

V2G –DC Stationary EVSE Conformance Testing and Certification Requirements

Rule 21 Working Group 3 – Issue 23 Subgroup

Working Group

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Topics For Discussion

Ask:

- Allow customer to purchase bi-directional “capable” V2G-DC vehicles with stationary EVSE for coupling V2G-DC to the electric grid
- V2G-DC owner would operate the EVSE as “one-direction” until a desire to change the mode to “bi-directional” at which time an interconnection application would be submitted to the utility

Goal:

- Identify or develop standard and/or processes that would ensure V2G-DC/EVSE will be operated as “one-direction” without need for owner to submit to the utility an interconnection request

What are/shoud the requirements for EVSE be?

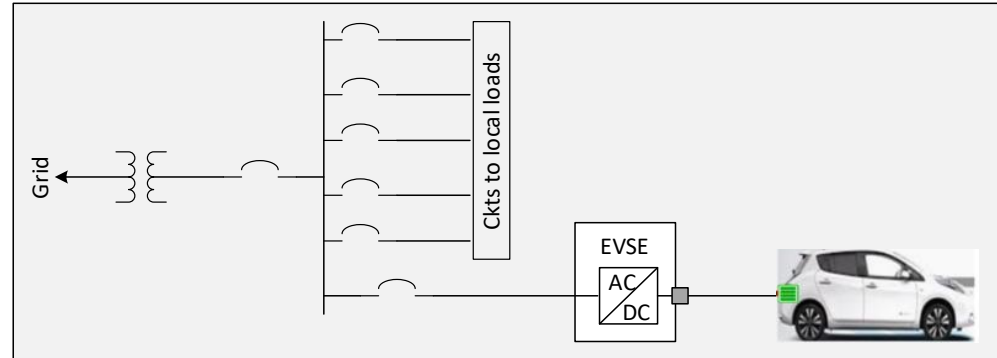
- Discharging - UL1741 SA Certification Discussion
- On/Off Capability Option (“On” – Bi-directional Operation, “Off” – One-Direction(Charging) Operation)
- Prevent ability to inadvertently switch to “ON”

Technical Specification Information Gathering

- EVSE vs Inverter model identifier?
- How is information compiled?

EVSE/Converter Certification Requirements

Bi-directional Capability OPERATED on a One-Directional control



What are the testing requirements for EVSE/Converter Evaluation?

- Evaluated, Tested and Certified based current relevant regulatory requirements for inverter based systems in California (Rule 21)
 - Currently - Evaluated and listed under UL1741/SA via an OSHA approved Nationally Recognized Testing Laboratory (NRTL)
 - Near Future – Evaluated using UL1741 that replaces the Supplement SA with P1547.1-2019 which is projected to be approved by Q4 2019

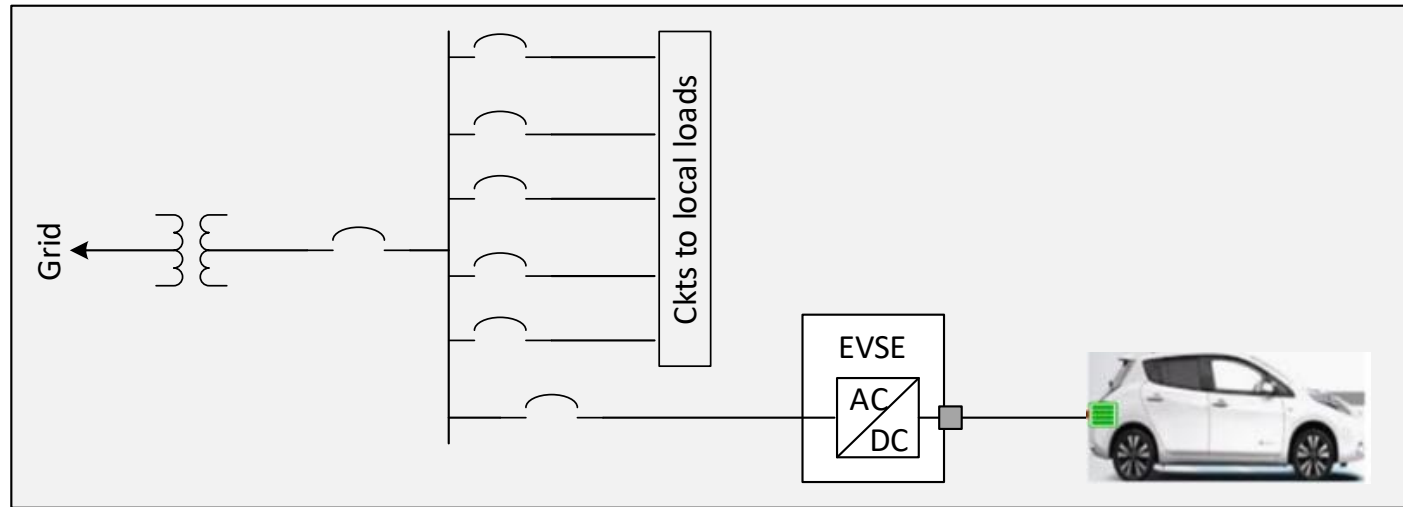
What standards can be used to test the ability to disable bi-directional operations?

- UL Current Limiting CRD standard can be used to evaluate the following:
 - EVSE set to one-direction (charging mode) so it will not discharge
 - Pending: Criteria on level of energy export and open loop response time, SCD capabilities (see 1547.1)

What standards, can be used to prevent inadvertent enabling of bi-directional operations?

- UL Current Limiting CRD standard can be used

Enabling Discharging Capability



Interconnection Request Prior to Enabling Bi-directional capability

- Follow equivalent process as currently used of stationary storage systems
 - Storage manufacturers send compliance test certificates to utility
 - Utility processes and compiles the information into data sets
 - Data sets are used for interconnection processing and future automation specifications
- Once PTO is provided, bi-directional capability can be enabled

Working Group Recommendations

Discussion: The working group had a robust discussion on technical requirements, evaluations and processes are needed to meet the requirements of the ask (see slide #2)

1. All EVSE used for V2G-DC vehicles shall:

a) Be evaluated based on current relevant regulatory requirements for inverter based systems in California (Rule 21)

- I. Currently - Evaluated and listed under UL1741/SA via an OSHA approved Nationally Recognized Testing Laboratory (NRTL)
- II. Near Future – Evaluated using UL1741 that replaces the Supplement SA with P1547.1-2019 which is projected to be approved by Q4 2019

b) Be evaluated, using the recently approved UL CRD for Power Control System to:

- I. Demonstrate that when the EVSE is set or programmed to one directional (charging) mode, the EVSE will not discharge
- II. Prevent inadvertent change in operational mode (change from one-direction to b-directional mode)

2. EVSE factory default mode shall be One-Direction(Charging)

EVSE manufactures are required to deploy EVSE's programmed as one-direction (charging only) as default. When EVSE/V2G-DC owners request to change the mode, they must first complete the interconnect process and receive Permission to Operate (PTO) from the utility. Once PTO has been received, the manufacturer or approved 3rd party installer can then program/enable bi-directional operation in accordance with EVSE instructions & UL CRD requirements.

3. When EVSE has met requirements under (1 & 2) then the EVSE needs to be evaluated as part of Rule 21 **ONLY** if EVSE owner desires to operate the EVSE/V2G-DC as a bi-directional system.

4. Pending Items (Utility Action Item)

1. Determine Criteria on level of energy export and open loop response time, SCD capabilities (see 1547.1)
2. Who is responsible for reviewing/approving testing information and maintain the list of approved equipment?