

ENERGY STAR Version 1.1 DC EVSE Draft 1 Comment Response Document

Topic	Subtopic	Stakeholder Comment	EPA Response
General		<p>A stakeholder recommended that EPA should consider separate requirements for indoor-only EVSE as they will be subject to different lighting and temperature conditions.</p> <p>Another stakeholder suggested that the specification should address a power allowance for additional lighting such as area down lighting, status displays, and low resolution displays.</p> <p>A stakeholder commented that the present wording of the NRTL safety requirement suggests that ENERGY STAR testing may not be started until after the product has completed NRTL 3rd party listing.</p>	<p>EPA appreciates this stakeholder feedback. EPA reviewed various installation sites and didn't come across any compelling use cases for DC EVSE in temperature-controlled environments. EPA analyzed typical meteorological year weather data (TMY3) for a total of six cities comprising one city in each Building America climate zone and assigned the highest weight to the efficiency recorded under ambient temperature conditions.</p> <p>EPA reviewed some existing data on power consumption of lighting systems and believes that auxiliary systems such as lighting and low resolution and status displays consume only a fraction of the power that the DC EVSE would require during standby mode. As a result, EPA believes lighting systems do not need to be allocated a separate allowance. However, if stakeholders have data to demonstrate that lighting systems use a significant amount of power, EPA would appreciate that information.</p> <p>As was the intention of this requirement, EPA has updated the specification to clarify that NRTL listing should be a requirement for receiving ENERGY STAR certification, not a condition for initiating the process.</p>

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Definitions	Wireless/ Inductive	A stakeholder commented that the wording `non-galvanically-connected EVSE' created ambiguity and didn't clearly define if the galvanic isolation was necessary at the source or the vehicle.	EPA has updated the Wireless/Inductive definition to provide more clarity that there is no galvanic connection between the EVSE and the vehicle.
	EVSE	A stakeholder recommended that the definition of EVSE be updated due to the inclusion of DC EVSE to the scope of the specification.	EPA updated the EVSE definition accordingly to account for the power conversion and energy transfer, as the previous definition suggested delivery of AC power to the vehicle.
	DC-output	A stakeholder noted that the DC-output definition creates a new term which is not defined: 'EV/PHEV supply equipment' and is inconsistent with the previous definitions. A stakeholder commented that it is unnecessary to include a modifier specifying 'public' in the DC EVSE definition.	EPA has retained the definition for DC-output EVSE, as it is harmonized with SAE J1772. However, EPA understands that the deployments can be public, private, or quasi-public.
	Power Management	A stakeholder noted that the purpose of power management is to deliver the highest possible power within some constraints, not the lowest.	In response to stakeholder feedback and concerns regarding ambiguity, EPA has removed the power management definition from the specification.
	Distributed Product Configuration	A stakeholder commented that the DC-output Configuration (Cabinet/ Dispenser) definition does not cover all possible configuration iterations and requested it to be renamed.	EPA believes that the recommended Distributed Product Configuration terminology would remove ambiguity and encompass any possible combination of the distribution of functions and ports, and has made the change that this stakeholder suggested.
	Minimum Distributed Product Configuration	A stakeholder commented that Minimum Dispenser Configuration is not a defined term.	EPA updated this configuration to be called the Minimum Distributed Product Configuration and the edited definition to be more consistent with the Distributed Product Configuration term and to be based on the primary functionality of an EVSE.
	Duty Cycle	A stakeholder suggested that the Duty Cycle definition be removed as it is not used in the document.	EPA has removed the Duty Cycle definition due to the understanding that the concept of control pilot duty cycle with regards to EVSE is not consistent with the previously-included definition of duty cycle, which was based on hours the product operates in each defined mode.
	High Resolution Display	A stakeholder requested a definition of a high resolution display. This same stakeholder also questioned why the specification didn't have any power allowance for a low-resolution display, like an LED bar.	EPA appreciates these stakeholder comments. EPA has already defined high resolution displays in the Draft 1 specification and the allowance for EVSE with high resolution displays is based on the ENERGY STAR signage display requirements. EPA believes that auxiliary systems such as low resolution and status displays do not consume enough power to be allocated a separate allowance.
Scope	<p>A stakeholder recommended that EPA collect data on the range of wireless EV charger efficiencies currently available on the market and consider including wireless EV chargers under the next revision to the ENERGY STAR EVSE specification.</p> <p>They also requested that EPA expand the scope of DC-output of EVSE covered by Version 1.1 to include DC Fast Chargers rated up to 400 kW, in order to harmonize with SAE J1772, and include Operation Mode requirements for more products.</p> <p>Another stakeholder commented that it is not clear why a limit of 350 kW has been proposed.</p>	<p>EPA appreciates these stakeholder comments and is interested in monitoring wireless EV chargers for inclusion in a future revision of the specification, once data is available.</p> <p>EPA chose to group these products into distinct categories based on output power with fewer requirements for high-power EVSE in response to stakeholder feedback that larger DC-output EVSE are newer to market, not as commoditized and more customizable, and there is a lack of data on efficiency for these products. EPA agrees that operating efficiency is a key metric for consumers and hopes to include criteria for the products with output power greater than 65 kW up to 350 kW in a future revision of the specification once data is available. In the meantime, EPA will require that operating efficiency is reported for all certified equipment.</p> <p>In response to stakeholder feedback and concerns regarding scope throughout the development of the Version 1.1 Test Method, EPA limited the scope of this effort to exclude DC-output EVSE with an output power greater than 350 kW.</p>	

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<p>Certification Criteria</p>	<p>Partial On Mode Requirements</p>	<p>A stakeholder recommended that EPA remove the Partial On Mode since DC EVSE is intended for immediate power delivery and the duration of this mode will be negligible.</p> <p>A stakeholder commented that State B2 should not be consistent with allocation of State B1.</p>	<p>Based on stakeholder input, EPA believes that Partial On Mode may be a relevant mode for fleet applications, or longer-dwell time applications. EPA looks forward to continuing to address technical concerns, with input from stakeholders and would like to receive supporting data on the hours a DC EVSE may spend in this mode (i.e., duty cycle) if stakeholders believe this mode is not relevant.</p> <p>EPA appreciates these comments and would request additional clarification. Each mode in the ENERGY STAR specification mode is intended to be associated with a vehicle/EVSE interface state (e.g., A, B, or C) as defined in SAE J1772. Partial On Mode is most closely (but not synonymous) with State B1 or State B2, where the EVSE is connected to a vehicle but the vehicle is not ready to accept energy.</p>
<p>Certification Criteria</p>	<p>Idle Mode Requirements</p>	<p>A stakeholder commented that Idle Mode does not map to DC EVSE, although something similar (i.e., cable check) exists in limited circumstances.</p>	<p>EPA appreciates these stakeholder comments. Each mode in the ENERGY STAR specification mode is intended to be associated with a vehicle/EVSE interface state (e.g., A, B, or C) as defined in SAE J1772. EPA expects these products to spend little time in Idle Mode and as a result, EPA has proposed a reporting requirement only for Idle Mode.</p>
<p>Certification Criteria</p>	<p>Operation Mode Requirements</p>	<p>A stakeholder recommended that EPA consider more stringent energy efficiency requirements for DC EVSE, as there is significant impact on the grid and renewable integration. The stakeholder also mentioned that more stringent ENERGY STAR efficiency requirement for DC EVSE would also set the stage for the commercialization of energy efficient power electronics technology with applications far beyond EVSE increasing production volumes.</p> <p>Another stakeholder suggested that EPA should decrease the minimum average loading-adjusted efficiency requirement to 92% as this could help lower the incremental costs of ENERGY STAR EVSE to purchasers, because more manufacturers should be able to meet the requirement, resulting in more choices for consumers at likely lower aggregated costs.</p> <p>A stakeholder suggested that it would be more efficient and effective to narrow the Operation Mode requirements test procedure to two temperatures and two power levels.</p> <p>Another stakeholder suggested that EPA base the efficiency metric in the ENERGY STAR EVSE Specification on the battery charger metric in the DOE federal standard, if appropriate, or explain why a different metric is needed.</p>	<p>EPA appreciates these stakeholder comments and concerns. EPA conducted an Operation Mode savings analysis with relevant utilization rates to determine the appropriate energy efficiency levels and pass rates. However, as the DC EVSE industry grows, EPA is hopeful that this effort will encourage energy efficiency to be one design criterion, while continuing to allow innovative product design.</p> <p>Since the proposed minimum average loading-adjusted efficiency requirement of 93% corresponds with an 80% pass rate of models available on the market today, EPA continues to propose this set of requirements.</p> <p>EPA understands the reasoning for reducing test burden. However, the loading conditions proposed by EPA are intended to measure unit performance across the loading profile of a given DC EVSE across a range of temperatures typical in the US. As a result, EPA will maintain the test procedure at the three temperature conditions at a range of output powers to accurately evaluate the efficiency at common temperatures and output powers.</p> <p>In response to this stakeholder feedback, EPA analyzed the DOE federal standard and realized that the scope of federally regulated battery chargers is limited to 115V AC whereas DC EVSE typically operate at 240V AC. Also, the test procedure for UPS is limited to products that utilize the standardized NEMA plug 1-15P or 5-15P, as specified in ANSI/NEMA WD 6-2016 (incorporated by reference, see §430.3) and have an AC output. Hence EPA believes that a separate metric is needed to successfully evaluate DC EVSE.</p>

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Certification Criteria	No Vehicle Mode Requirements	<p>A stakeholder suggested using a linear equation instead of the logarithmic equation for No Vehicle Mode as the number of AC-DC power converter modules increases with power, increasing the power consumption linearly. And a stakeholder requested EPA provide the rationale behind the logarithmic equation.</p> <p>Another stakeholder commented that the current No Vehicle Mode requirement formula might result in a value too low for the units in the data gap and exclude equipment as a result.</p> <p>Another stakeholder commented that an EVSE with multiple outputs (“n”) would be allocated less power to the display allowance.</p>	<p>Based on available data in the ENERGY STAR Data Package posted with the Draft 1 specification, EPA believes the current requirement accurately predicts No Vehicle Mode power. However, EPA looks forward to continuing to address technical concerns, with input from stakeholders and would like to receive supporting data if models between 70 kW and 350 kW may be at risk of not meeting the requirements because of the lack of data in this range of output power. Based on preliminary data, EPA proposed that the Maximum No Vehicle Mode Power Requirement be a logarithmic function of the nameplate maximum output current since EPA observed that power consumption increases exponentially for high powered chargers.</p> <p>EPA updated the allowance for a high resolution display to remove the division by the number of outputs available since as proposed in Draft 1, multiple output models would be allocated less power for the allowance.</p>
International Markets		<p>A stakeholder commented that it would be onerous to run the entire test program at 50 and 60 Hz across multiple voltages.</p>	<p>EPA understands that testing the products at different frequencies and voltages increases test burden. Hence, EPA requires that UUTs that are not compatible with any of the frequency/voltage combinations listed in Table 1 of the test procedure be connected to the highest rated voltage and frequency combination appropriate for the intended market. The voltage and frequency used for the test shall be reported.</p>
Connected		<p>A stakeholder commented that it would be costly and burdensome to establish additional testing requirements for the connected functionality requirements.</p> <p>A stakeholder commented that subclause (iii) which relates to ISO 15118 is vague and unclear as there are a variety of features that can be enabled via ISO 15118.</p> <p>A stakeholder mentioned that footnote 11 in the Demand Response Message Mapping table refers solely to OCPP 2.0 and it would be inappropriate to preferentially identify one sole version of OCPP.</p> <p>A stakeholder commented that the final sentence in the description of OCPP 1.6, 2.0 is subjective and fails to capture the range of protocols, and protocol extensions, that can, or are necessary to, carry out financial transactions.</p>	<p>EPA appreciates these stakeholder comments and does not currently propose any testing requirements for connected capable products.</p> <p>EPA has updated the subclause (iii) to report whether the charge controller within the EVSE has the necessary hardware for communication (Power Line Carrier) to support ISO 15118 for higher level communication.</p> <p>EPA believes that OCPP version 2.0 comes with features to get and set configurations which are not present in previous versions. These demand management features are important to monitor a charging station and are crucial for Charged Network Operators who manage complex multi-vendor DC charging stations. Also, the example message signals are pulled from the referenced version and as the title mentions the appendix is informational only. EPA's intent with this informational appendix is to solely provide a representative architecture for managed charging purposes and provide a background of different capabilities supported by different open protocols.</p>