

EEI Comments to EPA on EVSE Draft 2 Test Method

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Ms. Radulovic,

The Edison Electric Institute (EEI) appreciates the opportunity to submit comments on the Draft 2 Test Method (Rev. Oct-2015) and the October 21, 2015 webinar slides addressing the test methods for electric vehicle supply equipment (EVSE).

EEI is the association that represents all U.S. investor-owned electric companies. Our members provide electricity for 220 million Americans, operate in all 50 states and the District of Columbia, and directly employ more than 500,000 workers. With more than \$106 billion in annual capital expenditures, the electric power industry is responsible for millions of additional jobs. Reliable, affordable, and sustainable electricity powers the economy and enhances the lives of all Americans.

The continued electrification of the country's transportation sector is an area of great importance and one in which EEI has made specific efforts to lead by example through recent initiatives such as the November 2014 commitment by more than 70 investor-owned electric utilities, to devote at least five percent of their annual fleet acquisition budgets, or approximately \$50 million annually, to the purchase of plug-in electric vehicles (PEVs) and technologies; the Employee Adoption and Education Initiative to encourage its member utilities to participate in the Department of Energy's Workplace Charging Challenge and to help drive PEV adoption among utility employees; and the June 2015 private-public partnership between EEI and DOE that will identify and pursue collaborative opportunities between the government and the utility industry to promote and accelerate the nationwide adoption of electric vehicles..

Both the Test Boundary and the Definition of Level 1 EVSE Are Appropriately Narrow and Properly Exclude Regular Household Outlets, Premises Wiring, and the Plug-in Electric Vehicle

The Draft 2 Test Method contains a number of proposed definitions, including the Test Boundary and the Level 1 EVSE. In both instances, EEI supports the definitions as proposed. For the test boundary shown in the Figure 1 schematic on page 2, the boundary is appropriately drawn around the EVSE, and does not include the plug-in electric vehicle or premises wiring. The test boundary is appropriately limited to the EVSE itself as designed. Similarly, the definition of the EVSE is appropriately proscriptive and includes only the equipment "installed specifically for the purpose of delivery energy from the premises wiring to the electric vehicle." Under this definition, which is consistent with the requirements of SAE J1772, Level 1 EVSE may be defined to include the equipment that connects the vehicle's onboard charger to a regular 110 volt outlet, for example, but the definition appropriately excludes the outlet itself.

The Energy Star Test Method for EVSE Should Recognize Important Differences in Residential and Commercial Applications

Residential and commercial applications for EVSE have the potential to vary significantly in both function and energy demands. In recognition of this possibility, EPA has specifically requested feedback from stakeholders in order to better understand some of these differences. In response, EEI provides the following examples for consideration when reviewing and determining if separate residential and commercial Test Methods are necessary.

One of the key differences for commercial EVSE systems will be the non-charging ancillary services that will also have to be provided. For example, in a commercial setting such as a parking garage or parking lot, it is likely that the EVSE will require some form of lighting to identify the charging system, an electronic display to provide customer charging information, as well as communications equipment for transactional purposes, such as credit card transactions or providing receipts to the end user. Given the commercial nature of these machines, features such as automatic dimming controls, automatic “power down,” and/or occupancy sensors should not be Energy Star requirements as recognized under the current proposal. In contrast, a simple residential system would not require nearly the level of “bells and whistles.”

Therefore, any Energy Star specification should consider these operational differences, and should not create any specifications that could reduce the utility of the EVSE in a commercial setting.

EPA Should Consider Reinserting a Minimum Requirement for Power Factor

In the Draft 2 Test Method, EPA has opted to remove the power factor stating that “even a low Power Factor in Partial On Mode is unlikely to have a large impact on losses due to lower power levels.” While EPA does not offer a definition of “low power factor,” it is important to note that lower power factors have the potential to create added stress on the electric power generation, transmission and distribution systems. Appliances with lower power factors increase demand for power (which in turn may increase rates for some customers depending on their rate schedule), as well as related transmission and distribution losses. As a result, EEI would be in favor of a minimum requirement for power factor for all modes of operation.

Units with Demand Response Functionality Should Be Permitted to Use More Power and Be Tested With that Functionality Enabled

The default test procedure proposes to disable any demand-response functionality prior to testing. To maximize its ability for demand response and/or other Smart Grid programs, an EVSE equipped with such functionality should always be able to receive a signal from a grid operator (during partial on mode, idle mode, and operational mode). Therefore, EPA should consider allowing units with this functionality to use more power in all modes of operation, and units should be allowed to be tested without disabling this feature.

EEI has Concerns With the Scope and Breadth of “Connected Functionality Verification”

In Section 7.7 of the Draft Test Method, EPA published a list of possible criteria, expected benefits, and requested feedback on 5 topics: open standards and open access; demand response; price response; metering; and existing certification programs.

Open Standards and Open Access

EPA has requested feedback on whether or not the definitions and criteria as specified in Sections 1.6 and 4.1 of the Version 1.1 Energy Star Pool Pumps specifications are applicable to EVSE. While some of the language, definitions, and criteria in Section 1.6 of the Pool Pump specification are applicable to EVSE, most of the criteria and language in Section 4.1 (which refers to other sections in the Pool Pump Specification) are only applicable to pool pumps and would not be applicable to EVSE. For example, the operational functionalities identified in 4.4, which are referenced specifically in 4.1, such as “a change in motor speed and/or rate of flow” is not likely applicable in the EVSE environment. EPA will need to look closely at the specifications of each part of the standard in determining the appropriate applicability.

Demand Response

Demand response is an important and valuable tool for both utilities and customers. EPA, however, should not **require** demand response functionality from all EVSE as part of the first Energy Star specification for the following reasons:

- 1) There will likely be a segment of commercial EVSE that will not be able to participate in demand response or smart grid programs. Examples include a retail store that offers free charging to customers and a public charging station that collects a payment from the owner of a 3rd party plug-in electric vehicle. In both cases, the EVSE owner will not be in a position to modify or stop the charging of the vehicle. The EVSE would likely be able to meet other energy efficiency criteria, however, and should not be excluded from the Energy Star program because it is not able to participate in these programs.
- 2) In addition, some end users may prefer to install EVSE that is not demand response capable in order to reduce their upfront cost. For example, in Southern California Edison’s Charge Ready application, Level 1 EVSE under the program would not be required to have demand response capability.¹ Given the still nascent state of the EVSE marketplace EPA should be mindful not to be too prescriptive in this first set of program specifications given the overwhelmingly positive policy implications associated with fostering further deployments.
- 3) Finally, the demand response requirements shown in the pool pump specification (3 types of response) all contain language that, if used for EVSE, would potentially make EVSE incompatible with many demand response or smart grid programs. For example, in the

¹ See testimony Volume 1 at:

[http://www3.sce.com/sscc/law/dis/dbattach5e.nsf/0/97C3996994C8620288257D87007B1FD3/\\$FILE/A1410014%20Charge%20Ready%20App%20-%20SCE%20Testimony_SCE-01%20Vol.%2001.pdf](http://www3.sce.com/sscc/law/dis/dbattach5e.nsf/0/97C3996994C8620288257D87007B1FD3/$FILE/A1410014%20Charge%20Ready%20App%20-%20SCE%20Testimony_SCE-01%20Vol.%2001.pdf)

pool pump specification, it states “The consumer shall be able to modify or override the product’s response without limitation” (*emphasis added*). In many demand response or smart grid programs, there are likely to be limits placed on the number of overrides allowed per season or year. As another example for pool pumps, one of the specifications is “The CPPS may either delay its response or not provide a response if responding would compromise safety or result in equipment damage as determined by the manufacturer.” (*emphasis added*). While EEI understands the rationale of this requirement, such language could make such equipment incompatible with the requirements of demand response or smart grid programs (where it is predetermined that program participation will not compromise safety or harm the participating equipment).

Metering

Where there is a financial transaction, accurate metering of the energy use (and the cost to the vehicle owner) is extremely important. However, in many cases, metering should not be a requirement:

- 1) In residential applications, the energy used by the EVSE will be accounted for in the whole-house metering or it will be separately metered by the local electric distribution entity.
- 2) For commercial charging stations that provide service to employees or building occupants, it is possible that the EVSE will be metered by the local electric distribution entity.

There should not be a requirement except where the manufacturer is providing metering as part of the EVSE. Where provided, there should be an accuracy requirement of +/- 2.0% (or less, if manufacturers are using more advanced equipment).

Existing Certification Programs

EEI is not aware of any programs for certification of EVSE connected functionality.

EEI Is Concerned That The Data Assembly Process and Possible Requirements As Described In The Webinar Do Not Allow For Enough Diversity In Each of the EVSE Categories.

On the webinar slides 51 through 54, EPA provided graphs to show the efficiency at 25% load by EVSE type (VFD, VI, and VFI) and average loading-weighted efficiency. On slide 54, there is information about the “20% line” (EEI assumes that 20% of the tested products are at or higher than that efficiency), and a preliminary Energy Star requirement. In reviewing the slides for the VI and VFD products, however, it appears from the graphs that the number of models that would qualify in each of these two categories is much lower than 20%, especially at higher output power values:

Data Assembly Process (cont'd)

VFI:

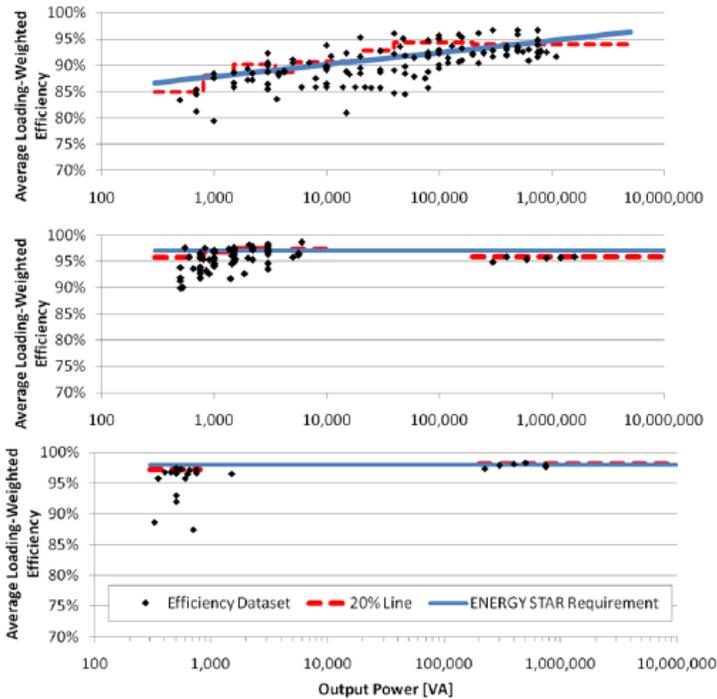
$$Eff_{AVG} \geq 0.0099 \times \ln(P) + 0.81$$

VI:

$$Eff_{AVG} \geq 0.97$$

VFD:

$$Eff_{AVG} \geq 0.98$$



Therefore, if EPA is going to rely on this information as the key determinant for an Energy Star EVSE, EEI would request that EPA revise its draft specification to ensure that there is a significant choice of models and manufacturers in each of the three categories. Neither customers, nor the marketplace, are well served by such a disproportionately limited selection of options for one or more of the categories.

Thank you for your review and consideration of our comments. Please contact Steve Rosenstock (202-508-5465, srosenstock@eei.org) if you have any questions about EEI's comments.

Respectfully submitted,

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