

DR16.02: Open Vehicle Grid Integration Platform (OVGIP)

OPPORTUNITY

Evaluate how OEMs can provide grid services through DSM and DR.

Open Vehicle Grid Integration Platform (OVGIP) residential Demand Response (DR) can provide aggregated DR management of customer's Personal Electric Vehicle (PEV) charging load in a residential environment. Evaluate how OVGIP can best determine, report and facilitate OEMs (original equipment manufacturers) to provide grid services through DR and DSM. As well as, determine the use of OEM measurement capabilities for future programs.

TECHNOLOGY

Open Vehicle Grid Integration Platform

The OVGIP enables utility access to data from the EVs including vehicle energy use, charging profiles, and consumer response to various signals or inducements to affect charging behavior. This enables utilities to integrate PEVs within their service territories into DR and DSM programs.

M&V

Where did M&V occur?

There were two sources of data collected and recorded for measurement and verification (M&V) of the customer performance and compliance with the DR events. The primary data source for M&V is the customer household meter data accessed through the SCE Green Button system. This data is the basis for quantifying the load (watt hour) increase or decrease between the average of the prior 10 days and the actual day of the event. The other data source was the OEM's (Honda) recorded customer charging session profile data associated with the DR event.

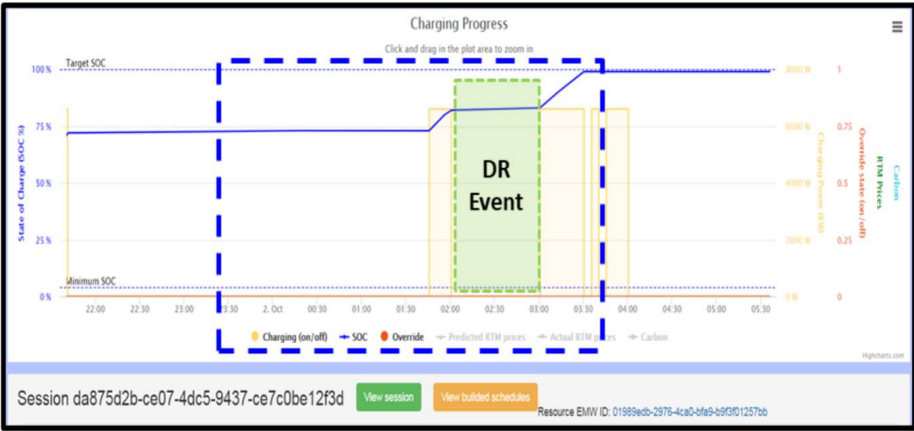


Figure 1. Represents the OEM reported charging session profile for a customer vehicle participating in a DR Event for one hour. The vehicle stopped charging during and then resumed after. This is an ideal charging management profile verifying the vehicle's responsiveness to the DR Event signal.

RESULTS

Was the capability of the OVGIP to provide a viable interface and communications connection between the utility and customer PEV's for managing EV charging loads, verified?

Verify OVGIP capabilities
The research validated the viability for DR aggregation of PEV charging load utilizing the OEM telematics vehicle connection and the ability to collect and report individual customer charging profile data for purposes of verification.

kWh load reduction
Data reports that the aggregated load reduction capacity equated to a reduction, or avoided, load increase of 26.48 kWh over a one-hour event duration.

Improved Enrollment
There is a need to address education about customer smart charge programs and the enrollment process at point of sale at the dealerships.

DEPLOYMENT

Are utilities ready to launch PEV load management programs?

Further study of PEV loads on the utility grid

A proposed load management business use case/model is to focus on when customers should charge. The M&V methodology will be determined based on actual customer charge times and electricity consumption during the prescribed time periods of day that are least impactful to the distribution system and/or at the least cost to the customer based on time of use (TOU) rates or dynamic pricing notifications.