



FIAT CHRYSLER AUTOMOBILES

Vehicle-to-Home (V2H)

NextEnergy Center, Detroit, Michigan

FCA US LLC and NextEnergy explored how an electric vehicle could become a part of the home ecosystem providing the owner more choices about how and when to charge via the intersection of a home energy management system, electric vehicle supply equipment and the electric vehicle.

Leveraging NextHome, a smart, distributed generation, direct current (DC) home that operates as a “living lab” within NextEnergy’s testing and validation platforms, and Coritech’s bi-directional charging system, the following scenarios were tested and evaluated:

GREEN CHARGING

Homeowners with solar panels are more likely to own electric vehicles. FCA US LLC partnered with NextEnergy to explore the potential for a home management and control system to 1) charge based on solar power availability, and 2) give the homeowner an option to delay the charge when solar is limited.

COST-EFFECTIVE CHARGING

In some regions, energy prices vary by time of day. FCA US LLC and NextEnergy evaluated the value of a home control system that recognizes when prices become more expensive prompting the homeowner to delay charging an electric vehicle.

BACK-UP POWER

Electric vehicles are unique from traditional automobiles in that they contain an energy storage device that when used intelligently, can serve as an emergency power supply in the event of a disruption of grid power.

Analysis

OPPORTUNITIES FOR V2H

V2H can be hard to quantify

- What is the value of resiliency to the homeowner?
- Assuming they are planning to have exportable power into the home, then the economics will be compared to that of having a home generator

V2H requires a smart inverter (either EVSE or in vehicle)

- The cost of changes to the vehicle or the higher cost of EVSE needs to be justified
- Once a smart inverter is installed, a gateway to residential energy storage is created