

**DEPARTMENT OF TRANSPORTATION**

**[4910-22-P]**

**Federal Highway Administration**

**23 CFR Part 680**

**[FHWA Docket No. FHWA–2022-0008]**

**RIN 2125-AG10**

**National Electric Vehicle Infrastructure Standards and Requirements**

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

**ACTION:** Final rule.

**SUMMARY:** This final rule establishes 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 under certain statutory authorities, including any EV charging infrastructure project funded with Federal funds that is treated as a project on a Federal-aid highway. The standards and requirements 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:** This final rule is effective [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

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### **Executive Summary**

This final rule establishes regulations that set minimum standards and requirements for projects funded under the NEVI Formula Program, projects for the construction of publicly accessible EV chargers funded under Title 23, United States Code (U.S.C.).<sup>1</sup> This also includes any publicly accessible EV charging infrastructure project funded with Federal funds that is treated as a project on a Federal-aid highway.

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<sup>1</sup> Refer to “DOT Funding and Financing Programs with EV Eligibilities” chart on pages 10–11 in the NEVI Formula Program Guidance, available at [The National Electric Vehicle Infrastructure \(NEVI\) Formula Program Guidance \(dot.gov\)](http://TheNationalElectricVehicleInfrastructure(NEVI)FormulaProgramGuidance(dot.gov)).

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. 135 Stat. 429, 1424. Congress specified that “funds made available under” the NEVI Formula Program are “subject to the minimum standards and requirements.” As outlined in statute, the purpose of the NEVI Formula Program is to “provide funding to States to strategically deploy EV charging infrastructure and to establish an interconnected network to facilitate data collection, access, and reliability.” This purpose is satisfied by creating a convenient, affordable, reliable, and equitable network of chargers throughout the country. Prior to the establishment of this rule, there were no national standards for the installation, operation, or maintenance of EV charging stations, and wide disparities exist among EV charging stations in key components, such as operational practices, payment methods, 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 also directed by Section 11129 of BIL, which amends 23 U.S.C. 109, to ensure that certain EV charging station standards apply to all projects that install EV charging infrastructure using funds provided under Title 23, U.S.C. This final rule does not conflict with or supersede the implementing regulations for other Title 23, U.S.C. statutory requirements. This final rule enables States or other designated recipients to implement federally funded charging station projects in a standardized fashion in order to build a convenient, accessible, reliable, and equitable charging network across the

country that can be utilized by all EVs regardless of vehicle brand. Such standards provide reliable expectations for travel in an EV across and throughout the United States, regardless of which State you charge in, and support a national workforce skilled and trained in charging station installation and maintenance.

The BIL specifically requires minimum standards and requirements be developed related to at least six areas:

(1) Installation, operation, and maintenance by qualified technicians of EV infrastructure. The FHWA requires 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, U.S.C., including any EV charging infrastructure project funded with Federal funds that is treated as a project on a Federal-aid highway. In terms of standards for installation, operation, and maintenance, charging stations are required to contain a minimum number of ports, types of connectors, payment methods, and requirements for customer support services. In terms of technician qualifications, there are minimum requirements for training, and certification standards for technicians installing, operating, and maintaining chargers to ensure consistency around quality installation and safety across the network. This final rule provides the traveling public with reliable expectations for their EV charging experience anywhere that NEVI Formula funds or Title 23, U.S.C. funds, including Federal funds for projects that are treated as a project on a Federal-aid highway, are used to construct EV charging infrastructure. In addition to requirements that are customer-facing, a series of additional requirements

provide less visible, yet critical, standardization and uniformity for how charging stations would be installed, maintained, and operated. These types of requirements 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. This final rule also explains what the program income can be used for when there is net income from the sale, use, lease, or lease renewal of real property acquired, or when there is income or revenue earned from the operation of the EV charging station.

(2) Interoperability of EV charging infrastructure. The requirements relating to interoperability similarly address less visible standardization along the national EV charging network. The FHWA is working to establish 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 establishes interoperability requirements through this final rule for charger-to-EV communication, charger-to-charger network communication, and charging network-to-charging network 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 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 address requirements about traffic control devices and on-premise signs.

(4) Data requested related to EV charging projects subject to this rule, including the content and frequency of submission of such data. The FHWA outlines data submittal requirements that are applicable under specified circumstances. States and other designated recipients are required to submit data to identify charging station use, reliability, and cost information. This final rule serves an important coordination role by standardizing submissions of large amounts of data from charging stations across the United State while providing the Joint Office of Energy and Transportation (Joint Office)<sup>2</sup> with the data needed to create the public EV charging database outlined in BIL.

(5) Network connectivity of EV charging infrastructure. This final rule outlines network connectivity requirements for charger-to-charger network communication, charging network-to-charging network communication, and charging network-to-grid communication. These requirements address standards meant to allow for secure remote monitoring, diagnostics, control, and updates. These requirements will help address cybersecurity concerns while mitigating against stranded assets (whereby any provider abandons operations at any particular charging station).

(6) Information on publicly available EV charging infrastructure locations, pricing, real-time availability, and accessibility through mapping applications. This final rule establishes requirements to standardize the communication to consumers of price and availability of each charging station. Specifically outlined in the final regulation, States and other designated recipients are required to ensure that basic charging station information (such as location, connector type, and power level), real-time status, and real-

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<sup>2</sup>[Home Page · Joint Office of Energy and Transportation \(driveelectric.gov\).](#)

time price to charge would be available free of charge to third-party software developers through application programming interface. These requirements 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. This final rule also establishes requirements for public transparency when EV charging prices are to be set by a third party. This will protect the public from price gouging.

This final rule applies 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). This final rule also applies to other designated recipients of Title 23 funds and recipients of other Federal funds for projects treated as a project on a Federal-aid highway.

The FHWA completed an analysis of this final rule, as described in detail in the “Regulatory Impact Analysis (RIA)” available in the docket. The RIA supports this final rule and estimates the costs and benefits associated with establishing minimum standards and requirements, derived from the costs of implementing the 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 RIA compares the costs and benefits of proposed provisions to the costs and benefits of the options States and other designated recipients would likely choose for their own charger programs in the absence of the rule. In many cases, the analysis found that States and other designated recipients would likely choose the same requirements that are found in this final 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. 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 released program guidance for the NEVI Formula Program, available at [The National Electric Vehicle Infrastructure \(NEVI\) Formula Program Guidance \(dot.gov\)](#), 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.

### **EV Funding Options**

In addition to NEVI, there are other Title 23 programs that can be used 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.<sup>3</sup> There also may be other sources of Federal funds that are available for EV charging infrastructure projects.

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<sup>3</sup> Federal Funding is Available for Electric Vehicle Charging Infrastructure on the National Highway System, available at [Federal Funding is Available For Electric Vehicle Charging Infrastructure On the National Highway System \(dot.gov\)](#).



## **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 under Paragraph (2) under the Highway Infrastructure Program heading in title VIII of division J. This final rule directly addresses the requirements in BIL. This final rule 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, U.S.C. funds for EV charging infrastructure. Through the provision of minimum standards and requirements, this final regulation helps set reliable expectations for the experience of EV charging across the nation. Notwithstanding any other provisions of law, nothing in this final rule is intended to be construed to prevent States and other designated recipients 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 in the Department of Transportation and the Department of Energy (DOE) 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 final rule.

### **Need for this Final Rule**

There are no other existing national standards for EV charging stations, although there may be some State standards that exist. Prior to the establishment of this final rule, 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 have been 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 multinational 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, unreliability of the charging station function, and issues from the historical lack of standardized technician qualifications each exacerbate 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 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 other minimum standards for chargers reduced 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, this final rule outlines minimum standards and requirements to ensure the appropriate use of Federal funds on a new technology and market, and greatly enhances consumer confidence and public safety.

### **Benefits of this Final Rule**

The FHWA believes that the establishment of this final rule provides a powerful antidote to these issues, helps create energy independence, and encourages more widespread adoption of EVs because EV consumers will 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 vehicle future is cleaner, more equitable, and more affordable. It provides 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.<sup>4</sup> Currently, the transportation sector is both the largest source of U.S. carbon dioxide emissions,<sup>5</sup> 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 circumstances. 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

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<sup>4</sup> White House Fact Sheet: The Biden-Harris Electric Vehicle Charging Action Plan (December 13, 2021), available at [FACT SHEET: The Biden-Harris Electric Vehicle Charging Action Plan - The White House](#).

<sup>5</sup> See EPA Inventory of U.S. Greenhouse Gas Emissions and Sinks, available at [Inventory of U.S. Greenhouse Gas Emissions and Sinks | US EPA](#).

land at a rate that is unprecedented in at least the last 2000 years.<sup>6</sup> 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.<sup>7</sup> These changes in extreme events, along with anticipated future changes in these events because of climate change, threaten the reliability, safety and efficiency of the transportation system. At the same time, transportation contributes significantly to the causes of climate change<sup>8</sup> and each additional ton of CO<sub>2</sub> 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, this final rule will supercharge America’s efforts to lead the electric future and align with recent Executive Orders (E.O.) 13990, “Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis,” 86 FR 7037 (Jan. 25, 2021), E.O. 14008, “Tackling the Climate Crisis at Home and Abroad,” 86 FR 7619 (Feb. 1, 2021), and a U.S. target of achieving a 50 to 52 percent reduction from 2005 levels of economy-wide net greenhouse gas (GHG) pollution in 2030, on a course toward reaching net-zero emissions economywide by no later than

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<sup>6</sup> 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 [Climate Change 2021: The Physical Science Basis | Climate Change 2021: The Physical Science Basis \(ipcc.ch\)](https://www.ipcc.ch/report/ar6/wg1/).

<sup>7</sup> 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. Pe’an, 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. Yelekci, R. Yu, and B. Zhou (eds.)]. Cambridge University Press. In Press.

<sup>8</sup> 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.

2050.<sup>9</sup> Section 1 of E.O. 13990 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 recommits the United States to the Paris Agreement and calls on the United States to begin the process of 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. This final rule 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.<sup>10</sup> Enabling wider adoption of EVs may also have significant benefits to equity and environmental justice whereby a national network

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<sup>9</sup> White House Fact Sheet: The Biden-Harris Electric Vehicle Charging Action Plan (December 13, 2021), available at [FACT SHEET: The Biden-Harris Electric Vehicle Charging Action Plan - The White House](#)/, 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 [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 - The White House](#); White House Fact Sheet: President Biden’s Leaders Summit on Climate (Apr. 23, 2021), available at [FACT SHEET: President Biden’s Leaders Summit on Climate - The White House](#).

<sup>10</sup> The Long-Term Strategy of the United States, Pathways to Net-Zero Greenhouse Gas Emissions by 2050, available at [The Long-Term Strategy of the United States, Pathways to Net-Zero Greenhouse Gas Emissions by 2050 \(whitehouse.gov\)](#).

of EV charging infrastructure reduces disparities in access to transportation infrastructure and health effects.<sup>11</sup>

Another benefit of this final rule is the opportunity to advance both equity and environmental justice for communities that have been underserved by transportation infrastructure and overburdened by costs and environmental harms by supporting widescale national EV adoption and the deployment of EV charging infrastructure. *See* Pub. L. No. 117-58, 135 Stat. 429, 1423 (in developing guidance concerning the NEVI Formula Program, the Secretary of Transportation and the Secretary of Energy shall consider “the need for publicly available electric vehicle charging infrastructure in rural corridors and underserved or disadvantaged communities.”); *see also* E.O. 13985, “Advancing Racial Equity and Support for Underserved Communities Through the Federal Government,” 86 FR 7009 (Jan. 20, 2021); E.O. 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations” 59 FR 7629 (Feb. 16, 1994). When determining where EV charging stations should be located, there should be engagement with rural, underserved, and disadvantaged communities, as appropriate, to ensure that the deployment, installation, operation, and use of EV charging infrastructure can achieve 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.

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<sup>11</sup> U.S. Department of Transportation Strategic Plan FY 2022–2026.

Achieving the USDOT's long-term goals requires the equitable deployment of EV infrastructure. The NEVI Formula Program funding, along with funding for EV charging infrastructure provided through applicable Title 23 programs, provides an opportunity to ensure these investments remove barriers for disadvantaged communities and create safeguards to prevent or mitigate potential harms. Consideration of the benefits and harms is in accordance with E.O. 13985, "Advancing Racial Equity and Support for Underserved Communities Through the Federal Government," 86 FR 7009 (Jan. 20, 2021), which requires the Federal Government to pursue a comprehensive approach to advance racial equity and support for underserved communities, 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. In the absence of the NEVI Formula Program and other federally funded EV charging infrastructure investments, the market will not prioritize the installation of EV chargers in low or medium income 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 an outcome would not support widescale national EV adoption and the deployment of EV charging infrastructure. It would also be at odds with E.O. 13985.

This final rule complements 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 to achieve fully built out status. 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.<sup>12</sup> 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. Thus, increased adoption in communities could be associated with a community-wide decrease in transportation 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 support energy independence and create domestic jobs.

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<sup>12</sup>[Alternative Fuels Data Center: Vehicle Cost Calculator \(energy.gov\)](#). 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.



The NEVI Formula Program and other federally funded EV charging infrastructure investments also address 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 final rule outlines minimum qualifications for technicians working on-site at charging stations. Minimum skill, training, and certification standards for technicians ensure 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, this final rule also increases the safety and reliability of charging station function and use, and mitigates project delivery issues such as cost overruns and delays.

This final rule establishes minimum standards and requirements specific to the use of NEVI Formula Program funds, funds made available under Title 23, U.S.C. for projects for the construction of publicly accessible EV chargers, and any EV charging infrastructure project funded with Federal funds that is treated as a project on a Federal-aid highway. Consistent with E.O. 14036, “Promoting Competition in the American Economy,” 86 FR 36987 (July 14, 2021), 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. E.O. 14036 also calls for a

Government-wide approach to ensuring improved access for entrepreneurs and better service for consumers by reducing the ability for companies to make products difficult to replace or service.

This final rule aligns closely with E.O. 14036 by promoting competition and opening the EV charging market to new entrants. It does so both generally, by establishing transparent standards, and specifically, by including interoperability standards which require standard protocols for communication between EVs, chargers, and charging networks. The interoperability requirements include network switching requirements which ensure that it is not prohibitively difficult to switch network providers after charging infrastructure is installed.

### **Summary of This Final Rule**

#### **Applicability**

This final rule establishes applicability of these regulations to projects funded under the NEVI Formula Program and projects for the construction of publicly accessible EV chargers under certain statutory authorities, including any EV charging infrastructure project funded with Federal funds that is treated as a project on a Federal-aid highway, except where explicit limited applicability is noted in the regulatory text.

#### **Procurement Process**

This final rule establishes a requirement for there to be public transparency regarding the process of how the price will be determined and set for EV charging.

## **Number of Charging Ports**

This final rule establishes a requirement for the number of ports at a charging station. Any time charging stations are installed there is a required minimum of 4 ports, notwithstanding the type of port (Direct Current Fast Charger (DCFC) or alternating current (AC) Level 2 or a combination of DCFC and AC Level 2). Additionally, in all instances when a DCFC charging station is installed along and designed to serve users of designated AFCs, there must be at least four network-connected DCFC charging ports.

## **Connector Types**

This final rule establishes a requirement that each DCFC port must have a Combined Charging System (CCS) Type 1 connectors. This final rule also allows DCFC charging ports to have other non-proprietary connectors so long as each DCFC charging port is capable of charging a CCS-compliant vehicle.

## **Power Level**

This final rule establishes a requirement that each DCFC located along and designed to serve users of designated AFCs must simultaneously deliver up to 150kW, as requested by the EV, and that each AC Level 2 port be capable of providing at least 6 kW per port simultaneously across all AC ports with an option to allow the customer to consent to accept a lower power level to allow power sharing or to participate in smart charge management programs. This final rule also clarifies that power sharing is permissible above the minimum 150 -kW per-port requirement for DCFCs.

## *Availability*

This final rule establishes a requirement that each charging station along designated AFCs and intended to serve the users of designated AFCs must be available 24 hours per day, 7 days per week and charging stations not along AFCs and not intended to serve the users of designated AFCs must be available for use and accessible to the public at least as frequently as the business operating hours of the site host.

### **Payment Methods**

This final rule establishes a requirement that charging stations must provide a contactless payment method that accepts major credit and debit cards and accept payment through either an automated toll-free phone number or a short message/messaging system (commonly abbreviated as SMS). Payment methods must be accessible to persons with disabilities, not require a membership, not affect the power flow to vehicles, and provide access for those that are limited English proficient.

### **Equipment Certification**

This final rule establishes a requirement that all equipment is appropriately certified and that all AC Level 2 chargers are ENERGY STAR certified.

### **Security**

This final rule establishes a requirement that States are required to implement appropriate physical strategies for the location of the charging station and cybersecurity strategies that protect consumer data and protect against the risk of harm to, or disruption of, charging infrastructure and the grid.

### **Long-Term Stewardship**

This final rule establishes a requirement that chargers are maintained in compliance with this regulation for a minimum of 5 years.

### **Qualified Technician**

This final rule establishes a requirement that the workforce installing, maintaining, and operating the chargers has appropriate licenses, certifications, and training. This final rule also requires that all electricians installing, operating, or maintaining EV supply equipment have a certification from the Electric Vehicle Infrastructure Training Program (EVITP) or graduation or a continuing education certificate from a registered apprenticeship program. Additionally, for projects that require more than one electrician, at least one electrician must be an enrolled in an electrical registered apprenticeship program. This final rule also clarifies that non-electrical work must be performed in accordance with State requirements.

### **Customer Service**

This final rule establishes a requirement that EV charging customers must have a mechanism to report issues with charging infrastructure. These reporting mechanisms must provide multilingual services and be compliant with the American with Disabilities Act of 1990.

### **Customer Data Privacy**

This final rule establishes a requirement that charging station operators only collect, process, and retain personal information strictly necessary to provide the charging service to a customer and take reasonable measures to safeguard customer data.

### **Use of Program Income**

This final rule establishes a requirement that the use of income derived from the real property shall be used for Title 23, U.S.C., eligible projects and that the use of income derived from the operation of the EV charging facility shall be used for debt services, return on investment for private financing, improvement or maintenance of the EV charging station, payments under public-private partnerships, or other Title 23 purposes.

### **Interoperability of EV Charging Infrastructure**

This final rule establishes certain interoperability requirements for charger-to-EV communication, charger-to-charger-network communication, and charging-network-to-charging network communication, as well as a requirement for chargers to be designed to securely switch charging network providers without any changes to hardware.

### **Traffic Control Devices or On-Premise Signs Acquired, Installed, or Operated**

This final rule establishes compliance with the MUTCD and 23 CFR part 750 for on-premise signs.

### **Data Submittal**

This final rule establishes quarterly and annual data submittal for all projects funded under the NEVI Formula Program and projects for the construction of publicly accessible EV chargers under certain statutory authorities, including any EV charging infrastructure project funded with Federal funds that is treated as a project on a Federal-aid highway. This final rule also establishes one-time data submittal requirements for both the NEVI Formula Program projects and grants awarded under 23 U.S.C. 151(f) for

projects that are for EV charging stations located along and designed to serve the users of designated AFCs. This final rule also establishes a requirement applicable only to the NEVI Formula Program projects that a Community Engagement Outcomes Report must be included in the State EV Infrastructure Deployment Plan.

### **Charging Network Connectivity of EV Charging Infrastructure**

This final rule establishes charging network connectivity requirements for charger-to-charger-network communication, charging-network-to-charging-network communication, and charging-network-to-grid-communication, as well as a requirement that chargers must remain functional if communication with the charging network is temporarily disrupted.

### **Information on Publicly Available EV Charging Infrastructure Locations, Pricing, Real Time Availability, and Accessibility Through Mapping**

This final rule establishes requirements for information on publicly available EV charging infrastructure locations, pricing, real time availability, and accessibility through mapping. The regulations specify that these specific data fields that must be available, free of charge, to third party software developers. The regulation also specifies how the price for EV charging must be displayed and stipulates that the price must be the real-time price and any other fees in addition to the price for electricity must be clearly displayed and explained. This final rule also establishes that each charging port must have an average annual uptime greater than 97 percent.

## **Other Federal Requirements**

Finally, this final rule specifies that all applicable Federal statutory and regulatory replacement apply to the EV charger projects.

## **Summary of Comments**

The FHWA published its NPRM at 87 FR 37262 on June 22, 2022. The FHWA received 384 submissions to the docket resulting in more than 1,700 individual comments in response to the NPRM. The FHWA received comments from a wide array of advocacy and interest groups, including comments representing EV coalitions, energy coalitions, transportation advocacy groups, as well as equity/environmental justice interest groups, accessibility advocates, and natural environment advocacy groups, among others; 31 State government offices, including State departments of transportation, and three associations of States (the American Association of State Highway Transportation Officials (AASHTO), the Northeast States for Coordinated Air Use Management, and the Western Governors Association); city and county governmental agencies, private companies (primarily representing energy companies, vehicle manufacturing companies, and charging equipment companies); and individual private citizens, identified and anonymous.

## **Summary of Significant Changes Made in this Final Rule as Compared to the NPRM**

Section 680.106(b) was revised regarding the minimum number of charging ports at each charging station. This section now requires all stations along, and designed to serve users of, designated AFCs to include at least four network-connected DCFC



charging ports capable of simultaneously charging at least four EVs. This section also now requires all stations that are not located along, or designed to serve users of, designated AFCs to include at least a total of four charging ports; these charging ports can be either all DCFC or AC Level 2 or a combination of DCFC and AC Level 2.

Section 680.106(e) was revised to specify different availability requirements for charging stations located along designated AFCs, and charging stations not located along, and not designed to serve users of, designated AFCs.

Section 680.106(f) was revised to also require an automated toll-free calling or an SMS as an additional payment method.

Section 680.108 was revised to incorporate regulations that were previously shown under § 680.114 in the proposed rule, as these standards were identified to apply to interoperability. This section was also modified to specify that chargers must be capable of using Open Charge Point Interface (OCPI) for interoperability.

Section 680.112 was revised to clarify which programs were subject to the reporting requirements as well as reduce the data reporting burden by removing the requirement for reporting the cost of electricity under the previous proposed § 680.112(b)(6), reducing the frequency of reporting of the previous proposed § 680.112(b)(7) to annually from quarterly, and changing of the previous proposed § 680.112(b)(8)-(9) to one-time reporting requirements rather than quarterly. The community engagement outcomes report was changed to include a requirement to address this information in the annual State EV Infrastructure Deployment Plan rather than as a separate report. To address Confidential Business Information (CBI) concerns,

all quarterly, annual, or one-time data that is made public is required to be aggregated and anonymized.

Section 680.114 was revised to remove interoperability requirements (which were moved to § 680.108). This section was also revised to include a requirement that chargers remain functional if communication with the charging network is temporarily disrupted.

Section 680.116 was revised to clarify exclusions for the uptime calculation including additional exclusions for scheduled maintenance, vandalism, natural disasters, and limited hours of operation. Under Third Party Data Sharing § 680.116(c), several data elements were removed that are of less importance for improving customer experience, several data elements were added that are necessary for an improved customer experience, and the data were re-organized into nine, more logical categories, which also clarify data that are required at the port level vs. station level.

### **Section-by-Section Discussion**

This final rule was developed in response to comments received on the NPRM. The following paragraphs summarize major comments received and any substantive changes made to each section in this final rule. Editorial or minor changes in language are not addressed in this document. For sections where no substantive changes are discussed, the substantive proposal from the NPRM has been adopted in this final rule.

### **General Comments**

Although not directly related to proposed regulatory language, several comments were received on the topic of spacing for EV chargers encouraged to be every 50 miles in

order to be considered fully built out through the NEVI Formula Program, as defined by the NEVI Formula Program Guidance ([The National Electric Vehicle Infrastructure \(NEVI\) Formula Program Guidance \(dot.gov\)](#)). In that guidance, the 50-mile distance was determined in order to ensure that older model EVs are not excluded when considering both the mile ranges all EVs are capable of and the desire to provide EVs a similar experience as gasoline-powered vehicles with regards to the frequency of gasoline stations to utilize and choose from along long-distance travel routes. No changes to the distance were made in this final rule, but there is a process through which States can request exceptions<sup>13</sup>.

## **Section 680.102 Applicability**

### **Other Title 23-Funded Chargers**

Several commenters opposed or questioned the broad applicability of the proposed rule beyond projects funded under the NEVI Formula Program to other projects for the construction of publicly accessible EV chargers under Title 23, U.S.C. Some commenters addressed concern that the application of the rule to all Title 23 funded projects would detract from the ability to construct medium-duty and heavy-duty (MD/HD) EV charging infrastructure using a broad range of currently available funding

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<sup>13</sup> As described in [The National Electric Vehicle Infrastructure \(NEVI\) Formula Program Guidance \(dot.gov\)](#), “As part of the development and approval of State Plans, and in very limited circumstances, a State may submit a request for discretionary exceptions from the requirement that charging infrastructure is installed every 50 miles along that State’s portion of the Interstate Highway System within 1 travel mile of the Interstate, as provided in the Alternative Fuel Corridors request for nominations criteria. All approved exceptions will be supported by a reasoned justification from the State that demonstrates the exception will help support a convenient, affordable, reliable, and equitable national EV charging network. Exceptions must be clearly identified and justified in State plans. Additional coordination with FHWA and the Joint Office may be necessary before any exception is approved. Exceptions will be approved on a case-by-case basis and will be adjudicated prior to approval of a Plan.”

sources, while other commenters requested clarification about the application of the rule for Title 23 funded EV charging projects. Several States and organizations representing State DOTs requested clarification on which specific subsections of the rule would only apply to NEVI Formula Program funds, and which subsections would apply to all Title 23 programs.

Yet other commenters oppose the applicability of the rule to all Title 23 programs outright, requesting more flexibility for States and other designated recipients to determine standards to meet local needs with the broad range of Federal funding programs. Commenters also pointed out specific EV infrastructure eligibilities under other Title 23 funds that are not specifically provided for in the proposed rule, such as the eligibility of vehicle to grid (V2G) infrastructure through the Surface Transportation Block Grant Program.

Finally, several commenters identified that application of the proposed rule to all Title 23 programs would also restrict the ability to install alternating-current (AC) Level 2 charging which, in turn, would impact the ability to address charging for multi-unit dwellings, which would drastically hamper the ability of the NEVI Formula Program and Title 23 programs to address equity in EV charging access and benefits.

*FHWA Response:* This final rule enables States and other designated recipients to implement federally-funded charging station projects in a standardized fashion across a national EV charging network that can be utilized by all EVs regardless of vehicle brand. Such standards provide consumers with reliable expectations for travel in an EV across and throughout the United States and support a national workforce skilled and trained in

charger installation and maintenance. Because of this, FHWA has modified the language describing applicability in this final rule to apply to projects funded under the NEVI Formula Program, projects for the construction of publicly accessible EV chargers that are funded with funds made available under Title 23, U.S.C., and any publicly accessible EV charging infrastructure project funded with Federal funds that is treated as a project on a Federal-aid highway. The parts of the rule that apply only to the NEVI Formula Program are clearly identified. To address some of the concerns expressing opposition to the application of the proposed rule across all Title 23 funded projects, FHWA revised language in the final rule to provide increased flexibility in the use of funds to install different types of chargers. Additional flexibility is provided for projects that are not located along AFCs, including the flexibility to install AC Level 2 chargers and DCFCs at lower power levels.

As further discussed in the following section, FHWA decided not to broaden the applicability of this final rule to include minimum standards for MD/HD EV charging infrastructure primarily so as not to preempt the pace of the technological innovation. While not regulating specific minimum standards for MD/HD, V2G, or other potentially eligible uses of Title 23 funds, this final rule also does not preclude the implementation of these technologies where not otherwise prohibited.

### **Medium Duty/Heavy Duty Vehicles**

Many commenters supported specifically addressing the needs of MD/HD EVs in addition to the needs of EV passenger vehicles. Several commenters identified the environmental, air quality, rural economy, and equity benefits of ensuring that the

applicability of the regulation addressed the needs and parameters of the evolving MD/HD EV sector. Commenters further elaborated that, by not specifically addressing the unique needs of MD/HD EV charging in the regulation, FHWA would be de facto discouraging investment in the needs of MD/HD EVs. Several commenters recommended that funding be set aside specifically for MD/HD EV charging infrastructure. Some commenters requested that separate minimum standards be released to address the unique needs of MD/HD EV charging, and yet other commenters requested that this final rule be modified to address MD/HD needs. Despite acknowledging the unique needs of MD/HD EVs, several commenters identified that the MD/HD EV sector is less evolved than the light-duty EV charging sector and that, because this portion of the industry is still in its infancy, there may be a need to continue to monitor technological developments before solidifying certain requirements specific to MD/HD EV needs.

In fact, commenters pointed out that MD/HD EV charging technologies are evolving and will be used in a number of ways. While many medium-duty vehicles will likely charge at fleet depots and operate under hub-and-spoke business models where they would not venture significant distances from their base locations, a growing sector of MD/HD vehicles will require on-corridor charging. Some commenters therefore suggested that these requirements be designed so as to consider the future accommodation of power demands and site use/circulation needs of long-haul trucking. Yet other commenters requested that requirements address MD/HD EV charging needs immediately, with some suggesting that a certain number of federally-funded EV charging parking spaces be designed to accommodate MD/HD needs.

Site design is a common topic of consideration in the comments addressing MD/HD needs. Several commenters requested that the regulation require that each charging station include at least one pull-through space sized appropriately for MD/HD needs. Commenters specifically identified that while MD/HD charging sites can be compatible with light-duty (LD) charging, charging stations designed to meet LD needs will not be suitable for MD/HD commercial vehicles. Several commenters requested that FHWA develop a site design template which incorporates the needs of MD/HD charging to assist the industry in ensuring these needs are met. In addition to support for pull-through design, commenters mentioned MD/HD vehicles have different turning radii which impact both on-site circulation and ingress/egress, and that MD/HD vehicles may have greater needs for on-site or nearby amenities as MD/HD charging may require longer dwell times. Conversely, one commenter noted that, if MD/HD charging is not a primary purpose of a charging station, site design requirements which consider MD/HD needs would be unnecessarily burdensome and wasteful.

Many commenters identified an opportunity to coordinate MD/HD charging with required off-duty breaks for long-haul truckers. One commenter noted that the regulation should consider dwell time needs for MD/HD charging and ensure that dwell time fees not penalize MD/HDs for their longer dwell times for charging. A handful of commenters identified a need to modify EV charging signage so as to help long-haul truckers identify MD/HD charging opportunities that can best align with their Federal hours of service (HOS) requirements. Site design and collocation of amenities accommodating MD/HD needs could serve multiple purposes beyond charging and

required HOS breaks; the gap in long-haul trucking duty cycle could also be leveraged for required inspections.

Many commenters opposed the availability requirements under proposed § 680.106(e) whereby charging stations would be required to be available for use by the public 24 hours a day, 7 days a week on a year-round basis. Commenters pointed to language in BIL which would allow for charging stations to be restricted to “authorized commercial motor vehicle operators from more than one company”<sup>14</sup> and identified that the requirement for near-constant public access would restrict many important MD/HD charging applications, such as those on port properties or for fleet charging.

In addition to identifying unique site design requirements of MD/HD vehicles, many of the commenters discussed differing MD/HD power level needs. Several commenters mentioned that most MD/HD vehicles required DCFC charging over 50 kW, with several commenters supportive of requiring 350 kW or 1 MW to satisfy MD/HD needs. A few commenters also mentioned an increased interest from the MD/HD EV sector in wireless charging technologies, which is noted in its potential ability to better address wear and tear from the MD/HD vehicles. Commenters also pointed out that MD/HD vehicles may require different connectors from LD vehicles. Commenters mention both the Megawatt Charging System (MCS) charging connector (SAE J3271) which is rated for charging at a much larger maximum rate, and the Society of

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<sup>14</sup> Paragraph (2) under the Highway Infrastructure Program heading in title VIII of division J of BIL, states that “Provided further, that funds made available under this paragraph in this act shall be for projects directly related to the charging of the vehicle and only for electric vehicle charging infrastructure that is open to the general public or to authorized commercial motor vehicle operators from more than one company.”



Automotive Engineers (SAE) J3068 connector as appropriate for MD/HD charging, also noting that the market is continuing to evolve at a rapid pace, and it may be too early to determine the appropriate uniform plug standard to serve these vehicles.

Finally, commenters noted that cybersecurity is of particular concern for MD/HD charging because the trucking industry is a high-value target for malicious actors and cybercriminals. As such, commenters requested consideration for specific cybersecurity requirements related to EV charging.

*FHWA Response:* The FHWA notes that several of the comments provided recommendations that are not within the purview of this final rule. For example, the final rule does not impact program funding and thus cannot regulate a set-aside for future MD/HD charging infrastructure or cybersecurity requirements. The FHWA also cannot regulate minimum standards that have not yet been identified or innovated in the industry. As was emphasized by several of the commenters, FHWA understands that the MD/HD charging industry is very nascent and rapidly evolving; as such, FHWA has not modified the language in this final rule to specifically accommodate MD/HD needs so as not to preempt the pace of the technological innovation. The rule does not preclude MD/HD charging infrastructure and FHWA strongly encourages project sponsors to consider future MD/HD needs. The FHWA will continue to monitor the technological advancements in the MD/HD industry for consideration as to whether further regulation is needed to provide applicable minimum standards and requirements at a future date. The FHWA specifically encourages the inclusion of pull-through EV charging parking

stalls in the design of EV charging stations. Pull-through EV charging parking stalls are acknowledged as better suited to the needs of MD/HD vehicles.

## **Section 680.104 Definitions**

### **AC Level 2**

Commenters indicated that AC Level 2 chargers can operate on circuits from 208 volts to 240 volts, with 208-volt circuits more common in commercial installations.

*FHWA Response:* The FHWA agrees that AC Level 2 charging can utilize circuits from 208 volts to 240 volts, depending on the application. The definition has been modified in this final rule to incorporate the 208-volt charging use case.

### **Charger**

The FHWA received a comment requesting that the definition of “charger” be clarified to indicate whether chargers are required to accommodate the charging of multiple vehicles simultaneously, or whether a “charger” could refer to an instrument which charges only one vehicle at a time. Additional clarity was also requested to distinguish “charger” from “charging station” with a request to include requirements for basic amenities in the definition for charging station.

*FHWA Response:* The definition for charger is intentionally broad so as to cover instances where the device can include one or more charging ports to charge one or more vehicles simultaneously. Further specificity regarding the definitions of “charger” or “charging station” would amount to operational requirements which are dealt with in § 680.106.

## **Charging Station**

The FHWA received comments requesting clarity to distinguish “charger” from “charging station” with a request to include requirements for basic amenities in the definition for charging station.

*FHWA Response:* Further specificity regarding the definitions of “charger” or “charging station” would amount to operational requirements which are dealt with in § 680.106. No changes were made to the definition.

## **Charging Station Operator**

In further review of the proposed regulation text, FHWA found a need to clarify the responsibilities assigned to the charging station operator as belonging to the owner of the chargers. This clarification was needed in order to identify the responsible parties for the final regulations where the language “charging station operator” is used. The definition has been modified in this final rule to identify the responsibilities of the owner of the chargers and supporting equipment and facilities.

## **Contactless Payment Methods**

The FHWA received a few comments requesting that the definition of “contactless payment methods” explicitly include payment by mobile application in order to provide another effective accessible payment option.

*FHWA Response:* The FHWA agrees that payment by mobile application linked to a particular charging station would provide another effective accessible payment option. Although payment by mobile application would be inherently included in the

proposed definition as “another payment device,” the definition has been modified in this final rule to explicitly incorporate payment by mobile application.

### **Cryptographic Agility**

The FHWA received a comment stating that the use of the term “cryptographic agility” was preferred to the term “encryption systems” as used in § 680.106(h).

*FHWA Response:* In addition to revising the reference in the proposed rule in § 680.106(h) (see section-by-section discussion of these changes below), FHWA found a need to define the term “cryptographic agility” as this is not a common or otherwise well-defined term.

### **Direct Current Fast Charger (DCFC)**

Several commenters identified that DCFC can be delivered through a multitude of different iterations of power phases and voltage and, as such, that the definition for DCFC should be rooted in the output of DC electricity, not the particular characteristics of input or output power, which vary. Multiple commenters said that the proposed definition of DCFC, which stated that DCFC use 3-phase, 480-volt input power, would effectively prohibit the use of 150-kW DCFCs operating on lower-voltage, single-phase input power with supplementary battery and/or solar energy systems.

*FHWA Response:* The FHWA agrees that the defining characteristic of DCFC is the ability to deliver an output of direct-current electricity to the EV. The definition has been modified in this final rule to remove references to input power characteristics.

## **Distributed Energy Resource**

One commenter recommended modifying the definition of “Distributed energy resource” to explicitly include EVs as a type of distributed energy resource, citing the role of EVs in supplying power for the grid using V2G technology.

*FHWA Response:* While FHWA acknowledges the power supply role that EVs play in a V2G environment, the definition of “Distributed energy resource” does not exclude EVs as written and, therefore, requires no modification.

## **Electric Vehicle**

The FHWA received a comment that the definition for “electric vehicle” specify that the vehicle can receive electricity from an external power source so as to exclude hybrid vehicles which are charged through regenerative braking and their internal combustion engines.

*FHWA Response:* The FHWA agrees that EVs should be defined by receiving electricity from an external power source. The definition has been modified in this final rule to specify charging from an external power source. The definition has also been modified to refer to “motor vehicle” to align with terminology common in industry. Language has also been added to the definition to clarify that electric bicycles are not included in this definition for the purposes of this rule. The FHWA excluded electric bicycles from this definition in order to avoid application of inadvertent regulations with unintended consequences to electric bicycle charging.

## **Megawatt Charging Standard**

The FHWA received a comment that the regulation should include a definition for Megawatt Charging Standard (MCS) which has yet to be finalized but is anticipated to serve as the industry standard connector type for charging heavy-duty trucks.

*FHWA Response:* The FHWA acknowledges that MD/HD charging technologies are more nascent than LD charging technologies. This final rule does not preclude the use of MCS; however, since the industry standard for MCS, SAE J3271, has not yet been finalized, FHWA has intentionally not revised this final rule to incorporate MCS in an effort to not inadvertently create restrictions on these emerging technologies at this time.

## **Open Charge Point Protocol**

The FHWA received a comment taking issue with the proposed definition for Open Charge Point Protocol (OCPP)'s reference to "network," stating that "network" is an ambiguous term that could mean software, wireless communications, or even a company's combined hardware and technology.

*FHWA Response:* This final rule includes a definition for "charging network" that clarifies the ambiguity identified in the OCPP definition.

## **Plug and Charge**

The FHWA received a comment requesting additional specificity in the definition for "Plug and Charge" to provide clarity regarding use of International Organization for Standardization (ISO) 15118 because several disparate definitions are in use in the industry.

*FHWA Response:* The FHWA agrees that “Plug and Charge” was intended to correlate to ISO 15118. The definition has been modified in this final rule to incorporate specific reference to utilization of ISO 15118 and digital certificates for authentication.

### **Power Sharing**

The FHWA received comments regarding the use of the term “smart charge management” that indicated there was confusion in the use of this term and what is typically referred to as either “power sharing” or “automated load management” by the industry.

*FHWA Response:* The FHWA included the use of the term “power sharing” in this final rule in order to distinguish “smart charge management” activities from “power sharing” activities. A definition for “power sharing” has been included in this final rule for this reference.

### **Public Key Infrastructure**

The FHWA received comments recommending that FHWA require consideration of “public key infrastructure” (PKI) in the development of cybersecurity strategies included in State EV Infrastructure Deployment Plans under § 680.106(h)(2).

*FHWA Response:* The FHWA included the use of the term “public key infrastructure” in this final rule in order to describe an important additional cybersecurity strategy recommended by a commenter. A definition for “public key infrastructure” has been included in this final rule for this reference.

## Smart Charge Management

The FHWA received a few comments on the definition of “smart charge management.” One commenter requested that the definition be revised to disconnect the concept of chargers controlling the amount of power dispensed from the concept that chargers can respond to external power demand signals, the latter potentially running contrary to the needs of customers at fast charging stations. Another commenter requested that the definition be revised to include the concept that chargers respond to external pricing signals, noting that electricity pricing is one of the most important methods utilized by smart charge management to incentivize drivers and operators to charge EVs at times when it is more beneficial to the grid.

*FHWA Response:* The FHWA acknowledges that the proposed definition conflated the concept of smart charge management with the concept of power sharing among chargers at the same station. Smart charge management involves controlling charging power levels in response to external conditions and is typically applied in situations where EVs are connected to chargers for long periods of time, such that prolonging charging for the benefit of the grid is not objectionable to charging customers. In contrast, power sharing involves dynamically curtailing power levels of charging ports, based on the total power demand of all EVs concurrently charging at the same station. The FHWA agrees that responding to external power demand signals is not a typical component of power sharing and it can be detrimental to the customer experience in fast charging applications. The FHWA agrees that smart charge management may involve both external power demand and price signals. The definition of smart charge



management has been modified in this final rule and the definition of power sharing has been added in response to commenters to avoid confusion.

### **Third Party**

The FHWA received a comment requesting that the regulation define “Third party” to include any entity other than the State DOT.

*FHWA Response:* The FHWA understands the desire to have all parties defined, however FHWA maintains that the proposed language retains the State or other direct recipient’s ability to define their own contract terms specific to their own procurement process. A definition for third party was not added.

### **Section 680.106 Installation, Operation, and Maintenance by Qualified Technicians of Electric Vehicle Charging Infrastructure**

#### **Procurement Process Transparency for the Operation of EV Charging Stations**

Many comments were submitted on § 680.106(a) Procurement Process Transparency. Notably, most of the commenters on this topic from State DOTs were generally supportive of the flexibility of the language in the proposed regulation; some went so far as to state that additional procurement requirements could impose unnecessary burden on States or postulated that excessive requirements would discourage desired private sector participation. State DOTs also requested that the regulation not be modified to require or imply rate regulation by the State and allow for the market to ultimately dictate price.

Most industry commenters that mentioned this topic were enthusiastically supportive of the concept of procurement and price transparency. A few private sector

commenters expressed concerns (shared by a few State DOT commenters) that the regulation should allow for trade secret, CBI, and intellectual property protections when requiring reporting how private charging networks set their price. On the other end of the spectrum, a few industry commenters requested the publication of specific data to include a list of eligible DCFCs that meet minimum NEVI requirements and meet the minimum standards and requirements for funding under the NEVI Formula Program and projects funded under Title 23, U.S.C., or that the Federal government maintain a national directory of EV suppliers and EV supply equipment with key metrics for use by the States and industry.

Several industry commenters requested that Requests for Proposal (RFP) and proposal documents be published on the Joint Office website and that the Joint Office maintain a bidding docket which would allow the States (and the public) access to compare bids received across the country.

Some commenters requested clarification on language in the proposed rule. In particular, it was noted that the phrase “price and cost data” in § 680.106(a)(2)(v) (currently § 680.106(a)(5)) is vague and open to interpretation. Other commenters suggested additional fields of data collection to expound on “price and cost data” requirements and other fields of interest. Suggested additional data included objectively qualified “total cost of ownership,” average installation costs, projected peak demand charges, and required infrastructure upgrades. Other commenters noted concerns with requiring specific metrics for price and cost data. One commenter noted that the price of electricity will most likely be dependent on the cost charged by the utility, but the

reporting of operations and maintenance costs for each site could be a useful independent additional metric. Another commenter asserted that station-specific fees such as idle fees or any other dwell-time-related charges should remain the responsibility of site hosts and network operators and not be reported to the State DOT.

One commenter also noted a concern with showing the proposed contract with an awardee and requested that this language under § 680.106(a)(2)(iv) be changed to “executed.”

*FHWA Response:* Most State DOTs submitting comments on this topic lauded the flexibility in the proposed regulation language, noting the importance of flexibility to allow for interpretation through diverse State law and potential trade secret, CBI, and intellectual property protections. As such, FHWA has not included revisions to “price and cost data” as required under § 680.106(a)(2)(v) (currently § 680.106(a)(5)). The FHWA agrees with the value of maintaining a nationwide database for applicable RFP documents and proposals and will consider opportunities to facilitate the creation of such a database. The FHWA disagrees that the language in § 680.106(a)(2)(iv) (currently § 680.106(a)(4)) should be changed to “executed”. The purpose of this regulation is to increase transparency of the procurement process undertaken by States and other direct recipients and the language in the final rule under § 680.106(a)(4) ensures that the contract proposed by States and other direct recipients is available for public review prior to execution. Noting the support for EV charging procurement and price transparency in the comments, FHWA also removed the restricted applicability language in the proposed

rule to broaden the application of this provision to all projects otherwise subject to this rule.

### **Number of Charging Ports**

The FHWA received a significant amount of comments on the number of chargers proposed in § 680.106(b). Many commenters supported the proposed minimum requirement as written for a minimum of four charging network-connected DCFC ports capable of simultaneously charging at least four EVs. Other commenters were generally supportive of the four-port minimum requirement but suggested that in some instances an exception process should be allowed so as to reduce the number of ports at certain stations to a minimum of two. Commenters suggested that the existing NEVI Formula Program exception process be expanded to allow for reducing the number of ports (or power requirements at each port), whereby States could submit exceptions for sites that are particularly remote, that have greater difficulty in receiving adequate power, or that would otherwise never be financially self-sustaining. Alternatively, some commenters suggested that the requirement remain at a minimum of four ports, but that States or other designated recipients be allowed to “phase in” to this requirement over several years with an initial requirement of two ports constructed along with spacing and make-ready power investments to support the future installation of the remaining two ports. Another alternative proposed was that the four-port minimum requirement remain, but States or other designated recipients retain flexibility to install fewer than four ports in certain prescribed circumstances to include geographic location in a county with less than 50 persons per square mile of land area.

Other commenters suggested that the regulation allow the minimum four-port requirement to be met by aggregating charging ports installed at multiple locations in close proximity rather than in the immediate vicinity on one site.

In contrast to the aforementioned commenters, a handful of commenters also recommended that the minimum required number of charging ports be either a larger number (6 or 8) or a smaller number (1 or 2), providing States or other designated recipients flexibility to increase beyond the minimum number required as needed. Commenters recommending a larger minimum-port requirement expected future demand for EV charging along AFCs to rapidly increase and wanted to future-proof facilities for excessive queuing. Commenters recommending fewer than four ports for the requirement indicated that the four-port minimum requirement would be overly burdensome in many instances, particularly rural areas, and a smaller requirement would provide States or other designated recipients the flexibility to increase the number of ports as-needed.

A few other comments were also submitted opposing a minimum required number of ports altogether, recommending instead that the final regulation indicate that the number of ports at a charging station should correlate to individualized projections for use.

Other commenters focused on the implementation of the rule rather than the content. The language in the proposed rule stated that § 680.106(b) applies only to NEVI Formula Program projects. However, commenters pointed out that the February 10, 2022, NEVI Formula Program Guidance indicates that States would have additional

flexibility to determine the type and location of any additional EV charging infrastructure after the Secretary of Transportation has certified that the State's AFCs for EVs are fully built out. Commenters elaborated on benefits of providing flexibility for States to use NEVI Formula Program funds for AC Level 2 charging sites for redundancy, equity, and network coverage, and requested that FHWA provide for this flexibility in this final rule.

One commenter recommended including a requirement for at least one AC Level 2 charger along with at least one AC Level 1 charger at each charging station (in addition to the four-port DCFC requirement). The benefit of these AC Level 1 and 2 chargers would be to provide emergency redundancy, to provide more affordable charging options, and to power e-bikes and e-scooters.

The International Association of Fire Chiefs also submitted a comment detailing multiple safety recommendations. Among these recommendations was a suggestion that no more than two charging ports be placed side-by-side at an EV charging station, in order to mitigate the threat of thermal runaway.

*FHWA Response:* The FHWA continues to see value in regulating a minimum number of ports at charging stations and clarifies that this section regulates the number of charging ports. This final rule allows for a predictable, standardized, and forward-looking charging capacity for EV drivers throughout the country when Federal funds are used. The FHWA agrees with the many commenters that were supportive or generally supportive of a four-port minimum requirement at each charging station. A minimum number of four ports per station will help ensure that Federal dollars are invested in a cost-effective manner by providing economies of scale when building out new stations

for fixed costs such as grid connection. Moreover, a four-port minimum will help mitigate the risk of underbuilding and needing to expand capacity at stations soon after they are built to accommodate new demand. The four-port minimum requirement also allows for sufficient redundancy should one or more port be experiencing downtime. It also allows for redundant capacity for EVs users that have planned to stop and charge at a station along their planned travel routes, should those EVs users encounter occupied ports at the time of their intended charging stop. The wide support among the comments for a minimum of four ports also indicates that four ports strikes the correct balance of desired redundancy and capacity while not overly burdening a minimum requirement.

However, FHWA agrees that, in certain circumstances, there may be situations where a four-port DCFC minimum requirement might not be warranted. The FHWA did not agree that an appropriate response to these circumstances would be the implementation of an exception process or phase-in requirement whereby a smaller number of ports would be allowed for a temporary period or indefinitely in specified circumstances. Introducing inconsistency in the number of ports along the national network would be undesirable as it would make the entire charging network less convenient, reliable, and equitable. The language in this final rule has instead been modified to clarify that any time charging stations are installed there is a required minimum of 4 ports, notwithstanding the type of port (DCFC or AC Level 2 or a combination of DCFC and AC Level 2). Additionally, in all instances when a charging station is installed along and designed to serve users of designated AFCs, there must be at least four network-connected DCFC charging ports.

The FHWA recognizes that there may be some locations that are geographically located along a designated AFC where an EV charging station is intended to serve local EV users and communities rather than the vehicles traveling on the AFCs such as at local business establishments or community service locations like community centers, town halls, or libraries. These are the types of locations that may still warrant an EV charger installation but are not intended to serve the users of designated AFCs and therefore may not need the four DCFC charging ports. This results in flexibility to install community-focused chargers in close proximity to AFC corridors, and not have the four network-connected DCFC charging ports requirement apply. Accordingly, FHWA would not count these types of stations with less than four DCFC charging ports in the assessment of distance requirements of charging stations along corridors. Also, by removing the language from the proposed rule that restricted this regulation to NEVI Formula Program funds, the revised language in this final rule removes the implicit prohibition on NEVI-funded AC Level 2 Chargers and allows for the implementation of charging stations with AC Level 2 Chargers using NEVI Formula Program funding, at the discretion of the State, according to program guidelines after the State's AFCs for EV Charging have been certified as fully built out.

The FHWA also acknowledges comments detailing site design recommendations regarding the proximate location of multiple charging ports to address fire safety. However, site design recommendations are not specifically addressed in this final rule as they are governed by other laws or authorities and typically involve complex decisions to accommodate context-specific needs. The FHWA also acknowledges that fire prevention



strategies may be addressed in § 680.106(h)(1) where FHWA requires States and other direct recipients to implement physical security strategies.

### **Connector Type**

The FHWA received many comments on the proposed rule's discussion of connector type. Many commenters supported the proposed requirement for DCFC chargers to use CCS Type 1 connectors. Commenters stated that the domestic EV market had mostly aligned around the use of CCS Type 1 connectors. The FHWA also received a large number of comments that, while generally supportive of the proposed CCS connector requirement, recommended the inclusion of CHAdeMO connectors as well. CHAdeMO proponents lauded the importance of accommodating CHAdeMO connectors for a few primary reasons. First, commenters noted that CHAdeMO was proposed for vehicles being released in the domestic market as late as 2025, meaning that, based on their projected battery lives, CHAdeMO vehicles would be on the roads until at least 2035. Accommodating CHAdeMO vehicles would allow the chargers subject to this rule to support second-hand EV ownership, which would be more accessible for low-income groups and thus enable chargers subject to this rule to better support low-income communities. Second, commenters noted that CHAdeMO already provides bidirectional charging capabilities, a technology that is very new for CCS vehicles using ISO 15118. Commenters recommended several improvements to the regulation to allow for greater consideration of CHAdeMO connectors including: providing for use of NEVI Formula Program funds and all eligible Title 23 funds for CHAdeMO connectors beyond Fiscal Year 2022 NEVI funding; stipulating that CHAdeMO connectors deliver the same power

level stipulated for CCS; and allowing for a temporary exception of the ISO 15118 requirement for bidirectional charging for CHAdeMO vehicles. Some commenters went so far as to recommend specific numbers of CHAdeMO connectors required per site, where other commenters suggested that States or other designated recipients be encouraged to do analysis to identify if their local markets had a need to support CHAdeMO vehicles.

The FHWA also received a few comments in opposition to CCS as the connector standard for DCFCs. Some commenters noted that CCS plugs were bulky and difficult to manage when compared to Tesla plugs, posing additional accessibility issues for users. Other commenters noted that the MD/HD EV charging community would likely need a different type of standard connector, but that this portion of the industry had not yet matured or coalesced around an appropriate connector standard to list for DCFC charging.

The FHWA also received several comments about the proposed AC Level 2 charging port connector, J1772. Most commenters were generally supportive of the proposed AC Level 2 connector type. One commenter recommended modifications to the proposed rule to allow for J1772 connectors to not be permanently attached so as to allow AC Level 2 chargers to more seamlessly integrate into existing urban parking spaces. Another commenter recommended that the rule be modified to allow AC Level 2 chargers a temporary waiver from the requirement to adopt Plug and Charge or ISO 15118 compliance. A few commenters also recommended that both J1772 and J3068 connectors be allowable connector types for AC Level 2 charging.

The FHWA also received a few comments in opposition to the J1772 connector standard. Most of these commenters recommended that FHWA instead require J3068 connectors for AC Level 2 charging. Commenters lauded J3068 for its ability to service MD/HD charging and to allow for vehicle-to-grid charging once the standard is developed.

The FHWA also received several comments discussing battery swapping and wireless charging needs. These commenters generally opposed addressing battery swapping and wireless charging in this rule because these technologies have not yet developed sufficiently for standards. A few commenters recommended that FHWA ensure the final regulation would not prohibit the future use of battery swapping or wireless charging technologies once the industry matures.

Although FHWA received many comments in support of the proposed regulation as written, FHWA did receive a few comments opposing the inclusion of a standard allowing proprietary connectors. These commenters warned that provisions allowing for the inclusion of proprietary connectors would serve to further bifurcate the market and undermine the standardization of the industry. One commenter recommended that if proprietary connectors be allowed, that they must deliver the same power level stipulated for CCS and that they should be allowed through NEVI Formula Program funds only after four CCS DCFC charging ports were provided at a site.

*FHWA Response:* Commenters overwhelmingly supported the CCS connector standard and verified that the industry is moving to adopt CCS as a market standard; therefore, FHWA requires CCS Type 1 connectors for each DCFC port through this final

rule. Although a few commenters preferred Tesla connectors, most of the Tesla products are proprietary and do not address the needs of the majority of EV makes and models available in the domestic market. However, on November 11, 2022, Tesla announced its “North American Charging Standard” (NACS), which makes its existing and previously proprietary Electric Vehicle charging port and connector available for broad and open public use, including to network operators and vehicle manufacturers. In the announcement, Tesla noted that charging providers were planning to offer NACS charging ports at public charging infrastructure. This rulemaking allows permanently attached non-proprietary connectors (such as NACS) to be provided on each charging port so long as each DCFC charging port has at least one permanently attached CCS Type 1 connector and is capable of charging a CCS-compliant vehicle.

The FHWA agrees with commenters that CHAdeMO connectors provide value to a segment of the market in the near term. The FHWA believes that allowing the option of installing CHAdeMO connectors using the first year of the NEVI Formula Program funding allocation gives States sufficient opportunity to ensure equitable charging access according to local needs, while limiting the cost of installing and maintaining a connector that is becoming less common in the industry. Recognizing the need for flexibility to accommodate the evolving technological needs of charging in the future, FHWA modified the language of this final rule to allow DCFC charging ports to have other non-proprietary connectors (specifically identifying NACS and CHAdeMO) in addition to the required four CCS connectors so long as each DCFC charging port is capable of charging a CCS-compliant vehicle. The language was also modified to clarify that each charging

port must still be accessible through a CCS connector. This avoids the possibility of having an entire charging port that a consumer cannot use if there are only non-CCS connectors attached to it. This also reflects comments that warned against the bifurcation of the market by clearly elevating the prominence of the CCS standard while still providing a bridge to other types of connectors to allow time for the market to transition.

The FHWA also continues to require J1172 for AC Level 2 charging in this final rule. The FHWA agrees that J3068 connectors may have future benefits, particularly for MD/HD charging applications. However, the proposed rule would already allow for but does not require the use of, J3068 connectors for AC Level 2 charging. Therefore, FHWA has not modified the language in this final rule to specifically accommodate J3068 connectors.

The FHWA also agrees with commenters that it is premature to include requirements regarding battery swapping or wireless charging.

Comments regarding ISO 15118 requirements are addressed in the discussion of §§ 680.108.

### **Power Level**

The FHWA received a significant amount of comments on the proposed rule's discussion of minimum power per DCFC charging port. Many commenters expressed general comfort with a requirement for a minimum power per DCFC charging port of 150 kW; however, some commenters requested that the final rule clarify that the minimum station power capability be required at or above 450 kW, rather than 600 kW, in order to provide for more realistic maximum simultaneous usage of charging infrastructure.

Commenters clarified that EVs demand the greatest amount of power at the beginning of their charging session, so rarely would four cars be charging at the full 150 kW simultaneously. Requiring less power per charging station would allow sites to be less demanding on the power grid and also generally less expensive to install and operate. Other commenters recommended that, to address this dynamic of maximum grid power needed per site and to facilitate power sharing or smart charge management more vigorously, this final rule removes the word simultaneous from the requirement to provide at least 150 kW per charging port “simultaneously” across all charging ports. Commenters indicated that facilitating power sharing or smart charge management could have significant positive impacts on the reduction of peak load, which provides value to all charging stations but is particularly critical in providing for MD/HD charging. One commenter asked that charging stations with greater than 2.5 MW capacity be exempted from simultaneous minimum charging power requirement of 150 kW. One commenter said that the proposed 150-kW power requirement is reasonable, given that it allows power sharing when charging vehicles capable of 350 kW that are projected to enter the market by 2030. Multiple commenters stated that smart charge management is not appropriate for fast charging stations on highway corridors because even if a driver willfully chooses to reduce their charge rate for load management purposes at a corridor DCFC station, they may be impeding other drivers that need a quick charge from using the charging equipment. Other commenters questioned the power delivery mechanism required by the proposed rule and requested that FHWA clarify if distributed energy resources (DERs) were eligible.

Other commenters were opposed to the requirement for a minimum power per DCFC charging port of 150 kW. Some commenters recommended that the proposed requirement is simply too aggressive and that the industry is not quite ready to supply the needed number of DCFCs at that size. These commenters requested that FHWA consider a temporary waiver or exception process allowing charging stations to delay or to be individually exempted from the power requirement. Still other commenters opposed the 150 kW requirement outright because they felt it would not best address the market needs. Some commenters pointed to the need for fast charging at a more moderate intensity for applications outside of designated AFCs in the communities. These chargers could efficiently meet needs in communities while providing 50 kW to 100 kW of maximum power per port, while being cheaper to install. Indeed, several commenters identified that requiring 150 kW, rather than 50 kW or 100 kW, removes an opportunity to take advantage of scale. Reducing the required maximum power per port allows for more charging stations to be installed in context-sensitive applications. One commenter argued that, because current EV battery design limits the amount of time an individual vehicle can use the full charging port power rating, smaller DCFCs can more efficiently and quickly charge some vehicles than larger DCFCs by providing higher average power transferred to vehicles. This commenter went on to argue that on sites with multiple smaller DCFC chargers, if combined with load-sharing technologies when several ports are not in use at a site, higher power level delivery is possible at any individual port. Another commenter recommended removing the word “maximum” from the DCFC power requirement to avoid confusion.

Other commenters opposed the 150 kW requirement because they did not feel it adequately addressed the needs of emerging technologies such as “in-motion” wireless charging or MD/HD charging.

Where commenters have suggested waivers or exceptions from the 150 kW power requirement per port, and even where commenters have suggested that the minimum power per port be lowered from the proposed 150 kW requirement outright, commenters have suggested that site infrastructure be upgradeable to enable future provision of higher power levels on site. One commenter recommended that any lower powered charging ports be installed with conduit ready for upgrade to 150 kW power delivery.

Several commenters requested that FHWA consider providing for an exception process to the power level requirements based on grid constraints, lower traffic volumes, or cost prohibitive site constraints. Other commenters requested that FHWA specifically regulate that, when an excess of four chargers is provided on a particular site, station and port power requirements be less restrictive for the additional chargers.

Other commenters requested that FHWA consider the needs for future charging through incorporation of a higher power requirement. Multiple commenters requested that FHWA require a minimum of 350 kW per port to shorten charging time for EV drivers, citing consumer survey research and listing the many currently available or announced EVs capable of charging at power levels above 150 kW. A few commenters requested that at least one DCFC port be capable of delivering a minimum power of 350 kW, while others requested that FHWA not prohibit or discourage the provision of ports capable of delivering 350 kW of power. Multiple commenters recommended specifying



a required range of output voltages for DCFCs to ensure that chargers can supply power to vehicles with different battery voltages. They stated that this is important because newer EVs are frequently incorporating high-voltage battery packs above 500V and chargers with sufficiently high voltage capability will limit charging speed or not be able to charge some vehicles. Commenters recommended either 200 volts or 250 volts as the minimum and 950 volts or 1000 volts as the maximum DCFC output voltage. One commenter pointed out that Build America, Buy America compliant 350 kW DCFCs are not currently available, requesting that FHWA issue a time-limited waiver for these chargers so that they could be installed in appropriate locations.

Most comments received about AC Level 2 power requirements were supportive of FHWA's proposed rule. A few commenters wrote specifically about the power levels proposed for AC Level 2 charging ports. One commenter recommended that the 6-kW proposed requirement be replaced with a 9-kW requirement, another commenter recommended it be replaced with a 48-amp requirement, and another commenter recommended replacing the word "maximum" with "minimum" for AC Level 2 charging. Another commenter said that it is not possible to specify a power requirement for all locations, but rather the private sector should be allowed to choose power levels suitable to meet customer needs. Several commenters requested that the AC Level 2 minimum power requirement be written to allow more flexibility for power sharing and smart charge management in locations where vehicles are expected to dwell for long periods of time, in order to reduce cost and provide vehicle-grid integration benefits.

Additionally, one commenter provided the general recommendation that FHWA require that all chargers be clearly labeled with the maximum power they are capable of delivering per port.

*FHWA Response:* The FHWA agrees that, in general, requiring less power per charging station, either by installing chargers with lower power capacity or by allowing dynamic power sharing, would allow sites to be less demanding on the power grid and also generally less expensive to install and operate. However, charging station power requirements must also be set to ensure a consistent and satisfying customer experience regardless of which charging port a customer selects and how many other ports are currently in use. Therefore, the requirement that each DCFC must simultaneously deliver up to 150 kW, as requested by an EV, was retained as a minimum requirement to provide a standard, reasonably high level of charging service for DCFCs. Likewise, the requirement that each AC Level 2 port be capable of providing at least 6 kW per port simultaneously across all AC ports was retained, but a provision was added to allow EV charging customers to consent to accept lower power to allow power sharing or to participate in smart charge management programs.

Furthermore, FHWA updated this final rule to clarify that power sharing is permissible above the minimum 150 kW per-port requirement for DCFCs and 6 kW per-port requirement for AC Level 2 chargers. Given the strong market trend toward EV charging power capacity above 150 kW for DCFC and above 6 kW for AC Level 2 charging, this allows flexibility to manage the cost of charging stations designed to meet current and future demand for significantly increased power. The FHWA agrees with the

recommendation to specify required DCFC output voltage and has updated this final rule to include the requirement that each DCFC port support output voltages between 250 volts DC and 920 volts DC. Regardless of the operating voltage of the battery, so that EVs are able to receive at least 150 kW per port, FHWA suggests that DCFC connectors be rated with a current carrying capacity of greater than or equal to 375 Amps. Also, FHWA agrees that smart charge management is usually not appropriate for fast charging stations, so reference to it was removed from the DCFC power requirement in this final rule.

The FHWA acknowledges that the power level of AC Level 2 chargers is typically specified in terms of amperage, but this final rule retains the 6-kW specification to provide a consistent customer experience, regardless of the circuit voltage of a particular AC Level 2 charger. The 6-kW requirement accommodates an AC Level 2 port with a 30-amp max current rating that is connected to a 208-volt AC power supply.

The FHWA has concluded that the provision of multiple levels of power availability at charging stations would detract from the goal of standardization and from the ability to deliver a convenient, affordable, reliable, and equitable solution for EV charging. The FHWA also considered the requests to modify the power level requirements to accommodate emerging technologies and found that the minimum power level requirements in this final rule sufficiently accommodates emerging technologies to serve the needs of MD/HD EVs. Technologies such as in-road wireless charging are nascent, so FHWA finds addressing standards in this final rule to be premature. The FHWA will continue to monitor the technological advancements in inductive and

catenary charging for consideration as to whether further regulation is needed to provide applicable minimum standards and requirements at a future date.

Finally, FHWA removed the word “maximum” from the DCFC and AC Level 2 power requirements and reworded the requirements to resolve confusion, as suggested by commenters.

### **Availability**

The FHWA received several comments regarding proposed availability regulations. In general, commenters were supportive of the requirement for stations to be available 24 hours per day, 7 days per week; however, many commenters requested that FHWA require or encourage charging sites to be collocated with travel amenities, specifically the availability of restrooms and manned payment support services. Commenters also proposed that a toll-free customer service hotline be provided at each charging station to offer technical and payment support.

Other commenters opposed the proposed requirement for near-constant site access and usability, citing the restricted hours of several prime candidates for charging stations such as local or State parks or the typical environment of MD/HD charging. One commenter recommended that availability instead align with the use of the Manual of Uniform Traffic Control Device’s description of hours of operation (Section 2J.01 of the current 2009 edition). Commenters noted that MD/HD charging may be best provided, in some instances, on private sites that have restricted hours and entry.

Other commenters were generally supportive of the availability of stations available 24 hours per day, 7 days per week, but requested this final rule specify limited

exceptions to this availability. Requested specified exceptions included needs for scheduled maintenance, natural disasters, vandalism, and unforeseen circumstances.

*FHWA Response:* The FHWA sees value in providing for near-constant access for public charging along designated AFCs; however, FHWA agrees with a need for flexibility to allow for some more restricted availability in some community charging locations, such as public parks. Therefore, FHWA has amended the language in the rule to allow for less restrictive hours for charging stations located off designated AFCs and require that the charging station must be available for use and accessible to the public at least as frequently as the business operating hours of the site host. This creates a minimum access timeframe, while allowing longer access if the site host chooses and site hosts are encouraged to keep their chargers open at all times the charging stations are physically accessible. While FHWA agrees that although there are advantages to collocating charging sites with travel amenities where feasible, this is not required by regulation in the final rule to both provide flexibility in locating stations where they are otherwise needed but these amenities are not available, and to reduce the cost burden for installation. The FHWA finds that the language in the proposed rule provided for sufficient exceptions to other availability requirements and has not made further modifications to the language specifying limited availability exceptions.

### **Payment Methods**

The FHWA received a significant number of comments regarding payment methods as described in the proposed rule. Many commenters recommended that this final rule include provisions for additional payment methods. There was broad support

among commenters for requiring the clear display of a toll-free phone number staffed by real-time customer support available to take payments or assist with customer service issues. Another option discussed in the comments for increasing the accessibility of payment methods was the use of a QR code which could also specify options for users that are hard of hearing or are limited English proficient.

A number of commenters also supported the inclusion of a requirement for contact-based credit card readers activated through a swipe, chip, or dip. Commenters pointed out that prepaid cash cards, identified as being particularly useful in unbanked and underbanked communities, usually lack “tap” based contactless features and require either a swipe, chip, or dip to complete a transaction. Where prepaid cards are identified as a potential solution to make EV charging payment more accessible to low-income communities, commenters noted that prepaid cards may incur high upfront and reload fees that present another hurdle for access.

In contrast, FHWA also received comments supporting the contactless payment requirement and opposing the addition of a contact-based payment option. These commenters argued that contactless credit cards are widely available and becoming ever more present in the marketplace, and that where contactless credit cards are not available most users would own a cell phone which would enable mobile-based payments. These commenters also pointed out potential issues with the inclusion of contact-based payment methods. Contact-based credit card readers are susceptible to malicious practices such as skimming whereby thieves capture credit card information from a cardholder through the insertion of a small device in the point of information transfer. Malfunctions with

contact-based credit card payments are also cited as being responsible for a large portion of reported downtime of existing chargers, potentially contributing to the failure of stations in meeting uptime requirements. Another point made by these commenters is that the needs of unbanked and underbanked groups are more appropriately addressed through the provision of technologies and programs that work with contactless payment features rather than in addition to them. Examples of these techniques include the provision of free digital accounts or discount codes for charging sessions, or the provision of prepaid cards with “tap” contactless technology.

Other commenters focused on aspects of the proposed rule that could be improved to make payment more accessible to disabled populations. Some commenters requested that FHWA consider the access to payment displays along with access to the angle of the screen and card reader from a seated position. One commenter noted that Section 508 of the Rehabilitation Act would be triggered when designing the information displayed through the payment system and when it becomes information and communication technology.

Yet other commenters discussed the proposed requirement to provide Plug and Charge payment capabilities. Many commenters were supportive of the Plug and Charge requirement, stating that this new technology is an improvement in the industry. Other commenters argued that it is premature to require Plug and Charge payment capabilities because the technology is still extremely new. Some commenters offered that FHWA should encourage but not mandate Plug and Charge payment capabilities.

Other commenters complained that the proposed regulation did not adequately address the needs of the MD/HD charging community. This community often charges through enterprise agreements. Commenters cautioned that FHWA should be careful so as not to craft the rule to unintentionally hinder application to MD/HD charging.

Commenters also pointed out the need for vendors to be able to offer charging even through prolonged network outages or in the event of natural disasters. Vendors could either have a mechanism to store payment information and charge users at a later time when systems are fully functional, or to offer free charging when system connectivity is down. Other commenters suggested that FHWA should allow for free charging both as a back-up for emergency situations and at the will of the vendor/site owner.

These commenters also raised questions about site connectivity. A few commenters requested FHWA explicitly require charging stations to ensure availability of communication signals, noting that in some remote areas communication signals, including internet and cell phone service, are limited or challenging.

*FHWA Response:* While FHWA agrees that contactless payment methods are critical to the future of the industry, FHWA also agrees that the addition of other payment options could improve the accessibility of charging stations to disadvantaged communities. The FHWA added the requirement that charging stations provide EV charging customers an automated toll-free phone number where customers can provide their debit/credit card information via phone to an automated system in order to initiate charging or an SMS where customers can provide their debit/credit information via text



to an automated system in order to initiate charging. If choosing a toll-free phone number, this phone line need not be staffed by live operators, thus reducing the burden of this final rule. The use of an automated toll-free phone number can help to alleviate many of the concerns regarding the inclusion of contact-based (i.e., EMV/Magswipe readers) payment methods. From a cost perspective, establishing an automated toll-free phone number or SMS is substantially cheaper than implementing physical hardware and economically scales across many chargers, because a single number can be used to service many different locations. In fact, most major service providers already have options to call for payment, and of the over 55,000 chargers listed on the Alternative Fuels Data Center, fewer than 700 do not have a phone number associated with them—indicating a strong precedent. The FHWA recognizes that the toll-free calling and SMS options are not perfect accessibility solutions. Consumers who are unbanked, underbanked, or may not have access to a credit/debit card may be able to use this option with a pre-paid card. However, consumers who do not have access to a cell phone, customers that are deaf or hard of hearing, or users who do not have cellular signal may not be able to properly utilize the charging infrastructure through provision of an automated toll-free phone number alone. Nevertheless, these options seek to minimize the drawbacks of contact-based technology while substantially decreasing the accessibility issues related to having a minimum contactless payment requirement. The FHWA is not requiring scannable graphic methods of payments due to the questions surrounding cybersecurity and being able to ensure a payment is securely transmitted to the intended destination.

The language in the proposed rule also already stipulates that payment options must be “accessible to persons with disabilities.” Additionally, several commenters expressed concern regarding the accessibility of payment mechanisms to individuals with disabilities. As such, FHWA recommends that States or other designated recipients ensure all station designs should consider recommendations from the U.S. Access Board’s recently released “Design Recommendations for Accessible Electric Vehicle Charging Stations.” This document, released in July 2022, provides guidance on issues such as reach height for those in wheelchairs and auditory mechanisms for the visually impaired, among others. These measures will be critical to ensure that disabled individuals will not be unduly burdened by design issues related to charger/station design. The additional payment method options of either an automated toll-free phone number or an SMS is the result of concerns raised for those users who may have run into accessibility challenges if required to use certain payment methods.

The FHWA also agrees that, although there are some concerns with contact-based options for credit card payments, States and other designated recipients should be allowed to include these options. Contact-based options for credit card payments are allowable under the language of the proposed rule, therefore this final rule has not been modified to further accommodate them.

The FHWA also acknowledges that although Plug and Charge is a new technology, its recent commercial introduction is the result of many automakers’ plans to incorporate the feature into their products since the first version of the standard was published in 2014. Additionally, commenters from the automotive industry supportive of

the rulemaking's proposal indicate that Plug and Charge based on the first or ISO 15118-20 versions of the standard will likely soon become a valuable feature in widespread mass market EV models. Charging hardware capable of supporting ISO 15118 software updates is required through several State EV charging programs by mid-2023 to support Plug and Charge, and in addition could provide grid integration and resiliency benefits as vehicles with bi-directional charging capabilities are released into the market. In order to capitalize on the benefits of Plug and Charge capabilities while acknowledging requests from several commenters for a need for additional time for compliance with the associated technological requirements, FHWA has modified the language in this final rule to more fully address a phased requirement for Plug and Charge capabilities through language in § 680.108 by adding the compliance date of [INSERT DATE 1 YEAR AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The FHWA also considered the implications of the language in the proposed rule regarding payment methods for MD/HD charging applications. Because charging stations are statutorily required to either serve the general public or to serve commercial motor vehicles from more than one company, fleets with enterprise payment agreements must still use some method of payment or authentication. This can be accommodated by the same near-field-communication system that accepts payment from major debit and credit card providers or through Plug and Charge.

The FHWA agrees that charging stations should require that charging be facilitated where payment systems may be down, including in emergency scenarios. In instances such as natural disaster evacuations or other such emergencies, people may be

relying on chargers to function with limited connectivity. The FHWA has modified this final rule to include a requirement that chargers remain functional in these instances through new language in § 680.114(d).

The FHWA notes that connectivity challenges in remote areas should be addressed by the States and other designated recipients during siting and development, often through contracting, of charging station sites. The FHWA emphasizes the importance of connectivity in order to provide EV charging services and notes that there is assistance available for States both through the NEVI Formula Program and other funding sources in order to fund fully connected charging stations, and that there are market-based solutions to provide connectivity through satellite even where other connectivity challenges persist.

Finally, even though the option of allowing free charging was implicit in the proposed requirements, FHWA modified the language in this final rule to specify that payment mechanisms may be omitted from charging stations if charging is provided for free.

### **Equipment Certification**

The FHWA received a handful of comments regarding equipment certification. A few commenters requested clarification in this final rule for the exact standards for certification to be used. Some commenters recommended that FHWA require documentation of charger certification to Underwriters Laboratories (UL) standards, specifying that UL 2594 be used for AC chargers and UL 2202 be used for DCFCs. One commenter requested that FHWA specify that EV charging be governed by the National

Fire Protection Association (NFPA) 70, National Electrical Code (NEC) Article 625, Electric Vehicle Charging System.

Other commenters wrote in agreement with FHWA that ENERGY STAR certification for DCFCs was premature. These commenters requested that, if ENERGY STAR certification were to be required for DCFC, that FHWA phase the timeline for certification.

*FHWA Response:* The FHWA agrees that there is value in specifying the standards that should be used to certify DCFCs and AC Level 2 chargers, such as UL 2202 and 2594, respectively; however, specific standards were not incorporated in this final rule to allow industry to use newer versions of the standards as they become available to ensure evolving best practices for safety be taken into account.

The FHWA recognizes that National Electrical Code standards apply to construction permitting rather than equipment certification and are thus not addressed in this rule. The language in the proposed rule required ENERGY STAR certification only of AC Level 2 chargers, for which standards are well-established. Therefore, FHWA did not include modifications to the language in the proposed rule regarding ENERGY STAR certification.

## **Security**

The FHWA received a substantial number of comments on the proposed language regarding both on-site physical security and cybersecurity. With regard to physical security, many commenters recommended that FHWA require both street and on-site lighting to illuminate and make visible access to chargers and charging activities. Some

commenters also recommended that on-site security personnel be either mandated or encouraged. Commenters noted that, at least where manned security was not feasible, FHWA should require the provision of emergency call boxes and closed-circuit television cameras (CCTV). Some commenters recommended FHWA require design features that encouraged safety through environmental design, such as requiring that chargers be visible to passersby and unobstructed from the view of the street by buildings, other utilities, or large landscaping features. Several commenters mentioned that FHWA should encourage chargers to be collocated with commercial amenities when possible, encouraging free access to restrooms, seating areas, and drinking water. Other commenters recommended that FHWA mandate that charging sites include weather protected coverings.

Other commenters focused on the importance of requiring fire protection protocols be in-place at all charging stations. One commenter provided a list of recommended NFPA standards for requirement to include: NFPA 25: Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems; NFPA 70: National Electrical Code®; NFPA 70B: Recommended Practice for Electrical Equipment Maintenance; NFPA 900: Building Energy Code; NFPA 13: Standard for installation of Sprinkler Systems; and NFPA 70E: Standard for electrical Safety in the Workplace®.

Another commenter provided a list of recommended required National Electrical Installation Standards (NEIS) to include: ANSI NECA 303-Standard for Installing Closed-Circuit Television Systems (CCTV); ANSI NECA 416–Recommended Practice for Installing Energy Storage Systems (ESS); ANSI NECA 417–Recommended Practice

for Designing, Installing, Operating, and Maintaining Microgrids; and ANSI NECA 701-Standard for Energy Management, Demand Response, and Energy Solutions.

An even more substantial number of commenters specifically addressed FHWA's proposed language regarding cybersecurity. Generally, commenters agreed that additional specificity regarding cybersecurity is needed for States. Some commenters asserted that cybersecurity at charging stations should not be the responsibility of States, but of the private vendors operating charging stations. The AASHTO's comments identified that cybersecurity requirements would likely be passed through from States to the private sector. Some commenters identified that FHWA should confer with the General Services Administration fleet management team and the petroleum industry to identify cybersecurity practices in use that may be applicable for this rule.

Indeed, several commenters identified collaboration opportunities for FHWA to develop the most appropriate cybersecurity strategies for charging stations. Commenters specifically mentioned collaboration opportunities for FHWA with the U.S. Department of Homeland Security's Cybersecurity and Infrastructure Security Agency, the U.S. Department of Energy's Office of Cybersecurity, Energy Security and Emergency Response (CESER), Society of Automotive Engineers International, and the National Association of State Energy Officials (NASEO) as potential partners to develop consensus-based cybersecurity standards for EV charging infrastructure. One commenter also requested that FHWA consult with the National Highway Traffic Safety Administration (NHTSA) and the Federal Motor Carrier Safety Administration (FMCSA) on the latest cybersecurity research being conducted regarding MD/HD charging.

Other commenters provided specific recommendations regarding cybersecurity strategies that FHWA should require. Several commenters recommended that FHWA require that regular testing of cybersecurity features be conducted and certified by parties that have no other ownership or financial interest in the charging site.

Commenters also mentioned specific standards that could be utilized to provide cybersecurity. Several commenters recommended that FHWA incorporate reference to standards in the National Institute of Standards and Technology (NIST) catalog of standards in order to protect the charging station and sensitive customer information from cyberattacks. Specific standards recommended from this catalog include: NIST SP 800-63 Digital Identity Guidelines; NIST SP 800-175 A and B Guideline for Using Cryptographic Standards; NIST SP 800-94 Guide to Intrusion Detection and Prevention Systems (IDPS); NIST SP 800-92 Guide to Computer Security Log Management; NIST SP 800-40 Guide to Enterprise Patch Management; NIST SP 800-61 Computer Security Incident Handling Guide; NIST SP-800-161 Supply Chain Risk Management Practices for Federal Information Systems and Organizations; and NIST SP-800-53 Security and Privacy Controls for Information Systems and Organizations. Other standards were also recommended for FHWA to include Payment Card Industry (PCI) Data Security standard (DSS) attestation through PCI DSS 3.2.1 for the processing, transmission, or storage of cardholder data or the use of ISO 27001 or SOC 2 for the attestation of customer data.

Other commenters recommended that FHWA include performance standards mandating minimum requirements for cybersecurity rather than selecting any particular protocols or solutions. Recommended performance standards included methods to ensure



operating system software is authenticated during the initial stage of turning on or else shut down, ensuring that over-the-air updates can be issued remotely, and that sensitive data are protected through encryption. Other commenters recommended that FHWA require that all communications must have a minimum of 128-bit encryption or simply that all communications must be authenticated using certificates.

A few commenters identified the importance of secure communications for cybersecurity. Some commenters recommended that broadband or cellular infrastructure be added to any chargers, and that hardwired ethernet communications for chargers should be encouraged. One commenter expressed that it is not clear what the statement “secure operation during communication outages” means.

Other commenters encourage FHWA to strengthen the language in the proposed rule from “may address” to “shall address” to require particular cybersecurity strategies to be implemented. Another commenter pointed out that “appropriate encryption systems” is an indefinite term and would be improved by replacement with “cryptographic agility,” which is more specific. Yet other commenters recommended adding support of multiple PKIs to the list of cybersecurity strategies that should be addressed.

One commenter identified a potential issue with the inclusion of cybersecurity strategies and encouraged FHWA to prohibit the use of invoking cybersecurity law to suppress truthful disclosures of defects in subsidized products and services.

*FHWA Response:* The FHWA agrees that physical security of charging station sites can be improved from consideration of additional strategies to include visibility

from passersby, monitoring using security cameras, and the provision of emergency call boxes. The FHWA has modified language in this final rule to include consideration of these additional physical security strategies. The FHWA also agrees that other strategies mentioned by commenters could provide physical security benefits to include collocating charging stations with manned amenities, public access to restrooms, and drinking fountains. The FHWA encourages States and other designated recipients to collocate charging stations with these amenities when possible, but recognizes that many charging stations will be placed in rural and remote areas where this collocation may not be possible and therefore will not modify the language in this final rule to require collocation. The FHWA also encourages States and other designated recipients to require any necessary fire prevention strategies but leaves the regulation of these codes to the building industry rather than incorporating in this final rule.

The FHWA considered comments on specific cybersecurity standards to incorporate. Given the lack of cybersecurity standards specifically focused on EV charging infrastructure and the complexity of existing cybersecurity policies, practices, and standards across Federal and State government agencies and industries, FHWA leaves cybersecurity provisions in this final rule as areas of consideration by States to allow evolution of State NEVI cybersecurity plans outside the regulatory process. The FHWA did update cybersecurity strategies of consideration to more holistically reflect the scope of standards recommended in comments. The FHWA acknowledges that multiple, ongoing government and industry efforts are determining the appropriate application of both existing appropriate cybersecurity standards and best practices from

other industries to the EV charging industry. The Joint Office will provide ongoing technical assistance to States to communicate the progress and findings of these efforts.

The FHWA agrees with the recommendation that States consider strategies regarding both third-party cybersecurity testing and certification and the support of emerging PKIs and has modified the language in this final rule to include consideration of these strategies. The FHWA also agrees to add language in this final rule to explain that the selection of “appropriate encryption systems” to “cryptographic agility,” meaning the capacity to rapidly update or switch between data encryption systems, algorithms and processes without the need to redesign the protocol, software, system, or standard. The FHWA also changed the phrase “secure operation during communication outages” to “continuity of operation when communication between the charger and charging network is disrupted” for clarity.

### **Long-Term Stewardship**

The FHWA received many comments about the proposed regulation’s discussion of long-term stewardship requirements. Many commenters were supportive of the proposed requirement for compliance with NEVI standards for at least 5 years; however, several commenters questioned if FHWA intended for all NEVI requirements to sunset after 5 years or just certain requirements. Many commenters also identified a need for continued operations and maintenance planning beyond 5 years. In fact, some commenters cautioned against, and asked FHWA to consider opportunities to prevent, widespread retirement, removal, or relocation of chargers at the conclusion of the proposed 5-year stewardship requirement. Commenters particularly cautioned against the

impact of retirement of charging stations after 5 years in low-income communities where EV adoption rates may be slower.

One proposal to guard against the premature removal of chargers was to extend the long-term stewardship requirement to 10 years. Commenters pointed out that most chargers have a life cycle that extends at least 10 years, so extending this requirement to 10 years would more efficiently use Federal dollars. Other commenters noted that, in order to achieve financial viability, many charging stations could benefit from longer-term support from the public sector.

Yet other commenters stated that minimum standards and requirements should be indefinite, or specifically that charger projects completed with NEVI or Title 23, U.S.C. funds could be owned by private sector contractors indefinitely after the sunset of long-term stewardship requirements. Moreover, commenters stated that, should a contract be terminated by the State or other designated recipient, that State or other designated recipient should be required to transfer ownership to another EVSP using Open Charge Point Protocol (OCPP).

One commenter identified that utility interconnections may take several months and often over a year from the construction of chargers to operations and, as such, recommended that FHWA consider revising language in this final rule to regulate standards from the date of start of operation rather than installation.

*FHWA Response:* The FHWA agrees that there are concerns with establishing a minimum standard for long-term stewardship that does not cover the typical lifecycle of the infrastructure in question. However, FHWA also notes that EV charging technology

is relatively new and the expected useful life of most chargers has yet to be verified at this national scale. As such, FHWA retained the language in the proposed rule to require at least 5 years of compliance in this final rule. The FHWA also agrees that the wording of the proposed rule created confusion about which minimum standards would be required to comply with the long-term stewardship requirement; therefore, FHWA has revised the language in this final rule to specify that this provision discusses compliance with all applicable standards in this final rule. Finally, FHWA agreed with and correspondingly modified the language in this final rule to clarify that application of long-term stewardship begins when chargers are first operational.

### **Qualified Technician**

The FHWA received many comments, including over a hundred comments submitted with identical content from different submitters, opposing the positive training requirements in the proposed rule. Many commenters asserted that licensed electricians are already trained and fully skilled in all of the content taught in EVITP, and that this proposed additional requirement would be excessive. These commenters stated that neither EVITP nor registered apprenticeship programs were available in all areas of the country or affordable to all populations. Commenters feared that these proposed requirements would exacerbate existing limits on the electrical workforce and ultimately serve to bottleneck widespread charger deployment.

Many commenters took issue with the option to achieve the regulation through registered apprenticeship programs for electricians, stating that USDOT is not involved with any existing registered apprenticeship programs and, as such, no existing registered

apprenticeship programs would qualify. Commenters also pointed out that registered apprenticeship programs are already underutilized and result in existing workforce shortages. Other commenters did not oppose the proposed requirements as written but recommended that FHWA include other training program options to expand opportunities to a larger sector of the workforce.

Other commenters identified concerns with positive qualification requirements in general, identifying the competitive disadvantage for smaller electrical contractors which include a disproportionate number of the woman and minority-owned electrical contracting businesses. Commenters asked if FHWA could consider on the job experience in lieu of the proposed requirements, especially in the first few years of the program. Other commenters asked if these training requirements could be waived altogether for the first few years of the program so as to prevent a workforce shortage from impacting the ability to efficiently deploy chargers nationwide.

A few commenters also wrote in support of the proposed regulation as written, citing the benefits of EVITP as a comprehensive training program that was regularly updated. Some commenters acknowledged the benefits of the proposed training requirements but requested that States and other designated recipients be given an opportunity to assess the strength of their workforce in identifying if they needed a waiver from training requirements for the first few years of deployment.

Many commenters opposed the application of training requirements to non-electrical work and/or low-risk electrical work activities required for on-site maintenance. One commenter also identified that graduates of registered apprenticeship programs

should not be penalized and should have an opportunity to meet the training requirements through continuing education courses.

*FHWA Response:* The FHWA agrees that there are concerns with the potential impact of positive education/training requirements on workforce bottlenecks and in establishing additional hurdles for access to jobs for disadvantaged communities. However, as stated in the NEVI Formula Program Guidance, FHWA recommends that States and other designated recipients 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 in compliance with the training and certification requirements in this final rule. States and other direct recipients should familiarize themselves with the Federal funding options that are available for workforce development and training related to EV infrastructure.<sup>15</sup>

The FHWA notes that this training program is highly endorsed from a large cross-section of EV charging stakeholders from both labor and industry. The EVITP is the only EV charging-specific, brand-neutral, training program that exists today and is utilized by both large and small contractors. The DOT, DOE, and Department of Labor (DOL) will work with State, local, and industry partners to continue to expand the pool of talent for EVITP certified electricians as the online certification can be completed in 20 hours. Costs for certification requirements are an eligible use of funds under the NEVI

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<sup>15</sup> DOT funding and financing programs with EV eligibilities can be found in The National Electric Vehicle Infrastructure (NEVI) Formula Program Guidance, available at [The National Electric Vehicle Infrastructure \(NEVI\) Formula Program Guidance \(dot.gov\)](#).

program. The FHWA agrees with comments that tout the need for a comprehensive training and certification process to specifically address the needs of EV charging in light of the significant issues experienced with uptime and reliability amongst EV chargers on the road prior to the implementation of this final rule. A February 2023 J.D. Power report indicates that a survey including 26,500 charging attempts at Level 2 and DC fast chargers in all 50 States found that drivers cannot reliably charge at public charging stations, with the rate of failure increasing nearly 50 percent over the past two years, from 15 percent in the first quarter of 2021 to over 21 percent by the fourth quarter of 2022<sup>16</sup>. The FHWA aims to address this reliability issue in three ways by: 1) increasing the requirements for technical skills and qualifications specifically related to electrical components of EV chargers which require proper maintenance and prompt attention; 2) requiring minimum uptime (see §680.116(b)); and 3) requiring data for duration of outage and error codes associated with an unsuccessful charging session (see § 680.112(a)).

The EVITP was created through a collaboration of automakers, EVSE manufacturers, educational institutions, utility partners, electric industry professionals, and other key stakeholders in the EV charging market to provide qualified electricians with “the most comprehensive training available in the market today.” After considering the comments, FHWA has decided that, in order to create a convenient affordable, reliable, equitable national charging network, and in order to contribute to readying the

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<sup>16</sup> [EV charging network failures frustrate drivers | Automotive News \(autonews.com\)](https://www.autonews.com/news/ev-charging-network-failures-frustrate-drivers).



workforce for green good-paying jobs, there is a need to retain most of the language in this section as proposed.

Further, FHWA believes that requiring these qualifications will communicate to industry groups, technical colleges, and other educational groups the need for these training programs, and thus expedite the development and deployment of these necessary educational training programs. Greater availability of these training programs will also provide opportunity for smaller electrical contractors, including woman and minority-owned electrical contracting businesses. The FHWA also clarifies that the EVITP certification is only applicable to electricians in installation, operations, and maintenance; non-electricians involved in operations and maintenance are not required to be EVITP certified in the proposed or final rule.

Despite receiving substantial comments in opposition, FHWA maintains that EVITP is the appropriate training program which provides comprehensive training for the installation of EV supply equipment. The FHWA has addressed concerns with the EVITP by including an option that States and other designated recipients can meet the requirement through another registered electrical apprenticeship program that includes charger-specific training. The DOT, DOL, and DOE are prepared to work with industry to establish new charger-specific registered apprenticeship programs.

The FHWA did agree that either graduation from a registered apprenticeship program or certifying completion of a continuing education from a registered apprenticeship program could appropriately demonstrate the qualifications of electricians. As such, FHWA modified the language in this final rule to allow for a continuing

education certificate from a registered apprenticeship program to qualify electricians to meet this requirement. The FHWA acknowledges that registered apprenticeship programs are currently underutilized and may not meet the requirements identified in this final rule. However, FHWA sees registered apprenticeship programs as appropriate training pathways that can easily be modified to incorporate sufficient EV-specific training. The FHWA also notes that registered apprenticeship programs have existing capacity which can be utilized to quickly ramp-up EV-specific training for a significant number of electricians. As such, FHWA modified the language in this final rule to accommodate appropriate registered apprenticeship programs as one of several options to meet electrician training requirements.

### **Customer Service**

The FHWA received a handful of comments on the proposed customer service regulations outlined in the proposed rule. Several commenters requested that FHWA require a toll-free customer service hotline be clearly displayed and staffed 24/7 to address issues, customer payment requests, or service issues. Commenters further requested that customer service be accessible through scannable graphics and provide American with Disabilities Act (ADA)-compliant access to service in multiple languages. Some commenters asked that, in addition to requiring a toll-free customer service hotline, FHWA require on-site technicians or service kiosks for every charging site. Other commenters requested that charging stations include an audio customer service call button.

*FHWA Response:* This final rule retains the requirement that charging customers have a way to report outages, malfunctions, and other issues with charging infrastructure. However, FHWA is not prescribing how this should be accomplished and is, therefore, not requiring the suggested specific methods such as customer service hotlines, on-site technicians, service kiosks, or audio call buttons. Some of these methods may be useful at certain locations, but FHWA believes it would be overly burdensome from a cost perspective and thus not appropriate to require them broadly via regulation. Additionally, FHWA is not requiring customer service be accessible through scannable graphics due to cybersecurity concerns.

### **Customer Data Privacy**

The FHWA received a handful of comments regarding language in the proposed regulation addressing customer data privacy. Most of these commenters generally supported requirements to collect, process, and retain only that personal information strictly necessary to provide the charging service. Some commenters provided recommendations to strengthen the intent of this proposed regulation. One commenter recommended that certain types of customer data be made completely confidential under Federal law and exempt from public records requests or at least restricted from disclosure to those who seek it for commercial purposes only. Another commenter recommended that FHWA require routine log rotation/deletion of older records after a set interval. Another commenter recommended that FHWA protect user payment information by requiring that charging stations be compliant with Payment Card Industry (PCI) Data Security standard (DSS) 3.2.1 for the processing, transmission, or storage of cardholder

data. One commenter warned that requiring compliance with ISO 15118 will make all charging sessions immediately identifiable and recommended that FHWA require States and other designated recipients to make publicly available only regional-level aggregates of data to anonymize user information for commercial purposes.

Other commenters generally supported the proposed regulation but noted that some data are needed by industry for research and analysis in order to optimize future market-based solutions. To that end, a few commenters requested that FHWA allow additional information to be collected with the customer's express consent.

*FHWA Response:* The FHWA agrees that there are additional strategies that could improve the protection of customer data privacy once the data has been collected; however, these strategies are best deployed by the Joint Office of Energy and Transportation as the hosts of the national database and will not be regulated by this rule. (For more information on the national database, see § 680.112 Data Submittal.) The FHWA also agrees that it is beneficial for charging stations to be compliant with industry standard protections for cardholder data privacy and has modified the language in the proposed rule to incorporate PCI DSS. However, because PCI DSS versions update on a frequent basis, FHWA stopped short of requiring compliance with a particular version of PCI DSS, and instead states that chargers and charging networks should be compliant with appropriate PCI DSS standards.

### **Use of Program Income**

The FHWA received many comments regarding § 680.106(m) "Use of program income." Most commenters maintained that the rate of return on chargers should be

market-driven and based on the pricing of labor, materials, and electricity. Some commenters mentioned that determining a “reasonable” rate of return would be difficult for States and other designated recipients because they do not have experience in managing for-profit charging stations. Without this experience, commenters argue that States and other designated recipients could unintentionally cap return on investment below levels that the market could sustain, which would, in turn, disrupt both the EV charging market and future deployment of chargers. These concerns were raised by both industry and States.

Commenters also mention that EV charging station service providers often manage their sites on a portfolio-wide basis, where some charging stations in a network/corridor are more profitable and effectively subsidize underperforming, but critical, charging stations. Commenters further indicated that some charging stations are monitored for profitability over a series of years, not on an annual or quarterly basis. These commenters requested that this final rule be revised to acknowledge that a reasonable rate of return may be evaluated over multiple years and multiple charging stations.

*FHWA Response:* The language in the proposed rule was provided to call attention to existing requirements in Federal law regarding the use of program income<sup>17</sup>; therefore, FHWA has not modified the language in this final rule. This final rule inherently includes flexibility to consider market forces and the other issues raised by commenters by using the term “reasonable return on investment.” However, FHWA

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<sup>17</sup> 23 U.S.C. 156

would draw to the attention of States and other designated recipients the comments that identify that reasonable return is identified by the industry over multiple years and across multiple charging stations.

### **Other – Site Design**

The FHWA received several comments recommending that this final rule regulate components of site design for charging stations. In addition to comments discussed above regarding site design for physical security, FHWA received comments about site design to accommodate MD/HD vehicles, to address accessibility needs, and to address fire safety. In particular, commenters recommended that FHWA develop a template for site design to accommodate MD/HD vehicles. Commenters with MD/HD vehicle concerns noted that charging station sites should be designed with at least one pull-through station and ingress/egress and circulation plans meant to accommodate the turning radii of large trucks.

Many commenters also supported the considerations for accessible site design as published in the “Design Recommendations for Accessible Electric Vehicle Charging Stations” guidance published by the U.S. Access Board in 2022.<sup>18</sup>

Fire prevention and protection organizations also submitted specific comments regarding site design towards fire prevention and safety. These commenters suggested that no more than two charging ports be placed side-by-side and that charging infrastructure should be placed at a distance away from building and overhead power lines, and outside of floodplains. These commenters also recommended that charging

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<sup>18</sup> “Design Recommendations for Accessible Electric Vehicle Charging Stations”, available at [Electric Vehicle Charging Stations \(access-board.gov\)](https://www.access-board.gov/electric-vehicle-charging-stations/).

equipment be installed per the latest National Electric Codes and appropriate National Fire Protection Association standards.

*FHWA Response:* The FHWA agrees that site design for charging stations would include many important considerations; however, the site design recommendations listed are all either governed by other laws or authorities or require complex decisions in order to accommodate context-specific needs. Therefore, FHWA has not modified this final rule to incorporate site design recommendations. However, FHWA strongly encourages States and other designated recipients to consider recommendations in addition to and beyond those provided for through the “Design Recommendations for Accessible Electric Vehicle Charging Stations” guidance published by the U.S. Access Board in 2022.<sup>19</sup> Some considerations could include allowing for one or more pull-through charging stations and on-site circulation and ingress/egress design that accommodates medium- and heavy-duty vehicles that may access the site for charging. The FHWA also appreciates the comments regarding fire prevention which are best addressed through § 680.106(h)(1) where FHWA requires States and other direct recipients to implement physical security strategies.

## **Section 680.108 Interoperability of electric vehicle charging infrastructure**

### **Charger-to-EV-Communication**

The FHWA received a significant number of comments in response to the proposed language under § 680.108. Many commenters were supportive of the language as written in the proposed rule. Commenters praised the reference to ISO 15118 for

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<sup>19</sup> Ibid.

interoperability for many reasons. A few commenters mentioned that ISO 15118 is a preferred standard for interoperability because it is an open standard that is in use both nationally and internationally. Commenters mentioned that ISO 15118 is complementary of other reference manuals referenced in the proposed rule. Other commenters noted that requiring ISO 15118 is consistent with regulations already in place in California. Benefits of ISO 15118 include that it can facilitate V2G and that it is one key to enabling the use of Plug and Charge technologies.

Other commenters were supportive of referencing conformance to ISO 15118 but recommended additional modifications to the language in this section of the rule. Several commenters mentioned a need for chargers to additionally conform to a complementary set of standard-specific requirements such as PKI in order to achieve interoperability. Other commenters identify that OpenADR standards should also be considered by FHWA as part of this suite of standards that contribute to interoperability. Commenters also pointed out that, in order to achieve interoperability, ISO 15118 must be integrated into both the chargers and the EVs. Indeed, many EVs on the market have not yet implemented ISO 15118. Commenters identified that yet other EVs, those that use CHAdeMO or Tesla connectors, do not require ISO 15118 for interoperability features. In light of this, several commenters recommended that FHWA modify the language in the rule so as to require that chargers are ISO 15118 “hardware ready,” rather than conforming to ISO 15118.

Other commenters requested that the final rule be broadened to require communication with all vehicles that have implemented ISO 15118 (not just CCS-



compliant vehicles). This would allow for future interoperability of MD/HD charging even if, as is likely, these vehicles will not use CCS connectors. One commenter identified that this would impact low-income communities specifically because of these communities' increased dependence on public transit which would require MD/HD charging. Yet other commenters recommended the addition of language to accommodate interoperability of AC Level 2 charging through either ISO 15118 with an SAE J1172 connector or through SAE J3068 connectors. The SAE J3068 connectors may possibly in the future provide for interoperability features to include enabling of Plug and Charge and V2G, while proposing a lower cost and a greater capability to address MD/HD needs.

Conversely, FHWA received many comments opposed to the proposed regulation to conform with ISO 15118. Several commenters characterized the primary benefits of ISO 15118 as enabling Plug and Charge payment, which they stated is new and only one of several types of innovative payment techniques. As aforementioned, several commenters pointed out that many EVs in the current market do not support power management through ISO 15118. A few commenters also stated that there are security concerns with the implementation of ISO 15118 in that it provides a point of entry for cyber attacks when the charger decrypts and then re-encrypts signals from the vehicle.

Other commenters point out the shortcomings of ISO 15118 for V2G purposes, especially because it does not enable V2G for AC Level 2 chargers. In fact, commenters noted that there is limited commercial availability of AC Level 2 chargers that can conform to ISO 15118 or that can enable Plug and Charge.

There are also versioning concerns that commenters presented. The newest version of ISO 15118 (ISO 15118-20) provides the greatest benefits but is not yet widely implemented nor is it backwards compatible to the next most recent version in use (ISO 15118-2).

Indeed, several commenters argued that the market is not yet mature enough for a single protocol, and FHWA should develop a performance standard instead. These commenters state that a performance standard would allow for alternatives to Plug and Charge that are not otherwise provided for through the regulation of ISO 15118. These commenters also note that months if not years are required in order to coordinate the ISO 15118 standard amongst EV manufacturers, charging network providers, and PKI providers. In contrast, FHWA also received several comments explicitly opposing a performance standard for interoperability, preferring the minimum standard outlined in the proposed rule.

*FHWA Response:* Although many chargers on the market today are not yet using ISO 15118, FHWA sees value in establishing a national standard for compliance and has found ISO 15118 to be the most appropriate standard for this purpose. Therefore, FHWA has maintained a requirement for full hardware conformance to ISO 15118, including conformance to ISO 15118-3 and hardware capability for implementation of both ISO 15118 Parts 2 and 20. A performance standard was not used since it benefits the entire network to coalesce as quickly and simply as possible around defined standards in fast-moving technology, which this final rule creates. Commenters indicated that a limited number of EVs are currently compliant with ISO 15118-2, and that a larger number of

vehicle models are expected to be compliant with ISO 15118-20 in the future. The potential to support additional drivers on an undetermined future timeframe need not delay the near-term improvements to drivers' experience made possible by implementing ISO 15118 within the initial chargers installed under the NEVI. Acknowledging the level of effort required for charger manufacturers that have not yet implemented ISO 15118-2 software, FHWA requires conformance of software to ISO 15118-2 and Plug and Charge capability by one year after the date of publication of this final rule in the Federal Register.

The FHWA sees value in third-party certification of ISO 15118 but acknowledges there is currently limited capacity to accomplish it or to regulate compliance with third party certification.

The FHWA acknowledges the benefits of the OpenADR standard but notes that several similar standards have been successfully deployed in the existing EV charging environment, with different electric utilities requiring, trialing, or considering different standards. It would be premature to select a single standard for communication between charging networks and electric utilities or intermediaries at this time. The FHWA acknowledges the challenges the industry is currently addressing in identifying appropriate PKIs, but notes that this challenge is better addressed by the private sector rather than by regulation. Similar challenges have been appropriately addressed by the private sector regarding credit card payment and telecommunications.

## **Charger to Charger-Network Communication and Charging-Network-to-Charging-Network Communication**

Other commenters identified a need to discuss other standards in this section in addition to ISO 15118. Commenters recommended that FHWA recognize the interoperable environment created by ISO 15118 in conjunction with OCPP and OCPI. One commenter noted that OCPP and OCPI work in conjunction to allow non-ISO 15118 compliant EVs to initiate and pay for charging.

Commenters recommended that FHWA require third-party certification of OCPP. Other commenters warned that tools and laboratory facilities capable of performing that certification are in short supply and that a third-party certification requirement could create unnecessary delays to charging station deployment.

*FHWA Response:* The FHWA also recognizes that OCPP and OCPI play a role in interoperability and, as such, moved and modified language from another provision in this final rule (§ 680.114) to clarify the interrelated roles of these three reference documents in interoperability. (See also the section-by-section analysis of § 680.114 for further discussion of comments received regarding OCPP and OCPI.) The FHWA sees the improvements in OCPP 2.0.1 over previous versions as compelling benefits to the EV charging ecosystem, while also acknowledging the level of effort required for charger manufacturers and charging network providers to update systems to OCPP 2.0.1. Therefore, this final rule will allow for a transition period between OCPP 1.6J and 2.0.1, requiring that chargers and charging networks conform to OCPP 2.0.1 by one year after the date of publication of this final rule in the Federal Register. The FHWA believes one

year is an appropriate transition period to allow chargers and charging networks to conform to a standard for software that is currently available in the marketplace. The FHWA sees value in third-party certification of OCPP but acknowledges there is currently limited capacity to accomplish it or to regulate compliance with third party certification.

### **Network Switching Capability**

A handful of commenters identified that interoperability is not facilitated through conformance to standards alone but requires that companies facilitate the efficient and free transfer of infrastructure from one provider to another at the point of transfer between contracts.

*FHWA Response:* The FHWA also recognizes that network switching is an interoperability and consumer protection concern that implicates the long-term stewardship of the equipment and station operations overall. As such, FHWA moved the relevant proposed language from § 680.114 to this section in this final rule.

### **Section 680.110 Traffic control devices or on-premises signs acquired, installed or operated**

#### **MUTCD**

Several commenters encouraged FHWA to issue the next edition of the MUTCD so that traffic control devices installed in conjunction with EV infrastructure projects are consistent with the most current MUTCD requirements.

Several commenters recommended removing § 680.110 entirely as the requirements are covered elsewhere in Title 23, Code of Federal Regulations.

Several commenters suggested more information be incorporated into advance signing such as number of stations available, power level, and compatibility with MD/HD vehicles.

*FHWA Response:* A Notice of Proposed Amendments (NPA) to issue a new edition of the MUTCD was published at 85 FR 80898 in the December 14, 2020, Federal Register for public comment. The comments received will inform the rulemaking action and the 11th edition of the MUTCD. The BIL directs U.S. DOT to update the MUTCD by no later than May 15, 2023. Section 680.110 includes only references to 23 CFR part 655 and 23 CFR part 750. Because EV infrastructure will involve private-sector and other entities that are less familiar with these provisions than transportation agencies, there is value in providing a cross-reference to the information. Sign complexity, information load on drivers, and ensuring that signs convey a clear, simple meaning are all important considerations with traffic control devices. The information road users need to be guided to charging stations is being considered in the ongoing MUTCD rulemaking.<sup>20</sup>

## **Section 680.112 Data submittal**

### **Quarterly and Annual Data Requirements**

Many commenters stated that the proposed data collection requirements are burdensome, excessive, and unnecessary. Several State DOTs recommended that the data proposed for collection should be reviewed to verify its use to the program and future operation of the charging network so that only data that are necessary for these

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<sup>20</sup> [View Rule \(reginfo.gov\)](#) .

efforts is collected. To reduce costs for station providers and State agencies, data that is necessary to inform continued buildout of the charging network should be identified and data beyond that necessity should not be required. Another commenter suggested that FHWA consider which sets of data are critical for the long-term success of the NEVI program and which data are unnecessary or could be collected only in the first year.

Many commenters suggested that the data elements identified for quarterly reporting should be changed to annual. It was requested that FHWA review the proposed quarterly data to determine if it is efficient and reasonable to collect on a quarterly basis.

Many commenters recommended that standardized methods be established for data collection, validation, and utilization. Specific ideas included standardized templates for reporting and efficient, automated processes for data submission. Some commenters recommended a data collection system built upon the current system in use for the U.S. DOE's Alternative Fuels Data Center which is already in use by States and could be replicated or extended for use for NEVI data submission.

Several commenters suggested that reporting be aligned with annual reporting requirements already in place by certain States, such as California, and noted that the California Air Resources Board EV Charging Station Open Access Regulation has established fairly comprehensive data collection requirements through a specified template that is submitted annually during the first quarter of the year. The commenters suggested that FHWA review California's submission timelines and templates and align them to the extent possible.

Several commenters suggested a working group or technical committee be established to work out the details of data collection, efficient reporting methods, and business confidentiality concerns.

A few commenters suggested some additional data elements. One of these recommended alignment with the existing data collection requirements of the California Electric Vehicle Infrastructure Project. The commenter stated that aligning these requirements with NEVI will leverage industry-accepted standards, prevent duplicative data collection efforts, and enhance the evaluation of key program parameters. Another comment recommended collecting data associated with each charging session and at each station on a monthly basis to more accurately measure reliability experienced by customers to respond more quickly in the short-term and better understand and correct reliability problems over time. A few commenters noted the need to collect data related to the total cost charged to customers. Other commenters said the data requested on uptime is opaque and requested additional data to allow the verification of uptime metrics reported.

Many private sector commenters were concerned that some of the required data are CBI and competitively sensitive. Sections 680.112(b)(6) – (b)(9) of the proposed rule were specifically noted by several commenters, with the data on maintenance costs (paragraph 7) and acquisition costs (paragraph 8) of particular concern. If data that may be CBI is necessary, strong parameters were recommended for collection, storage, and analysis, including aggregating and anonymizing sensitive data prior to dissemination or publication.



For § 680.112(b)(8) (currently § 680.112(c)(4)), related to grid connection and upgrade cost on the utility side of the electric meter, several commenters noted the wide variability in how these costs are categorized, set, and collected across States and electric companies and how that limits the usefulness in making direct comparisons. The cost data may be useful in comparing project costs for EV charging stations within a particular electric company service area but could potentially be misleading when used to make comparisons between electric companies. Other commenters spoke to challenges related to collecting utility cost data and questioned the need for data reporting of utility costs beyond what is already reported to utility commissions. Commenters from utilities recommended streamlining reporting by using high-level cost categories and suggested 1) system upgrades, 2) distribution work, and 3) new service work.

*FHWA Response:* The FHWA reviewed and revised the proposed data elements to ensure that the data required are the elements most critical for managing and improving the NEVI Formula Program and federally funded EV charging initiatives. In order to strike the correct balance, considering the burden of data collection against the need to continue to provide a method of monitoring the success of the NEVI Formula Program, FHWA was careful in recrafting § 680.112 so as to retain the critical data while reducing the burden on States and other direct recipients. As a result, selected data elements were deleted or are required at a less frequent interval in the language in the final rule. As specified below, one data element was deleted from the former § 680.112(b), one data element was moved from the list of required quarterly submittals in the former § 680.112(b) to the revised § 680.112(b) which now requires an annual data

submittal, two data elements were moved from the list of required quarterly submittals in the former § 680.112(b) to the revised § 680.112(c) which now requires a one-time data submittal, and one data element was moved from the list of required annual data submittals in the former § 680.112(c) to the revised § 680.112(c) which now requires a one-time data submittal. Other data elements were clarified through language revision or by separating into more specific elements. The former § 680.112(b) was moved from a quarterly submittal requirement to a one-time submittal requirement under the revised § 680.112(c) and, for clarification, was separated into two separate required data fields (revised as § 680.112(c)(3) and § 680.112(c)(4)).

After streamlining data requirements, a few data field requirements were deemed critical and also added to the quarterly data submittals through § 680.112(a) to include § 680.112(a)(2), § 680.112(a)(6), and § 680.112(a)(8) to increase the clarity of the data submittal request and to address comments suggesting additional data fields.

The FHWA acknowledges the sensitivity of some of the data requested and clarified in this final rule for quarterly, annual, and one-time data submissions that any data made public will be aggregated and anonymized to protect confidential business information. Although this rule does not include a requirement to show validation of the data submitted, the data provided will be publicly displayed and should be able to be verified if requested. The FHWA reorganized this section to remove the general applicability paragraph and insert specific applicability as the first sentence to § 680.112(c) and (d). For § 680.112(a) and (b), FHWA has included this data requirement for all NEVI Formula Program projects and projects funded under Title 23, U.S.C.,

including any EV charging infrastructure project funded with Federal funds that is treated as a project on a Federal-aid highway. Although these two paragraphs were limited in the proposed rule to NEVI Formula Program projects, FHWA believes the importance of this data spans beyond just NEVI Formula Program projects and the intent of BIL is to collect useful and meaningful data for all EV charging stations where Federal funding is used. For § 680.112(a), FHWA maintains that the quarterly frequency of the data submission is necessary for on-going monitoring and analysis of use and reliability. Most quarterly data elements can be transmitted automatically from the chargers.

The FHWA added a qualifier to the data field “charging station location identifier” to require that this identifier is the same charging station name or identifier used to describe the same station in the data set made available to third parties in § 680.116(c)(1). An additional data field was added to identify the charging port in use, so that data describing charging sessions can be linked to the port that conducted the session. This field must be consistent with the charging port identifier in § 680.116(c)(2). The requirement that identifiers be consistent across data sets is necessary to allow the Joint Office to join the two data sets to perform analysis necessary to manage and improve the NEVI Formula Program. This requirement also streamlines data reporting and avoids requiring redundant data fields in the quarterly data set.

The FHWA added payment method per session to § 680.112(a) to provide insight into the types of payment methods used by EV charging customers. This information is necessary to inform policy updates related to required payment methods.

In response to commenters requesting means of verifying uptime measurements submitted by charging station operators or charging network providers, FHWA added the requirement to report two data fields that underlie the uptime calculation, T\_outage and T\_excluded, in addition to the uptime metric itself.

Given the inherent difficulty of collecting electricity cost information that is isolated to electricity for charging vehicles, due to the uncertainty of separately metered stations, FHWA removed the requirement for reporting electricity cost from § 680.112(b)(6) and instead will estimate electricity cost based on charging session data.

Regarding recurring maintenance and repair cost information (§ 680.112(b)(1)), FHWA modified the frequency of reporting to an annual basis.

Regarding submission of acquisition costs (formerly § 680.112(b)(8)) and distributed energy resource installed capacity (formerly § 680.112(b)(9)), FHWA changed these items to be a one-time submission per charging station that occurs annually for charging stations not yet reported, rather than quarterly. The FHWA also included clarification as to what programs this data submittal is applicable to by inserting language that specifies that this paragraph applies only to both the NEVI Formula Program projects and grants awarded under 23 U.S.C. 151(f) for projects that are for EV charging stations located along and designed to serve the users of designated AFCs. Although the data submittal under this paragraph was limited in the proposed rule to NEVI Formula Program projects, FHWA believes the importance of this data spans beyond just NEVI Formula Program projects and the intent of BIL is to collect useful and meaningful data for all EV charging stations that are along and designed to serve the

users of designated AFCs where Federal money is used. Additionally, FHWA streamlined and clarified “aggregate grid connection and upgrade cost on the utility side of the electric meter” to the more standardized utility categories of 1) total distribution costs and 2) total service costs. This final rule clarifies that only the costs paid to the electric utility as part of the project need to be reported.

The due date for annual data was specified as on or before March 1, beginning in 2024. This aligns with some State reporting cycles and provides time between annual data reporting and submission of State EV Infrastructure Deployment Plan updates.

To facilitate the collection of data required in this section, and in accordance with its Congressional mandate, the Joint Office will establish and manage a national database and analytics platform that will streamline submission of data from States and their contractors. Using the platform, States will be able to produce reports, conduct analysis, and access data for their program assessment activities. The platform will also provide a public-facing dashboard for communication of aggregated, anonymized information.

### **Community Engagement Outcomes**

Several commenters suggested that community engagement data be incorporated into the annual State EV Infrastructure Deployment Plan updates, reducing the amount of staff time required to create a separate reporting document. Metrics and the status of community engagement activities could be tied to what the States proposed in their Plan and included in the Plan update. Several commenters also supported the Community Engagement Outcomes Report overall and suggested a few ways in which the report could be developed, including suggestions to: (1) condition funding for future years on

meeting robust engagement requirements, including community engagement and equity and inclusion efforts by States; (2) describe how community engagement informed station siting and operations; (3) describe how workforce opportunities were integrated into community engagement efforts; and (4) describe engagement with disabled community members.

A few commenters recommended a similar approach for the information related to private entity participation in State or local business opportunity certification programs (§ 680.112(c)(2) in the NPRM), in terms of including it in the annual State EV Infrastructure Deployment Plan update.

*FHWA Response:* Community Engagement Outcomes was modified to require inclusion in the annual State EV Infrastructure Deployment Plan, rather than as a separate report. Content expectations will be included and updated in the annual Plan guidance. This will allow the type of information and data from States to be the most beneficial for informing and improving community engagement efforts and outcomes. The FHWA also clarified that this paragraph is only applicable to NEVI Formula Program projects.

## **Section 680.114 Charging network connectivity of electric vehicle charging infrastructure**

### **Charger-to-Charger Network Communication**

The FHWA received many comments regarding the proposed language in § 680.114. In general, commenters were supportive of the proposed rule as written. Commenters were generally supportive of the language under the proposed “Charger-to-Charger Network,” identifying that OCPP allows for standard communications between

chargers and central control at charging networks. The OCPP was supported because of its ability to allow site hosts to effectively manage both chargers and charging activity and its ability to allow for the appropriate collection of data in order to create a seamless and consistent user experience. Multiple commenters pointed out that the recently published OCPP version 2.0.1 has substantial benefits over its predecessor, OCPP 1.6J, with regard to cybersecurity, planned support for ISO 15118, and other functionalities. Another commenter stated that imposing a requirement for OCPP 2.0.1, instead of requiring OCPP 1.6 or later, would seem to offer no discernable benefit. One commenter recommended that this section be modified to explicitly allow end user load monitoring and management.

The FHWA also received a few comments in opposition of pointing to OCPP as the preferred standard. These commenters stated that OCPP was relatively new and choosing a standard would be premature at this time. Many commenters noted that the proposed rule requires implementation of OCPP version 2.0.1 and explained that most EV charging providers are currently operating with OCPP version 1.6J. They requested a transition period be allowed in this final rule to give industry time to update their systems to implement OCPP 2.0.1. Other commenters recommended that OCPP 2.0.1 be required immediately to realize its benefits more quickly.

*FHWA Response:* The FHWA agrees with commenters that, although there is some diversity among standards currently used by the industry, OCPP and OCPI are appropriate references for this section and the industry is moving towards these references as de-facto standards. However, based on comments FHWA found it more

logical to include regulations referencing OCPP and OCPI in § 680.108, and therefore moved references to these standards to this section under “interoperability.” Note that FHWA allows for a one-year transition period for conformance to the latest versions of OCPP and OCPI to allow chargers and charging networks sufficient time to conform to a standard for software that is not currently widely used but is currently available in the marketplace. (See also the section-by-section analysis of § 680.108 for further discussion of comments received regarding OCPP and OCPI.)

The FHWA does not feel that it is critical to mandate end user load monitoring and management in the minimum standards provided for in this rule.

#### **Charging-Network-to-Charging-Network Communication**

The FHWA also received comments on “Charging-Network-to-Charging Network.” Commenters were generally supportive of the proposed requirement to allow for roaming in order to allow EV drivers to seamlessly locate and charge at different charging stations managed by different networks without different memberships or toggling between different mobile applications. Commenters were generally supportive of the language in the proposed rule and the reference to OCPI which, it was noted, is currently the standard used in California. One commenter did note, however, that there is no existing credentialing system applicable to charging network to charging network payment processing. This commenter took specific issue with the use of the term “credential” in the context of charging-network-to-charging-network communication.



*FHWA Response:* In this final rule, “credentials” was replaced with “method of identification” to clarify the requirement that charging-network-to-charging-network communication allow roaming.

### **Charging-Network-to-Grid Communication**

The FHWA received a few comments specific to “Charging-Network-to-Grid Communication.” Most commenters were supportive of the language in the proposed rule as written. One commenter offered that the benefits of this regulation were minimal because of proposed requirements for power levels which dampened opportunities for effective power demand management activities which would otherwise be governed by this section.

Another commenter recommended that FHWA replace references to “network” with “back-end software” because they felt network was too ambiguous.

*FHWA Response:* Comments addressing the proposed language in this section were addressed by FHWA in other relevant sections as follows. The FHWA modified the power level requirements under § 680.106(d) to allow for power demand management amongst applicable AC Level 2 chargers. By allowing for power demand management elsewhere in the final rule, the language provided under this section becomes more important and addresses the comments received that the benefits of the regulation were minimal because power demand management was not allowed under the proposed rule.

The FHWA also considered whether the reference to a “charging network” was too ambiguous as used under this requirement and determined that the charging network

is the appropriate reference for which secure communications should be regulated for charging network to grid communication. Charging network is defined under § 680.104 and identifies specifically a collection of interconnected chargers. This regulation is meant to ensure that collections of chargers are themselves able to securely communicate with the grid, ensuring secure communications within the entire charging environment. This is best accomplished where FHWA specifies the secure communications of collections of interconnected chargers with the grid, not generic “back-end software” with the grid.

Based on this analysis, FHWA made no changes to this section in the final rule.

### **Disrupted Network Connectivity**

The FHWA also received comments that generally applied to § 680.114. Many commenters pointed out the importance of connectivity for charger operations to enable remote diagnostics, remote start, data collection, payment processing, power distribution and other critical activities. Several commenters recommended FHWA mandate high-speed (4G LTE) broadband connectivity at sites. Other commenters asked how to accommodate charging stations in areas with limited cellular and internet connectivity and recommended that FHWA address this concern in this final rule. As described in § 680.106(f), commenters recommended that chargers be required to continue to operate in the event of lost communication.

The FHWA also received comments that were generally supportive of the proposed § 680.114 as written, but recommended language clarifications. One

commenter recommended that FHWA modify language to clarify that network connectivity obligations rest with the station operator and not the charger.

*FHWA Response:* The FHWA agrees that connectivity is a particular challenge in remote areas, but notes that, outside of temporary disruptions, connectivity is critical for the functioning of the charging environment and therefore encourages States and other designated recipients to work closely with contractors in siting and development of charging stations to ensure sufficient broadband and cellular connectivity availability. The FHWA notes that there are satellite-based connectivity solutions available that may address concerns in remote areas. In the event of communication disruption, FHWA agrees that there is a need to require charging capabilities when network connectivity has been lost. This is important to ensure a positive customer experience and to avoid stranding drivers, especially during times of emergency. The FHWA has therefore included modifications in the language in this final rule to require chargers to function when communication is lost, sometimes referred to as “defaulting to charge.”

With regard to recommended language clarifications, the proposed requirement referenced chargers to indicate a correlation with function, not obligation. The obligation of the requirements will fall to the States and other designated recipients and parties contractually obligated to the States and other designated recipients.

**Section 680.116 Information on publicly available electric vehicle charging infrastructure locations, pricing, real-time availability, and accessibility through mapping applications**

## **Pricing (\$/kWh)**

Many commenters noted that \$/kWh pricing is ideal and would be the clearest and most understandable way to communicate price to customers. However, State laws in several States prohibit this, allowing pricing in \$/kWh only for utilities. The pricing structure of \$/minute was identified as another option with the idea of using several tiers of price for a range of power levels, to account for different vehicle charge rates and variable charge rates within a charging session. Several commenters recommended this or other alternatives to provide an option for those States that have State law prohibitions of pricing by \$/kWh.

A State DOT noted that in 2012 their State Legislature required the State to adopt rules to provide definitions, methods of sale, labeling requirements, and price-posting requirements for charging stations to allow for consistency for consumers and the industry. The State has been using the National Institute of Standards and Technology requirements for EV charging infrastructure since 2014 when weights and measures officials adopted the kilowatt-hour as the unit of measurement for method of sale. Their recommendation was that all States communicate price in a standard dollar per kilowatt-hour value but the comment was indicative that some work needs to be done at the State level to make this possible.

*FHWA Response:* A single, uniform, nationwide communication of pricing to customers, regardless of where they are travelling in the United States, is in the national interest; therefore \$/kWh was retained. Liquid fuels are priced in a single, nation-wide unit of price per gallon that is simple and clear to customers. So, too, here a simple,

understandable communication to customers of price with a common unit is important for transparency and customer protections. The FHWA recognizes that this transition may require changes in some States choosing to receive NEVI funds, and FHWA has allowed one year from the date of rule publication in the Federal Register for potentially impacted States to determine how to proceed.

### *Price Transparency*

There were many comments related to price transparency, demand charges for electricity, and price gouging. Several commenters recommended that all fees be clearly identified to customers at the charging site, without reliance on an application or website. In addition to the charging price, other examples of fees include parking/dwelling fees, connection fees, and fees charged for occupying the site after charging is complete. One commenter suggested stabilizing customers' expectations by not changing the \$/kWh as frequently as electricity prices may be fluctuating on the open market by setting a daily price.

*FHWA Response:* This final rule was changed in regard to how costs are communicated, requiring that the \$/kWh price to charge be transparently communicated prior to initiating a charge and that any other fees, such as fees charged for occupying the site after charging is complete, be clearly explained via an application, website, or other means in a manner of like prominence to the price anytime the price is displayed. Communication of fees via applications is commonly used, currently, and the requirement to share pricing structure with third party software developers has been retained. Display of fees and payment information cannot be membership-based, and the

provision of a publicly available website is also encouraged. Parking fees and time limits may also be communicated with signage or other displays.

### **Uptime Calculation**

Many comments were received regarding the proposed 97 percent uptime requirement, with most commenters supportive of that threshold. A State DOT suggested that all NEVI stations comply with a requirement for robust maintenance and repair plans to accompany charger installations. These plans could demonstrate how each charging port at a station, and the station overall, will achieve uptime standards through routine maintenance and timely repairs.

Several commenters requested that uptime be calculated on a per-station basis, rather than on a per-port basis, stating that this incentivizes building larger stations to ensure a minimum number of charging ports are operational. Another commenter said the precision of the equation should be minutes, not hours. Other commenters expressed that the phrase “the charging port successfully dispenses electricity as expected” is incomplete because it does not define what is meant by “as expected.”

Several commenters noted that scheduled maintenance should not count against uptime, especially if that maintenance occurs during periods of low utilization. Others recommended additional exclusions for situations outside the station operator’s control such as vandalism, emergency scenarios, certain weather factors, etc. One commenter suggested the first year of the program be a test year because enforcing the uptime requirement will be complex. After collecting data for one year to better understand the

factors that impact uptime, more stringent standards could go into effect in the remaining years of the program.

*FHWA Response:* The definition of when a charger is considered “up” was updated in this final rule to remove the phrase “as expected” and instead stipulate that charging ports must dispense electricity in accordance with requirements for minimum power level found in § 680.106(d). The calculation of uptime in this final rule remains at the per-port level, as high reliability at the port level is important to improve customer experience and confidence in charging infrastructure. On the recommendation of a commenter, the equation was updated to calculate uptime to the nearest minute, rather than hours, to increase the precision of the calculation and make calculation more uniform across all charging station operators and charging network providers.

The proposed calculation for charging port uptime included the variable  $T_{\text{excluded}}$  = total hours of outage in previous year for reasons outside the charging station operator’s control. The FHWA agrees with the recommendation to explicitly define the conditions when downtime can be excluded from the calculation of uptime. The FHWA also sees value in specifying additional conditions than those listed in the NPRM. Vandalism, natural disasters, and limited hours of operation were added as allowable reasons for exclusion. Proposed language stating “outages caused by the vehicle” was updated for precision to “failure to charge or meet the EV charging customer’s expectation for power level due to the fault of the vehicle.” Scheduled maintenance was also added, and charging station operators are encouraged to conduct regular preventative maintenance during period of low demand to minimize disruption to

customers. As a performance standard, the methods for achieving the port uptime threshold will not be prescribed by FHWA. Uptime reporting will not be delayed.

The FHWA acknowledges that the uptime calculation does not address all categories of failure or ways that chargers may fail to provide a satisfying customer experience. Alternate or additional approaches to regulating charging reliability could include requiring chargers to successfully complete a high percentage of charging sessions or to successfully initiate charging sessions after a minimal number of attempts. However, insufficient data are available to set reasonable thresholds for such requirements. Instead, FHWA modified requirements for data reporting in § 680.112(b) to collect error code data to better understand the nature and frequency of charging session problems.

The FHWA also acknowledges that enforcement of the uptime requirement will be complex; however, in contrast to a recommendation in the comments, FHWA does not see sufficient benefit in delaying the uptime requirement as uptime is a key complaint received regarding those chargers existing prior to the implementation of this final rule. The FHWA would prefer to immediately implement this important regulation, acknowledging that enforcement techniques will evolve over time.

### **Third-Party Data Sharing**

Many private sector commenters expressed concern about unfair competition if charging network data sharing is overly broad. Commenters noted that making the data freely available will, in effect, translate into charging networks subsidizing competitors' new business models that could then unfairly attract drivers to use their mobile



applications and payment/subscription services. Another concern was that real-time operational data on a per-session basis would allow competitors to determine rate of utilization, proprietary business information that operators should not be required to share in the competitive market. Other commenters said that charging network providers already send most of this data to the Alternative Fuel Data Center (AFDC) so this requirement would lead to redundant work.

*FHWA Response:* The data for third-party data sharing were reviewed to identify which elements are necessary for improving customer experience. Some data elements were removed as unnecessary for that purpose, such as ‘Date when charging station first became available for use’ and ‘Physical dimensions of the largest vehicle that can access a charging port at the charging station.’ A few necessary elements were added, such as hours of operation since this final rule only requires those stations along AFCs to be open 24/7. Other data elements added include “unique port identifier,” “accessibility by vehicle with trailer (pull-through stall),” and “charging station access type (public or limited to commercial vehicles). The remaining data elements were re-organized into nine, more logical categories. This also clarifies data that needs to be provided at the station level versus the port level. The concerns about sharing data with third parties is noted, but an improved customer experience is critical and the sharing of data is expected to increase business at charging stations. The FHWA acknowledges that the required submittal of some of these data are duplicative of optional data submitted through the AFDC, but because some of the data submitted to the AFDC contains data that is more

commercially sensitive, a reduced data set for third-parties focused on customers was identified for § 680.116(c), rather than a single data set for both purposes.

## **Section 680.118 Other Federal requirements**

### **Disadvantaged Business Enterprise Program**

In further internal review of the proposed regulation text, FHWA found a need to clarify that the Disadvantaged Business Enterprise (DBE) program does not apply to NEVI formula funds but may apply in some other instances. The FHWA modified the language in this final rule to identify situations where the DBE program may apply to projects subject to this final rule.

### **Build America, Buy America**

Many comments were received on Build America, Buy America (BABA) and Buy America, which includes requirements for certain items permanently incorporated into a project to be produced domestically. Several commenters requested that FHWA provide more clarity and timely information on BABA and Buy America requirements for chargers funded through NEVI and other Title 23, U.S.C. programs including the process needed to demonstrate compliance. Commenters recommended that FHWA monitor the availability of U.S. made products, ensure that there is both adequate availability and competition, and issue waivers or waiver extensions, as appropriate. Several commenters recommended an incremental approach, particularly during the first years of the program, to ensure that the industry can achieve full compliance without significant delays. Others suggested that FHWA provide and maintain a list of approved manufacturers and products that comply with BABA and Buy America.

Several commenters expressed support for BABA and Buy America requirements, citing benefits to the U.S. economy and workers and reducing U.S. vulnerability to global supply chain disruptions.

*FHWA Response:* A ‘Notice of Proposed Waiver of Buy America Requirements for Electric Vehicle Chargers’ was published at 87 FR 53539 in the August 31, 2022, Federal Register. The Notice requested comments on a proposal to waive certain Buy America requirements under FHWA regulations and the BABA for the steel, iron, manufactured products, and construction materials in EV chargers in a manner that, over a deliberate transitional period, reduces the scope of the waiver. Comments closed on September 30, 2022, and will inform any future actions related to Buy America and chargers.

### **American with Disabilities Act**

Several commenters submitted suggestions to improve charging station accessibility for persons with disabilities. Other commenters requested clarification on ADA requirements at charging stations.

*FHWA Response:* The U.S. Access Board published “Design Recommendations for Accessible Electric Vehicle Charging Stations” in 2022. Until any formal rules are proposed and finalized by the U.S. Access Board, FHWA recommends that charging stations be designed and constructed according to the U.S. Access Board Recommendations to demonstrate ADA compliance and optimize usability for persons with disabilities.

## **Severability**

Congress created the NEVI program by statute and directed FHWA to establish the minimum standards and requirements for NEVI-funded projects, as outlined in this final rule. The purpose of this rule is to operate holistically in addressing a panoply of issues necessary to ensure efficient operation of this nationwide network. However, FHWA recognizes that certain provisions focus on unique topics. Therefore, FHWA finds that the various provisions of this final rule are severable and able to operate functionally if severed from each other. In the event a court were to invalidate one or more of this final rule's unique provisions, the remaining provisions should stand, thus allowing this congressionally mandated program to continue to operate.

## **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 this rulemaking would be a significant regulatory action within the meaning of E.O. 12866, "Regulatory Planning and Review" 58 FR 51735 (Oct. 4, 1993).

The regulatory impact analysis (RIA) 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 and other designated recipients

would likely choose for their own charger programs in the absence of the rule. In many cases, the analysis found that States and other designated recipients 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 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 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 rule will not have a significant economic impact on a substantial number of small entities.

### **Unfunded Mandates Reform Act of 1995**

This rule would not impose unfunded mandates as defined by the Unfunded Mandates Reform Act of 1995 (Pub. L. 104-4, 109 Stat. 48). This 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 rule has been analyzed in accordance with the principles and criteria contained in E.O. 13132, “Federalism” 64 FR 43255 (Aug. 10, 1999), and FHWA has determined that this rule would not have sufficient federalism implications to warrant the preparation of a federalism assessment. Regardless, FHWA could foresee the possibility of a conflict between § 680.116’s condition that pricing be displayed in \$/kWH and the laws of some States. As such, in accordance with section 4(d) of E.O. 13132, FHWA has, to the extent practicable, consulted with appropriate State and local officials in an effort to avoid any such conflict. The FHWA weighed those interests carefully in promulgating § 680.116. That section represents the best balance possible of State interests with the need to present a consistent, transparent, and easily-recognized nationwide pricing approach for EV charging.

#### **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 for each collection of information they conduct, sponsor, or require through regulations. The FHWA has determined that this rule contains collection of information requirements for the purposes of the PRA. This 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, U.S.C., including any EV charging infrastructure project funded with Federal funds that is treated as a project on a Federal-aid highway. The collection of quarterly, annual, one-time and real-time data in support of 23 CFR 680.112(a), 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. 2125-0674.

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

*Respondents:* 52 State DOTs and awardees of grants under 23 U.S.C. 151(f).

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

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

*Estimated Total Annual Burden Hours:* Approximately 10,816 hours annually.

### **National Environmental Policy Act**

The FHWA has analyzed this 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 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 rule; no unusual circumstances are present under 23 CFR 771.117(b).

**Executive Order 13175 (Tribal Consultation)**

The FHWA has analyzed this rule in accordance with the principles and criteria contained in E.O. 13175, “Consultation and Coordination with Indian Tribal Governments” 65 FR 67249 (Nov. 9, 2000). The 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, U.S.C. 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, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations” 59 FR 7629 (Feb. 16, 1994), 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 rule does not raise any environmental justice issues.

### **Congressional Notification**

As required by 5 U.S.C. 801, FHWA will report to Congress on the promulgation of this final rule before its effective date. The report will state that it has been determined that this rule is not a “major rule” as defined by 5 U.S.C. 804(2).

### **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, Reporting and recordkeeping requirements, Transportation

Issued under authority delegated in 49 CFR 1.81 and 1.85 on:

/s/

Shailen P. Bhatt  
Administrator  
Federal Highway Administration

In consideration of the foregoing, FHWA amends Title 23, CFR chapter I, subchapter G by adding part 680, to read as follows:

**SUBCHAPTER G – ENGINEERING AND TRAFFIC OPERATIONS**

**PART 680 – NATIONAL ELECTRIC VEHICLE INFRASTRUCTURE**

**STANDARDS AND REQUIREMENTS**

Sec.

680.100 Purpose.

680.102 Applicability.

680.104 Definitions.

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

680.108 Interoperability of Electric Vehicle Charging Infrastructure.

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

680.112 Data Submittal.

680.114 Charging Network Connectivity of Electric Vehicle Charging Infrastructure.

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

680.118 Other Federal Requirements.

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 this part 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, including any EV charging infrastructure project funded with Federal funds that is treated as a project on a Federal-aid highway.

**§ 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, including any EV charging infrastructure project funded with Federal funds that is treated as a project on a Federal-aid highway.

**§ 680.104 Definitions.**

*AC Level 2* means a charger that operates on a circuit from 208 volts to 240 volts and transfers alternating-current (AC) electricity to a device in an EV that converts alternating current to direct current to recharge an EV battery.

*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 [CHAdEMO](#)). 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. Also referred to as Electric Vehicle Supply Equipment (EVSE).

*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 EV. A charging port may have multiple connectors, but it can provide power to charge only 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 owns the chargers and supporting equipment and facilities at one or more charging stations. Although this entity may delegate responsibility for certain aspects of charging station operation and maintenance to subcontractors, this entity retains responsibility for operation and maintenance of chargers and supporting equipment and facilities. 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 an EV to a charging port in order to transfer electricity.

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

*Cryptographic Agility* means the capacity to rapidly update or switch between data encryption systems, algorithms, and processes without the need to redesign the protocol, software, system, or standard.

*Direct Current Fast Charger (DCFC)* means a charger that enables rapid charging by delivering direct-current (DC) electricity directly to an EV's battery.

*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 a motor vehicle that is either partially or fully powered on electric power received from an external power source. For the purposes of

this regulation, this definition does not include golf carts, electric bicycles, or other micromobility devices.

*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 [Home | EVITP – Electric Vehicle Infrastructure Training Program](#).

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

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

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

*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 through digital certificates defined by ISO-15118, a charging session initiates, and a payment is transacted automatically, without any other customer actions required at the point of use.

*Power Sharing* means dynamically limiting the charging power output of individual charging ports at the same charging station to ensure that the sum total power output to all EVs concurrently charging remains below a maximum power threshold.

This is also called automated load management.

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

*Public Key Infrastructure (PKI)* means a system of processes, technologies, and policies to encrypt and digitally sign data. It involves the creation, management, and exchange of digital certificates that authenticate the identity of users, devices, or services to ensure trust and secure communication.

*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 or pricing signals to provide load management, resilience, or other 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.* States or other direct recipients shall ensure public transparency for how the price will be determined and set for EV charging and make available for public review the following:

- (1) Summary of the procurement process used;



- (2) Number of bids received;
- (3) Identification of the awardee;
- (4) Proposed contract to be executed with the awardee;
- (5) Financial summary of contract payments suitable for public disclosure including price and cost data, in accordance with State law; and
- (6) Any information describing how prices for EV charging are to be set under the proposed contract, in accordance with State law.

(b) *Number of Charging Ports.* (1) When including DCFCs located along and designed to serve users of designated AFCs, charging stations must have at least four network-connected DCFC charging ports and be capable of simultaneously charging at least four EVs. (2) In other locations, EV charging stations must have at least four network-connected (either DCFC or AC Level 2 or a combination of DCFC and AC Level 2) charging ports and be capable of simultaneously charging at least four EVs.

(c) *Connector Type.* All charging connectors must meet applicable industry standards. Each DCFC charging port must be capable of charging any CCS-compliant vehicle and each DCFC charging port must have at least one permanently attached CCS Type 1 connector. In addition, permanently attached CHAdeMO ([CHAdeMO](#)) connectors can be provided using only FY2022 NEVI Funds. Each AC Level 2 charging port must have a permanently attached J1772 connector and must charge any J1772-compliant vehicle.

(d) *Power Level.*

(1) DCFC charging ports must support output voltages between 250 volts DC and 920 volts DC. DCFCs located along and designed to serve users of designated AFCs must have a continuous power delivery rating of at least 150 kilowatt (kW) and supply power according to an EV's power delivery request up to 150 kW, simultaneously from each charging port at a charging station. These corridor-serving DCFC charging stations may conduct power sharing so long as each charging port continues to meet an EV's request for power up to 150 kW.

(2) Each AC Level 2 charging port must have a continuous power delivery rating of at least 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 conduct power sharing and/or participate in smart charge management programs so long as each charging port continues to meet an EV's demand for power up to 6 kW, unless the EV charging customer consents to accepting a lower power level.

(e) *Availability.* Charging stations located along and designed to serve users of designated Alternative Fuel Corridors must be available for use and sited at locations physically accessible to the public 24 hours per day, 7 days per week, year-round. Charging stations not located along or not designed to serve users of designated Alternative Fuel Corridors must be available for use and accessible to the public at least as frequently as the business operating hours of the site host. This section does not prohibit isolated or temporary interruptions in service or access because of maintenance or repairs or due to the exclusions outlined in § 680.116(b)(3).

(f) *Payment Methods.* Unless charging is permanently provided free of charge to customers, charging stations must:

(1) 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 either an automated toll-free phone number or a short message/messaging system (SMS) that provides the EV charging customer with the option to initiate a charging session and submit payment;

(2) Not require a membership for use;

(3) Not delay, limit, or curtail power flow to vehicles on the basis of payment method or membership; and

(4) Provide access for users that are limited English proficient and accessibility for people with disabilities. Automated toll-free phone numbers and SMS payment options must clearly identify payment access for these populations.

(g) *Equipment Certification.* States or other direct recipients must ensure that all chargers are certified by an Occupational Safety and Health Administration Nationally Recognized Testing Laboratory and that all AC Level 2 chargers are ENERGY STAR certified. DCFC and AC Level 2 chargers should be certified to the appropriate Underwriters Laboratories (UL) standards for EV charging system equipment.

(h) *Security.* States or other direct recipients must implement physical and cybersecurity strategies consistent with their respective State EV Infrastructure Deployment Plans to ensure charging station operations protect consumer data and protect against the risk of harm to, or disruption of, charging infrastructure and the grid.

(1) Physical security strategies may include topics such as lighting; siting and station design to ensure visibility from onlookers; driver and vehicle safety; video surveillance; emergency call boxes; fire prevention; charger locks; and strategies to prevent tampering and illegal surveillance of payment devices.

(2) Cybersecurity strategies may include the following topics: user identity and access management; cryptographic agility and support of multiple PKIs; monitoring and detection; incident prevention and handling; configuration, vulnerability, and software update management; third-party cybersecurity testing and certification; and continuity of operation when communication between the charger and charging network is disrupted.

(i) *Long-Term Stewardship*. States or other direct recipients must ensure that chargers are maintained in compliance with this part for a period of not less than 5 years from the initial date of operation.

(j) *Qualified Technician*. States or other direct recipients shall ensure that the workforce installing, maintaining, and operating chargers has appropriate licenses, certifications, and training to ensure that the installation and maintenance of chargers is performed safely by a qualified and increasingly diverse workforce of licensed technicians and other laborers. Further:

(1) Except as provided in paragraph (j)(2) of this section, all electricians installing, operating, or maintaining EVSE must meet one of the following requirements:

(i) Certification from the EVITP.

(ii) Graduation or a continuing education certificate from a registered apprenticeship program for electricians that includes charger-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 chargers must have graduated from a registered apprenticeship program or have appropriate licenses, certifications, and training as required by the State.

(k) *Customer Service.* States or other direct recipients must ensure that EV charging customers have mechanisms to report outages, malfunctions, and other issues with charging infrastructure. Charging station operators must enable access to accessible platforms that provide multilingual services. States or other direct recipients 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. Chargers and charging networks should be compliant with appropriate Payment Card Industry Data Security Standards (PCI DSS) for the processing, transmission, and storage of cardholder data. Charging Station 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 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 or other direct recipient 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 or other direct recipient;

(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 Title 23, United States Code.

**§ 680.108 Interoperability of electric vehicle charging infrastructure.**

(a) *Charger-to-EV Communication.* Chargers must conform to ISO 15118-3 and must have hardware capable of implementing both ISO 15118-2 and ISO 15118-20. By [INSERT DATE ONE YEAR AFTER DATE OF PUBLICATION IN THE FEDERAL

REGISTER], charger software must conform to ISO 15118-2 and be capable of Plug and Charge. Conformance testing for charger software and hardware should follow ISO 15118-4 and ISO 15118-5, respectively.

(b) *Charger-to-Charger-Network Communication.* Chargers must conform to Open Charge Point Protocol (OCPP) 1.6J or higher. By [INSERT DATE ONE YEAR AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER], chargers must conform to OCPP 2.0.1.

(c) *Charging-Network-to-Charging-Network Communication.* By [INSERT DATE ONE YEAR AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER], charging networks must be capable of communicating with other charging networks in accordance with Open Charge Point Interface (OCPI) 2.2.1.

(d) *Network Switching Capability.* Chargers must be designed to securely switch charging network providers without any changes to hardware.

**§ 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 part 655 of this subchapter.

(b) *On-Premises Signs.* On-property or on-premise advertising signs must comply with part 750 of this chapter.

**§ 680.112 Data submittal.**

(a) *Quarterly Data Submittal.* States and other direct recipients must ensure the following data are submitted on a quarterly basis in a manner prescribed by the FHWA.

Any quarterly data made public will be aggregated and anonymized to protect confidential business information.

(1) Charging station identifier that the following data can be associated with. This must be the same charging station name or identifier used to identify the charging station in data made available to third-parties in § 680.116(c)(1);

(2) Charging port identifier. This must be the same charging port identifier used to identify the charging port in data made available to third-parties in § 680.116(c)(8)(ii);

(3) Charging session start time, end time, and any error codes associated with an unsuccessful charging session by port;

(4) Energy (kWh) dispensed to EVs per charging session by port;

(5) Peak session power (kW) by port;

(6) Payment method associated with each charging session;

(7) Charging station port uptime, T\_outage, and T\_excluded calculated in accordance with the equation in § 680.116(b) for each of the previous 3 months;

(8) Duration (minutes) of each outage.

(b) *Annual Data Submittal.* Beginning in 2024, States and other direct recipients must ensure the following data are submitted on an annual basis, on or before March 1, in a manner prescribed by FHWA. Any annual data made public will be aggregated and anonymized to protect confidential business information.

(1) Maintenance and repair cost per charging station for the previous year.

(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.

(c) *One-time Data Submittal.* This paragraph applies only to both the NEVI Formula Program projects and grants awarded under 23 U.S.C. 151(f) for projects that are for EV charging stations located along and designed to serve the users of designated AFCs. Beginning in 2024, States and other direct recipients must ensure the following data are collected and submitted once for each charging station, on or before March 1 of each year, in a manner prescribed by the FHWA. Any one-time data made public will be aggregated and anonymized to protect confidential business information.

(1) The name and address of the private entity(ies) involved in the operation and maintenance of chargers.

(2) Distributed energy resource installed capacity, in kW or kWh as appropriate, of asset by type (e.g., stationary battery, solar, etc.) per charging station; and

(3) Charging station real property acquisition cost, charging equipment acquisition and installation cost, and distributed energy resource acquisition and installation cost; and

(4) Aggregate grid connection and upgrade costs paid to the electric utility as part of the project, separated into:

(i) Total distribution and system costs, such as extensions to overhead/underground lines, and upgrades from single-phase to three-phase lines; and

(ii) Total service costs, such as the cost of including poles, transformers, meters, and on-service connection equipment.

(d) *Community Engagement Outcomes Report*. This paragraph only applies to the NEVI Formula Program projects. States must include in the State EV Infrastructure Deployment Plan a description of 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.

**§ 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. See § 680.108 for more information about OCPP requirements.

(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.

(b) *Interoperability*. See § 680.108 for interoperability requirements.

(c) *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 method of identification to charge at Charging Stations that are a part of multiple charging networks. See § 680.108 for more information about OCPI requirements.

(d) *Charging-Network-to-Grid Communication.* Charging networks must be capable of secure communication with electric utilities, other energy providers, or local energy management systems.

(e) *Disrupted Network Connectivity.* Chargers must remain functional if communication with the charging network is temporarily disrupted, such that they initiate and complete charging sessions, providing the minimum required power level defined in § 680.106(d).

**§ 680.116 Information on publicly available electric vehicle charging infrastructure locations, pricing, real time availability, and accessibility through mapping.**

(a) *Communication of Price.*

(1) The price for charging must be displayed prior to initiating a charging transaction and be based on the price for electricity to charge in \$/kWh. If the price for charging is not currently based on the price for electricity to charge an Electric Vehicle in \$/kWh, the requirements of this subparagraph must be satisfied within one year from [INSERT THE DATE ONE YEAR AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(2) The price for charging displayed 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 displayed and explained.

(b) *Minimum Uptime.* States or other direct recipients must ensure that each charging port has 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 in accordance with requirements for minimum power level (see § 680.106(d)).

(2) Charging port uptime must be calculated on a monthly basis for the previous twelve months.

(3) Charging port uptime percentage must be calculated using the following equation:

$$\mu = ((525,600 - (T_{\text{outage}} - T_{\text{excluded}})) / 525,600) \times 100$$

where:

$\mu$  = port uptime percentage,

$T_{\text{outage}}$  = total minutes of outage in previous year, and

$T_{\text{excluded}}$  = total minutes of outage in previous year caused by the following reasons outside the charging station operator’s control, provided that the charging station operator can demonstrate that the charging port would otherwise be operational: electric utility service interruptions, failure to charge or meet the EV charging customer’s expectation for power delivery due to the fault of the vehicle, scheduled maintenance, vandalism, or natural disasters. Also excluded are hours outside of the identified hours of operation of the charging station.

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

- (1) Unique charging station name or identifier;
- (2) Address (street address, city, State, and zip code) of the property where the charging station is located;
- (3) Geographic coordinates in decimal degrees of exact charging station location;
- (4) Charging station operator name;
- (5) Charging network provider name;
- (6) Charging station status (operational, under construction, planned, or decommissioned);
- (7) Charging station access information:
  - (i) Charging station access type (public or limited to commercial vehicles);
  - (ii) Charging station access days/times (hours of operation for the charging station);
- (8) Charging port information:
  - (i) Number of charging ports;
  - (ii) Unique port identifier;
  - (iii) Connector types available by port;
  - (iv) Charging level by port (DCFC, AC Level 2, etc.);
  - (v) Power delivery rating in kilowatts by port;
  - (vi) Accessibility by vehicle with trailer (pull-through stall) by port (yes/no);

(vii) Real-time status by port in terms defined by Open Charge Point Interface 2.2.1;

(9) Pricing and payment information:

(i) Pricing structure;

(ii) Real-time price to charge at each charging port, in terms defined by Open Charge Point Interface 2.2.1; and

(iii) Payment methods accepted at charging station.

**§ 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 requirements of 2 CFR part 200 apply. This includes the applicable requirements of 23, United States Code, and Title 23, Code of Federal Regulations, such as the applicable Buy America requirements at 23 U.S.C. 313 and Build America, Buy America Act (Pub. L. No 117-58, div. G sections 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, 23 U.S.C. 113 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 and 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 Disadvantaged Business Enterprise (DBE) program does not apply to the NEVI Formula Funds; however, the DBE program may apply to other programs apportioned under chapter 1 of Title 23, United States Code.

(g) 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.

(h) 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.