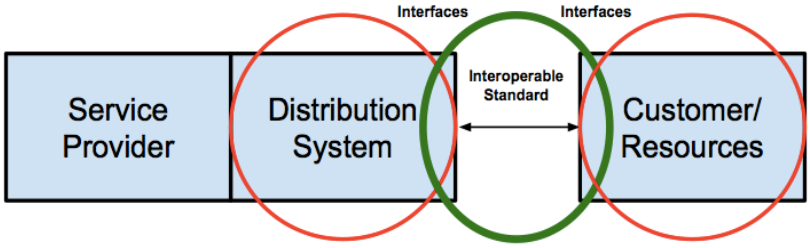
November 17, 2015

Comments to the U.S. Environmental Protection Energy's ENERGY STAR® Electric Vehicle Supply Equipment Draft 2 Test Method

Greenlots is a network operator and Electric Vehicle Supply Equipment (EVSE) and Electric Vehicle (EV) charge management solutions provider. The following comments focus on the "Connected Criteria" for EVSEs. We support the U.S Environmental Protection Agency's (EPA) Energy Star's consideration of these criteria in addition to energy efficiency requirements.

1. Unlike the connected criteria requirements for other household appliances or building systems, the following unique nature of EVSEs should be considered:
    a. EVSE can be owned by individuals, workplaces, or provide public charging services
    b. EVSE owners (host site or customer) and EV owner/lessee can be different.
    c. EVSEs must provide charge management solutions (e.g., monitoring, metering, billing) in addition to the grid connectivity for grid services.

2. Grid connectivity for electricity markets such as demand response (DR) require interoperability between two distinct system domains within the Smart Grid – electricity service provider/operator and customer (see below figure[1]).



    a. In case of EVs, the EVSE connectivity can be either within the distribution system (e.g., public/highway charging) or customer domains (e.g., behind-the-meter).

3. Because of these unique features of EVSEs and grid connectivity requirements for systems and Smart Grid domains, EPA Energy Star must consider the following:
    a. Review connected systems for automated DR (AutoDR) from California Title 24 building codes and International Green Conservation Code (IgCC). The performance requirements without reference to a specific open standard, and review of nationwide codes and AutoDR requirements, including suggested language, is already outlined in the California Energy Commission funded study.[2] Two key technical recommendations are highlighted here: "*(1) technology and equipment vendors must be able to ensure AutoDR compliance during product development, and ensure that when the equipment is installed in a building it is capable of demand-responsive control, and (2) customer participation (when chosen) must be made simple by plug-and-play features."*
    b. While the intent must be encourage innovation and support to any open standard that meets these performance requirements without specific implementation requirements (e.g., native or cloud-based support), Energy Start must guide the industry by providing specific examples so as to encourage its market adoption.

[1] Ghatikar G., J. Zuber, E. Koch, and R. Bienert, Smart Grid and Customer Transactions: The Unrealized Benefits of Conformance, Green Energy and Systems Conference (IGESC), 2014 IEEE, November 2014. DOI 10.1109/IGESC.2014.7018633

[2] Ghatikar G., E.H.Y Sung, and M.A. Piette, Diffusion of Automated Grid Transactions Through Energy Efficiency Codes, ECEEE Summer Study on Energy Efficiency, France, June 2015. LBNL-6995E.

c. For ease of integration and cost-effectiveness, Energy Star must consider EVSE interoperability with existing national standards for DR/price communications. Examples of such standards are OpenADR 2.0 and Smart Energy Profile 2.0
d. To reduce integration costs and ease EVSE access, existing industry (de-facto) or formal standards must be considered to also provide grid connectivity and participate in electricity market programs. An example of such an industry (de-facto) standard is the Open Charge Point Protocol (OCPP).
e. These standards and their integration must consider the availability of a compliance tool, program, and certification agency to assure cyber-security and interoperability for grid connectivity and cross-domain interactions.
f. While certification for interoperability compliance for grid-connectivity is one key requirement, testing and certification of EVSE performance must also be included (e.g., switch off or reduce charging levels upon receipt of DR signals).

EPA Energy Star's consideration of these key features in the "connected criteria" enables grid interoperability and cyber-security, eliminate stranded assets and technology obsolescence, and improve the cost-effectiveness of AutoDR and DR programs. Such outcomes provide value to EVSE/EV owners and encourage their widespread participation in grid services.

Sincerely,
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