



PJM Interconnection is interested in advancing the electrification of the transportation system, particularly with respect to the role of plug-in hybrid electric vehicles (PHEVs). PJM is part of a consortium that is evaluating and demonstrating how PHEVs can be integrated into and benefit the electric grid.

A PHEV is a hybrid vehicle that includes batteries that can be recharged by plugging into a source of electric power. It combines elements of the typical hybrid electric vehicle – an electric motor and a gas-fueled engine – and a battery electric vehicle, which has a plug to connect to the electric system.

The electrification of the transportation system would use off-peak electricity (nights and weekends) from the grid to charge PHEVs. This would enhance the efficiency of the grid by shifting electricity use to the off-peak, nighttime hours.

The vehicles also could provide regulation service to the grid during the daytime hours. This concept is called vehicle-to-grid (V2G) technology. It would allow PHEVs to charge from the grid at night and to discharge the power stored in their batteries to the grid during the day based on regulation signals from PJM. With large numbers of such vehicles plugged in, they could serve as a “battery on the grid.”

Regulation helps balance variations in load by correcting for short-term changes in electricity use that might affect the stability of the power system. It helps match generation and load and adjusts generation output to maintain the desired frequency.

PJM is working with the Mid-Atlantic Grid Interactive Car Consortium (MAGICC) to demonstrate and evaluate V2G technology. The consortium is composed of the University of Delaware; Pepco Holdings Inc. and its affiliate utilities; AC Propulsion; Comverge Inc.; the Atlantic County Utilities Authority; and PJM.

For more than a year, several MAGICC vehicles provided regulation service to PJM and received payments in return, marking a first for V2G technology in PJM.

Partnering with the Electric Power Research Institute and The Ohio State University’s Center for Automotive Research, respectively, PJM sponsored two PHEV summit meetings in 2009 that brought together representatives of the electric industry, automakers, academia and government to discuss how PHEVs could be integrated into the grid, their role as storage devices to help expand the use of intermittent resources like wind energy, and their role in the smart grid.

4/24/2012