunctions, and other issues with charging infrastructure. States must comply with the American with Disabilities Act of 1990 requirements and multilingual access when creating reporting mechanisms.
- (l) *Customer Data Privacy.* Charging Station Operators must collect, process, and retain only that personal information strictly necessary to provide the charging service to a consumer, including information to complete the charging transaction and to provide the location of charging stations to the consumer. Charging Stations Operators must also take reasonable measures to safeguard consumer data.
- (m) *Use of Program Income.*
 - (1) Any net income from revenue from the sale, use, lease, or lease renewal of real property acquired with NEVI Formula Program funds shall be used for title 23, United States Code, eligible projects.
 - (2) For purposes of program income or revenue earned from the operation of an EV charging station, the State DOT should ensure that all revenues received from operation of the EV charging facility are used only for:

- (i) Debt service with respect to the EV charging station project, including funding of reasonable reserves and debt service on refinancing;
- (ii) A reasonable return on investment of any private person financing the EV charging station project, as determined by the State DOT;
- (iii) Any costs necessary for the improvement and proper operation and maintenance of the EV charging station, including reconstruction, resurfacing, restoration, and rehabilitation;
- (iv) If the EV charging station is subject to a public-private partnership agreement, payments that the party holding the right to the revenues owes to the other party under the public-private partnership agreement; and
- (v) Any other purpose for which Federal funds may be obligated under this title 23, United States Code.

**§ 680.108 INTEROPERABILITY OF ELECTRIC VEHICLE CHARGING
INFRASTRUCTURE**

Charger-to-EV Communication. Chargers must conform to ISO 15118 (incorporated by reference, see § 680.120(b)(1)) to communicate with CCS-compliant vehicles that have implemented ISO 15118.

**§ 680.110 TRAFFIC CONTROL DEVICES OR ON-PREMISES SIGNS
ACQUIRED, INSTALLED OR OPERATED**

- (a) *Manual on Uniform Traffic Control Devices for Streets and Highways*. All traffic control devices must comply with 23 CFR part 655.
- (b) *On-Premises Signs*. On-property or on-premise advertising signs must comply with 23 CFR part 750.

§ 680.112 DATA SUBMITTAL

- (a) *Applicability*. This section applies only to NEVI Formula Program projects.
- (b) *Quarterly Data Submittal*. States must ensure the following charging station use, cost, reliability, and maintenance data are collected, maintained, and submitted on a quarterly basis in a manner prescribed by the FHWA:
 - (1) Charging station location identifier that the following data can be associated with;
 - (2) Charging session start time, end time, and successful session completion (yes/no) by port;
 - (3) Energy (kWh) dispensed to EVs per session by port;
 - (4) Peak session power (kW) by port;
 - (5) Charging station uptime calculated in accordance with the equation in § 680.116(b) for each of the previous 3 months;
 - (6) Cost of electricity to operate per charging station in each of the previous 3 months;
 - (7) Maintenance and repair cost per charging station for each of the previous 3 months;

- (8) Charging station real property acquisition cost, charging equipment acquisition and installation cost, distributed energy resource acquisition and installation cost, and grid connection and upgrade cost on the utility side of the electric meter; and
- (9) Distributed energy resource installed capacity, in kW or kWh as appropriate, of asset by type (e.g., stationary battery, solar, etc.) per charging station.

(c) *Annual Data Submittal.* States must ensure the following data are collected, maintained, and submitted on an annual basis in a manner prescribed by the FHWA for each charging station:

- (1) The name, address and type of private entity involved in the operation, maintenance, and installation of EVSE.
- (2) For private entities identified in paragraph (c)(1) of this section, identification of and participation in any state or local business opportunity certification programs including but not limited to minority-owned businesses, Veteran-owned businesses, woman-owned businesses, and businesses owned by economically disadvantaged individuals.

(d) *Community Engagement Outcomes Report.* States must make publicly available in a manner prescribed by the FHWA an annual report describing the community engagement activities conducted as part of the development and approval of their most recently-submitted State EV Infrastructure Deployment Plan, including engagement with DACs. This report should include community engagement type,

date, number of attendees, communities represented by attendees, and how information on that engagement was reflected in the State's EV Infrastructure Deployment Plan.

§ 680.114 CHARGING NETWORK CONNECTIVITY OF ELECTRIC VEHICLE CHARGING INFRASTRUCTURE

(a) *Charger-to-Charger-Network* Communication.

- (1) Chargers must communicate with a charging network via a secure communication method.
- (2) Chargers must have the ability to receive and implement secure, remote software updates and conduct real-time protocol translation, encryption and decryption, authentication, and authorization in their communication with charging networks.
- (3) Charging networks must perform and chargers must support remote charger monitoring, diagnostics, control, and smart charge management.
- (4) Chargers and charging networks must securely measure, communicate, store, and report energy and power dispensed, real-time charging-port status, real-time price to the customer, and historical charging-port uptime.
- (5) Chargers must be capable of using Open Charge Point Protocol (OCPP) (incorporated by reference, see § 680.120(c)(1)) to communicate with any Charging Network Provider.
- (6) Chargers must be designed to securely switch Charging Network Providers without any changes to hardware.

- (b) *Charging-Network-to-Charging-Network Communication.* A Charging Network must be capable of communicating with other Charging Networks to enable an EV driver to use a single credential to charge at Charging Stations that are a part of multiple Charging Networks.
- (c) *Charging-Network-to-Grid Communication.* Charging Networks must be capable of secure communication with electric utilities, other energy providers, or local energy management systems.

§ 680.116 INFORMATION ON PUBLICLY AVAILABLE ELECTRIC VEHICLE CHARGING INFRASTRUCTURE LOCATIONS, PRICING, REAL-TIME AVAILABILITY, AND ACCESSIBILITY THROUGH MAPPING APPLICATIONS

- (a) *Communication of Price.*
- (1) Chargers must display and base the price for electricity to charge in \$/kWh.
 - (2) Price of charging displayed on the chargers and communicated via the charging network must be the real-time price (i.e., price at that moment in time). The price at the start of the session cannot change during the session.
 - (3) Price structure including any other fees in addition to the price for electricity to charge must be clearly explained via an application or a website, with instructions for finding the information posted in an accessible manner at the charging station.
- (b) *Minimum Uptime.* States must ensure that charging ports have an average annual uptime of greater than 97%.

- (1) A charging port is considered "up" when its hardware and software are both online and available for use, or in use, and the charging port successfully dispenses electricity as expected.
- (2) Charging port uptime must be calculated on a quarterly basis for the previous twelve months.
- (3) Charging port uptime percentage must be calculated using the following equation:

$$\mu = ((8760 - (T_{\text{outage}} - T_{\text{excluded}})) / 8760) \times 100$$

where:

μ = port uptime percentage,

T_{outage} = total hours of outage in previous year, and

T_{excluded} = total hours of outage in previous year for reasons outside the charging station operator's control, such as electric utility service interruptions, internet or cellular service provider interruptions and outages caused by the vehicles, provided that the Charging Station Operator can demonstrate that the charging port would otherwise be operational.

- (c) *Third-Party Data Sharing.* States must ensure that the following data fields are made available, free of charge, to 3rd-party software developers, via application programming interface:

- (1) Charging station name or identifier;

- (2) Address (city, state, and zip code) of the property where the charging station is located;
- (3) Global positioning system (GPS) coordinates in decimal degrees of exact charging station location;
- (4) Charging station operator name;
- (5) Charging station phone number;
- (6) Charging network provider name;
- (7) Number of charging ports;
- (8) Connector types available at each charging port;
- (9) Maximum power level of each charging port;
- (10) Power sharing by port (i.e., whether power sharing between EVSEs is enabled)
- (11) Date when charging station first became available for use;
- (12) Pricing structure;
- (13) Physical dimensions of the largest vehicle that can access a charging port at the charging station;
- (14) Payment methods accepted;
- (15) Number of charging ports accessible to persons with disabilities;
- (16) Real-time status of each charging port, including identification of whether a port is accessible to persons with disabilities, in terms defined by Open Charge Point Interface 2.2 (incorporated by reference, see § 680.120(a)(1)), updated at a frequency that meets reasonable customer expectations;

- (17) Real-time price to charge at each charging port, in terms defined by Open Charge Point Interface 2.2 (incorporated by reference, see § 680.120(a)(1)), updated at a frequency that meets reasonable customer expectations; and
- (18) Station Status (Available or Planned).

§ 680.118 OTHER FEDERAL REQUIREMENTS

All applicable Federal statutory and regulatory requirements apply to the EV charger projects. These requirements include, but are not limited to:

- (a) All statutory and regulatory requirements that are applicable to funds apportioned under chapter 1 of title 23, United States Code, and the requirement of 2 CFR part 200 apply. This includes the applicable requirements of title 23, United States Code, and title 23, Code of Federal Regulations, such as the applicable Buy America requirements at section 313, of title 23 United States Code, and Build America, Buy America Act (Pub. L. No 117-58, div. G §§ 70901–70927).
- (b) As provided at 23 U.S.C. 109(s)(2), projects to install EV chargers are treated as if the project is located on a Federal-aid highway. As a project located on a Federal-aid highway, Section 113 of title 23, United States Code, applies and Davis Bacon Federal wage rate requirements included at subchapter IV of chapter 31 of title 40, U.S.C., must be paid for any project funded with NEVI Formula Program funds.
- (c) The American with Disabilities Act of 1990 (ADA), and implementing regulations, apply to EV charging stations by prohibiting discrimination on the basis of disability by public and private entities. EV charging stations must comply with

applicable accessibility standards adopted by the Department of Transportation into its ADA regulations (49 CFR Part 37) in 2006, and adopted by the Department of Justice into its ADA regulations (28 CFR Parts 35 & 36) in 2010.

(d) Title VI of the Civil Rights Act of 1964, and implementing regulations, apply to this program to ensure that no person shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance.

(e) All applicable requirements of Title VIII of the Civil Rights Act of 1968 (Fair Housing Act), and implementing regulations, apply to this program.

(f) The Uniform Relocation Assistance and Real Property Acquisition Act, and implementing regulations, apply to this program by establishing minimum standards for federally funded programs and projects that involve the acquisition of real property (real estate) or the displacement or relocation of persons from their homes, businesses, or farms.

(g) The National Environmental Policy Act of 1969 (NEPA), the Council on Environmental Quality's NEPA implementing regulations, and applicable agency NEPA procedures apply to this program by establishing procedural requirements to ensure that federal agencies consider the consequences of their proposed actions on the human environment and inform the public about their decision making for major Federal actions significantly affecting the quality of the human environment.

§ 680.120 Reference manuals.

Certain material is incorporated by reference (IBR) into this subpart with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. All approved material is available for inspection at the U.S. Department of Transportation Library, 1200 New Jersey Avenue, SE., Washington, DC 20590 in Room W12-300 and may be obtained from the sources listed in paragraphs (a) and (b) of this section. It is also available for inspection at the National Archives and Records Administration (NARA). For information on the availability of these documents at NARA email fr.inspection@nara.gov or go to <https://www.archives.gov/federal-register/cfr/ibr-locations.html>.

(a) EVRoaming Foundation, Vondellaan 162, 3521 GH, Utrecht – The Netherlands,

<https://www.evroaming.org>.

(1) Open Charge Point Interface (OCPI) 2.2.1, October 6, 2021, IBR approved for § 680.116(c)(15) – (16).

(2) [Reserved]

(b) International Organization for Standardization, Chemin de Blandonnet 8, CP 401, 1214 Vernier, Geneva, Switzerland, +41 22 749 01 11, <https://www.iso.org/contact-iso.html>

(1) International Classification for Standards Catalogue: “Electric Road Vehicles: Road vehicles – Vehicle to grid communication interface,” 43.120.15118, Sections 1 (published 2019), 2 (published 2014), 3 (published 2015), 4 (published 2018), 5 (published 2018), and 8 (published 2020), IBR approved for § 680.106(f)(1) and 680.108.

(2) [Reserved]

(c) Open Charge Alliance, Businesspark Arnhems Buiten, Utrechtseweg 310, Office Building B42, 6812 AR Arnhem – The Netherlands, tel: +31 26 312 0223,
<https://www.openchargealliance.org>.

(1) Open Charge Point Protocol (OCPP) 2.0.1, March 31, 2020, IBR approved for § 680.114(a)(5).

(2) [Reserved]

(d) SAE International, 400 Commonwealth Drive, Warrendale, PA 15096, tel: (724) 776-4841; <https://www.sae.org>.

(1) SAE Electric Vehicle and Plug in Hybrid Electric Vehicle Conductive Charge Coupler, J1772_201710, October 13, 2017, IBR approved for § 680.106(c).

(2) [Reserved]