Comments of the
National Electrical Manufacturers Association (NEMA)
to
US Department of Energy, US Department of Transportation

RE: Request for Information EV Chargers and Buy America Requirements

Docket No. FHWA-2021-0015

January 10, 2022

The National Electrical Manufacturers Association (NEMA) is the leading U.S. trade group representing electrical equipment and medical imaging manufacturers, which are at the forefront of electrical safety, reliability, and efficiency. Our nearly 325 Member companies provide a range of products including both the transportation and utilities sectors. Collectively our membership provides some 370,000 American manufacturing jobs in more than 6,100 facilities, with worldwide industry sales exceeding $140 billion.[1]

Summary of Comments

The U.S. Department of Energy (DOE) and the U.S. Department of Transportation has requested information on "Buy America Requirements related to EV Chargers." Please find our comments herein:

General Questions on EV Chargers

1. Identify all EV charger manufacturers currently selling, manufacturing, or operating in the United States, of which you are aware.

NEMA's EV Charging Manufacturers represent manufacturers that are currently selling, manufacturing, or operating, in the North America. The full list is available at the following URL: https://www.nema.org/directory/products/view/electric-vehicle-supply-equipment-system

2. Identify all such EV charger manufacturers of which you are aware that can either meet FHWA's Buy America requirement or can currently assemble EV chargers in the United States

[1] For more information, please visit: https://www.nema.org/.

to meet a domestic final assembly condition. For those that can meet a final assembly condition, please identify the percentage of components manufactured in the United States (if known).

NEMA's EV Charging Manufacturers identified in question #1 share the goal of fostering and strengthening our domestic manufacturing and supply chain capabilities for EV Charging Equipment. NEMA has identified responsible rightshoring as a viable technique to support the FHWA's Buy America requirement.

3. What is the total cost of a typical EV charger?

The International Council on Clean Transportation paper includes the following table that provides estimated costs per charger public and workplace charger hardware cost across Level 1, Level 2, and DC Fast Charging Equipment. An excerpt from this table is provided below

Level	Type	Chargers per Pedestal	Per Charger Cost
Level 2	Networked	One	$3,127
Level 2	Networked	Two	$2,793
DC Fast	Networked 50kW	One	$28,401
DC Fast	Networked 150kW	One	$75,000
DC Fast	Networked 350kW	One	$140,000

https://theicct.org/sites/default/files/publications/ICCT_EV_Charging_Cost_20190813.pdf

This table references price ranges for pedestal mounted/free standing EV charging equipment. Wall mounted EV charging equipment are also readily available from many EV charging manufacturers and are deployed in many public, workplace and fleet charging arrangements. Wall mounted EVSE may be available at slightly lower price ranges.

4. How much does cost vary for EV chargers? Why does the cost vary?

Costs vary widely based the rated power of the EV charger, along with other features, like cables, cable management, payment systems, network integrations, and the rating for environmental conditions.

5. What is the average delivery timeline for an EV charger?

Average delivery times are difficult to discern at this time, as the persistence of the pandemic has severely impacted supply chains, workforce availability, and logistics delivery. As an example, in some cases EVSE purchasers are reporting lead times over 40 weeks for DC Fast Charging equipment.

6. How much does delivery time vary for EV chargers? Why does the delivery time vary?

Delivery time varies for a number of reasons, the chief of which now is the supply chain and logistics shortages created by the pandemic. Like other industries, EV chargers rely heavily on semiconductors, circuit boards, advanced power electronics and other commodities that are in short supply during the pandemic. Logistics transportation has also slowed to workforce shortages. Under pre-pandemic conditions, DC based EV chargers tend to take longer to manufacture than AC-based EV chargers because they have a complex manufacturing process.

7. For manufacturers: what type(s) of EV chargers are currently produced or likely to be produced in the near future

Answer: The International Council on Clean Transportation paper includes the following table on Electric Vehicle Charging Infrastructure Specifications in the United States

Charging Level	Voltage	Typical Power	Electric vehicle miles of range per charging hour	Location
Level 1	120 V AC	1.2–1.4 kW AC	3–4 miles	Primarily home and some workplace
Level 2	208 V–240 V AC	3.3–6.6 kW AC	10–20 miles	Home, workplace, and public
DC Fast	400 V–1,000 V DC	50 kW or more	150–1,000 miles	Public, frequently intercity

https://theicct.org/sites/default/files/publications/ICCT_EV_Charging_Cost_20190813.pdf

NEMA believes that the EV charging equipment industry is heading towards, smaller physical footprints, greater integration of energy management systems, and improved customer experience technologies. There are some new emerging charging technologies like wireless or inductive EV Charging. However, these technologies are exceptionally nascent, are not compatible with nearly all EV's currently being produced, and they have only been deployed in pilot projects so far.

Manufacturer Ability to Meet FHWA's Existing Buy America Requirement

8. Are there existing EV chargers that meet FHWA's existing Buy America requirement for steel and iron? (Yes or No)

NEMA believes this is best answered by EV Charging Manufacturers

9. If you answered yes to the preceding question:

a. How many EV chargers meeting FHWA's existing Buy America requirement for steel and iron can be manufactured per year?

b. What is the price typically paid for the steel and iron for used in EV chargers?

c. What percent of the total price is typically representative cost of the steel and iron used in EV chargers?

d. Can the origins of the steel and iron used in your charger by certified by documentation? If so, how?

e. What is the typical delivery timeline for EV chargers?

10. For those EV chargers currently manufactured that cannot meet FHWA's Buy America requirement, what steps can be taken to provide EV chargers that meet FHWA's existing Buy America requirement? How long might it take to undertake those steps? What is the volume of EV chargers that could be shifted to manufacture in compliance with FHWA's Buy America requirement? Can that volume be ramped up over time?

NEMA believes that federal domestic content requirements for EVSE should:

- Phase in new requirements. An extended phase in period is necessary in order to avoid supply shortages and provide EVSE manufacturers and their suppliers with sufficient time to develop domestic manufacturing capabilities, build up supply chains, and train their workforce.
- Clarify that for the purposes of the Buy America Act, EVSE are not iron or steel products.
- Avoid any rules that require determining the country of origin of subcomponents integrated into larger domestically manufactured components.
- Allow 100% of manufacture value added (MVA) to be classified as domestic content in component tests.
- Accelerate domestic manufacturing with a 30% investment tax credit for capital cost related to the domestic manufacture of EVSE, EVSE components, and EVSE subcomponents.
- Create a federal grant program targeting the manufacture of EVSE components and subcomponents not domestically available in commercially significant quantities.
- Provide clear rules governing EVSE domestic content requirements, including guidelines on how they apply across all funding and procurement programs.

Manufacturer Ability to Meet Domestic Final Assembly Condition for EV Chargers

11. Are there existing EV chargers that are currently assembled in the United States that could meet a domestic final assembly condition? (Yes or No).

NEMA believes this is best answered by EV Charging Manufacturers

12. If you answered yes to the preceding question, provide details about domestic final assembly. Also explain whether this includes domestic final assembly of all EV charger components and whether the assembled EV charger is ready for installation and use.

13. If you answered yes to Question 12:

a. How many EV chargers assembled in the United States (meeting a domestic final assembly condition) currently meet the domestic final assembly requirement?

b. How many EV chargers assembled in the United States (meeting a domestic final assembly condition) could be expected to be provided annually each year between 2022 and 2030?

What would be the likely price of EV chargers meeting the domestic final assembly requirement?

d. What is the likely timeline for delivery of those EV chargers?

e. What percentage of the components used in an EV charger assembled in the United States are themselves made in the United States? Of the components made in the United States, what percentage of those are iron and steel as opposed to other parts?

EV Charger Components and Subcomponents

14. Identify each component and subcomponent typically contained in an EV charger (or for manufacturers, in the EV chargers you produce).

NEMA believes this is best answered by EV Charging Manufacturers

15. What materials do the components and subcomponents consist of (e.g., iron, steel, non-ferrous metals, semiconductors, plastics)?

NEMA believes this is best answered by EV Charging Manufacturers

16. Provide information on the manufacturing processes for each component and subcomponent, including where the manufacturing processes occur.

The domestic manufacturing of certain key subcomponents for EV chargers is infeasible. EV chargers require subcomponents that cannot be reasonably or cost-effectively be produced in the United States as they primarily consist of semiconductors, advanced power electronics, and other specialty items. These subcomponents are used by innumerable other industries and their manufacturing has not been cost effective in the United States for decades.

For example, EV charging stations require Human Machine Interfaces (HMI), which include liquid crystal displays (LCDs), semiconductors, and brackets. EV chargers comprise a tiny fraction of the global demand for HMIs and the demand for EV chargers is not adequate to induce HMI manufacturers to establish domestic operations to produce of cost-effective HMIs. Second, power modules are extremely complex components that integrate a variety of advanced power electronics. Third, it is unlikely that communications subcomponents like semiconductors, modems, and more could be cost-effectively manufactured and/or commercially sourced domestically.

Notably, EV chargers represent a tiny fraction of the demand for these subcomponents, and it is unlikely that EV charging manufacturers alone could force or induce suppliers to locate cost-effective manufacturing operations in the United States.

17. Provide information on the assembly steps for each component or subcomponent including where the assembly steps occur (if the answer differs from the preceding question).

18. Provide information on the cost of each component or subcomponent.

NEMA believes this is best answered by EV Charging Manufacturers

19. Provide information on the domestic content of each component or subcomponent, including the amount and percentage of domestic content (relative to foreign content). If this cannot be traced, explain why.

NEMA believes this is best answered by EV Charging Manufacturers

Ability to Maximize Domestic Content, Services, and Labor

20. Provide information on how the domestic content of EV chargers (including their components, subcomponents, or component bundles) could be maximized (even if full Buy-America compliance is not possible).

Domestic content requirements for EV chargers could be maximized via the following

- Phase in new requirements. An extended phase in period is necessary in order to avoid supply shortages and provide EVSE manufacturers and their suppliers with sufficient time to develop domestic manufacturing capabilities, build up supply chains, and train their workforce. This is particularly relevant for the batteries included in EV charging equipment.
- Accelerate domestic manufacturing with a 30% investment tax credit for capital cost related to the domestic manufacture of EVSE, EVSE components, and EVSE subcomponents.

- Create a federal grant program targeting the manufacture of EVSE components and subcomponents not domestically available in commercially significant quantities.
- Provide clear rules governing EVSE domestic content requirements, including guidelines on how they apply across all funding and procurement programs

21. Provide information on how domestic services and labor used in in the manufacturing and assembly of EV chargers (including their components, subcomponents, or component bundles) could be maximized (even if full Buy America compliance is not possible).

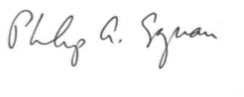
Domestic services and labor used in the manufacturing and assembly of EV chargers could be maximized via the following

- Avoid any rules that require determining the country of origin of subcomponents integrated into larger domestically manufactured components.
- Allow 100% of manufacture value added (MVA) to be classified as domestic content in component tests.

Request for Meeting

We would like to facilitate a meeting with you to discuss NEMAs responses to this RFI further at your earliest possible convenience. Please contact Phil Squair (703-841-3274 or Phil.Squair@nema.org) and Steve Griffith (703-307-7847 or steve.griffith@nema.org).

Sincerely,



Philip A. Squair
Vice President, Government Relations