Mr. James Kwon
Climate Protection Partnerships Division
U.S. Environmental Protection Agency
Washington, D.C. 20460

July 8, 2019

Subject: ENERGY STAR® EVSE Version 1.1 Draft 2 Test Method

Dear Mr. Kwon:

This letter contains comments from Pacific Gas and Electric Company (PG&E), San Diego Gas and Electric (SDG&E), and Southern California Edison (SCE) on the ENERGY STAR Electric Vehicle Supply Equipment (EVSE) Version 1.1 Draft 2 Test Method. We thank the United States (U.S.) Environmental Protection Agency (EPA) for the opportunity to participate in this process.

The signatories of this letter, collectively referred to herein as the California Investor-Owned Utilities (CA IOUs), represent some of the largest utility companies in the Western U.S., serving over 32 million customers. As energy companies with an extensive portfolio of efficiency programs, we understand the potential for equipment efficiency specifications and standards to cut costs and save energy while maintaining or increasing consumer satisfaction. We have a responsibility to our customers to advocate for sensible test procedures, specifications, and standards that accurately reflect the climate and conditions of our respective service areas, to maximize the positive effects of these efforts. We strongly support EPA's efforts to develop a direct current (DC) -output EVSE test method and offer the following comments to improve the draft test method.

General Comments

The CA IOUs recommend harmonization with the Society of Automotive Engineers (SAE) J2894.

The CA IOUs encourage EPA to participate in the J2894 Power Quality Requirements for Plug-In Electric Vehicle Chargers working groups, including the current J2894/2 working group, and work to facilitate harmonization between ENERGY STAR and J2894, including EVSE efficiency test set-up and measurement procedures.

Section 4 - Scope

DC-output EVSE's with an output power up to 150 kilowatt-hour (kW) should have operational efficiency benchmarks to evaluate performance.

The CA IOUs agree that the proposed scope of the Test Method should include DC-output EVSE up to 350 kW.

However, the table provided in Section 4 contains an informational note indicating that units with greater than 50 kW will report operational efficiency, but that no operational efficiency benchmarks will apply when a specification is developed. The CA IOUs encourage EPA to reconsider setting performance benchmarks for units up to 150 kW if data are available to evaluate their performance. There are currently over 5,700 DC-output EVSE installations with a rating between 50 and 150 kW, and an additional 700

units are planned for deployment in the next several years based on market data collected by the CA IOUs and summarized in Appendix A.

Section 5 – Test Setup

The CA IOUs recommend that EPA consider temperature effects on operational mode efficiency.

The informational note on pages 6 and 7 of the test method states that units with active cooling would be tested under cold, temperate, and hot conditions; and units without active cooling would be tested under only temperate conditions. The note also states that EPA received a comment that the effect of ambient temperature on energy use would be small. However, the efficiency levels for units without active cooling and heating can vary widely across the -7ºC to 40ºC temperature range due to increased resistivity with increased temperature. Therefore, EPA should consider whether the temperate temperature condition would adequately represent the range of results expected from these units if tested across all three temperature conditions.

The CA IOUs recommend separate recordings of Alternating Current (AC) versus DC power.

Instead of requiring the summing of AC and DC inputs for units that require both types of input power, the CA IOUs recommend recording both separately and noting which is AC power and which is DC power. AC power inputs will lead to greater losses in the DC-output EVSE when converted to DC power. On the other hand, for DC input power those losses may occur outside the DC-output EVSE system boundary for DC-input power. Similarly, when power is recorded in Section 5(D) for units without dual inputs, the type of power (AC or DC) should also be recorded.

Section 6 – Test Conduct

The CA IOUs recommend amending some test conditions for clarity and consistency.

Section 6.1(E) states that automatic brightness control (ABC) shall be disabled in operational mode, if possible, or else the EVSE will be tested in very dark conditions. The purpose is to minimize the number of tests needed in operational mode, as noted in the June 25, 2019 webinar. The CA IOUs believe that this will result in inconsistent conditions since EVSE with ABC disabled may result in higher screen energy use than units with ABC enabled and tested under very dark conditions (which would tend to minimize screen energy use). Instead, the CA IOUs recommend testing all units with ABC under consistent conditions, leaving ABC enabled to provide consistent testing conditions for different models. Additionally, the noted power measurement uncertainty in Section 6(H)(1) seems inconsistent with the measurement accuracy requirements in Section 5(H)(5) of +/- 0.1 percent of reading plus +/- 0.1 percent of full scale for power measurements. We recommend revising Section 6(H)(1) to match Section 5(H)(5). Lastly, the CA IOUs recommend modifying the current requirement which requires testing with the default image that appears as-shipped. It may be more representative to instead require displaying the image that appears after the unit is configured, since each unit is likely to be configured in the field. We recommend making a similar adjustment to the note in Section 6 page 14.

Section 7 – Test Procedures for All Products

The CA IOUs agree with EPA's intent to measure battery energy.

The informational note in Section 7 page 19, states that units with a battery will be tested with the battery disconnected if possible; if not possible, the energy from the battery to the EVSE will be measured. The CA IOUs agree with EPA's intent to add requirements for how this energy will be measured. We note that J2894 addresses power quality for EVSE with external photovoltaic charging inputs and should be considered when developing this procedure. We also note that the specification may need to address AC- and DC-input power separately, since the inputs for AC-input power may incur additional loses in the EVSE, whereas this conversion may occur externally for DC-input power. The CA IOUs also encourage EPA to informally educate companies that market EVSE with battery storage about the need to obtain interconnection permits from their local utility.

The CA IOUs recommend more stringent power controls of loading conditions.
Allowable loading conditions that can vary +/- 2%, such as 1 kW at 50 kW or +/- 3 kW at 150 kW or +/- 7kW at 350 kW. The CA IOUs recommend better control of input power levels based on the accuracy of the power meter (+/- 0.1 percent of reading plus +/- 0.1 percent of full scale for power measurements per section 5(H)(5) as noted earlier).

The CA IOUs recommend a longer testing period for actively cooled units.
The CA IOUs recommend revising the testing period to capture the power overhang for actively cooled units by continuing to measure the energy and elapsed time after power stops flowing into the vehicle until the unit returns to the energy use level that occurred prior to the test initiation.

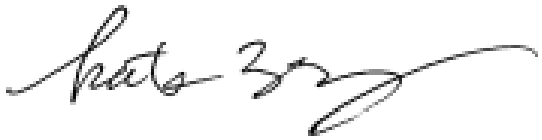
Line Edits and Specific Comments

In addition to the overarching comments discussed above, we urge EPA to consider the more specific suggested edits outlined below.

LINE NUMBER	EDIT/COMMENT
13	The CA IOUs recommend removing this statement because it might be interpreted to mean that Sections 3 through 6 are advisory rather than mandatory.
40	The CA IOUs recommend deleting the definition in Section 3(A)(4) for simplicity as it is not used in the draft test method. If needed, it can be defined later and can reflect the state of technology at that time.
42	This figure does not explain why some energy flow arrows are outlined with solid lines and others are outlined with dashes. The dashed lines appear to indicate a potential pathway for energy to flow back to the grid, which is outside the scope of the draft test method. If this is in fact what the dashed lines indicate, they should be deleted from the figure to improve clarity.
43	Section 3(B) implicitly defines cabinets and dispensers. For clarity, the CA IOUs recommend adding an explicit definition for each term.
69	The CA IOUs recommend removing the language that reads “with the shortest cable possible” in favor of setting a minimum length for the cable based on realistic conditions for real world installations.
141	The references to Table 5 and Table 6 appear to be a typo and should be corrected to reference Table 3 and Table 4.
141 & 143	Sub-sections (a) and (b) should be changed to (1) and (2) for consistency with other sections of the draft.
252	The subsections in Section 6.1(B)(2) of the draft document start with Section B(2)(b) rather than B(2)(a), which appears to be a typo
461 & 476	Sections 7.3 C.1 and 7.4 both note that testing will be conducted while the vehicle is in SAE J1772 State C. The CA IOUs suggest adding a clarifying note that states which of the two sub-states under SAE J1772 State C would apply: connected to a vehicle but the vehicle is not drawing power; or/and connected to a vehicle and drawing power.

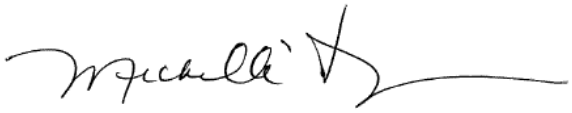
In conclusion, the CA IOUs wish to reiterate our support for EPA's efforts to expand the ENERGY STAR program for EVSE to include DC-output EVSE.

Sincerely,



Patrick Eilert
Manager, Codes and Standards
Pacific Gas and Electric Company

Kate Zeng
ETP/C&S/ZNE Manager
Customer Programs
San Diego Gas & Electric Company



Michelle Thomas
Manager, Energy Codes & Standards
Engineering Services
Southern California Edison

Appendix A: DC-output EVSE Market Data

Table 1 is a summary of publicly available information regarding current and planned DC-output EVSE.

Table 1: DC-output EVSE Installations, Plans and Demand Forecasts

	Source	Type	49 states	California	Canada	Total
Current and Planned Installations	**AFDC [a] Database of Existing DC-output EVSE**	120 kW (Tesla)	4,209	1,352	208	5,769
		25 kW to 50 kW (non-Tesla)	2,800	1,501	641	4,942
	CA IOU Passenger Vehicles Programs [b]	DC Fast Chargers	N/A	284	N/A	284
	California Energy Commission	DC Fast Chargers	N/A	352	N/A	352
	New York Power Authority Plan	150 kW	200	NA	N/A	200
	Porsche Fast Network [c]	250 kW	NA	NA	N/A	500
	Electrify America January 2017-June 2019 [d]	150 kW to 350 kW	240	50	N/A	290
	Electrify America July 2019-December 2021		153	75	N/A	228
	Total Installations	All DC Fast Chargers	**7,602**	**3,614**	**849**	**12,065**
Projected Demand	**Massachusetts Demand by 2025**	All DC Fast Chargers	200 to 2,000	N/A	N/A	200 to 2,000
	California Demand by 2025	50 kW to 105 kW	N/A	9,000 to 25,000	N/A	9,000 to 25,000
	U.S. Demand by 2030	50 kW to 150 kW	N/A	N/A	**N/A**	**100,000**

Sources: Electrify American Investment Cycle 1 and Cycle 2 Investment Plans; DOE Alternate Fuels Center Database, February 19, 2019; CA IOU September 6, 2018 letter to ENERGY STAR; NY Power Authority, November 19, 2018, https://www.nypa.gov/news/press-releases/2018/20181119-evolve; CNET, "Porsche's EV fast-charging network will go way beyond dealerships", April 16, 2018, https://www.cnet.com/roadshow/news/porsche-ev-fast-charging-network-500-chargers; California Energy Commission Staff Report - California PEV Infrastructure Projections 2017-2025 (August 2018); NREL - Regional Charging Infrastructure for Plug-in Electric Vehicles: A Case Study of Massachusetts (January 2017); Institute for Electric Innovation/Edison Electric Institute - Electric Vehicle Sales Forecast and the Charging Infrastructure Required Through 2030 (November 2018).

[a] AFDC means Alternative Fuel Data Center.
[b] Estimated; Does not include potential medium/heavy duty vehicle DC-output EVSE.
[c] Charge rate based on assumption of three miles per kWh; Charge rate listed in miles/minute (250 miles/20 minutes).
[d] Electrify America could also include 50 kW DC Fast Chargers as part of metropolitan development.