

PLYMOUTH STATE UNIVERSITY EVS TAKE CHARGE

EVs at PSU Delivered 1 MWh of Energy with Fermata Energy Bidirectional EV Charging Platform

A Vehicle-to-Grid (V2G) Installation at PSU Receives Electricity Rates One Day in Advance Through Innovative Transactive Energy Rate Program from NHEC

Two Nissan LEAF electric vehicles (EVs) at Plymouth State University (PSU) provided 1 MWh of energy to the PSU's ALLWell Center, offsetting some of the building's electricity needs. EVs are more than sustainable transportation; they are "batteries on wheels" that can send energy stored in their batteries to a building when paired with a bidirectional EV charging platform.

The university is able to reduce its electricity bill and support grid resilience by taking part in an innovative utility rate program developed by its local utility New Hampshire Electric Cooperative (NHEC), electrification software provider Bella-watt, and Fermata Energy, the developer of the leading AI-driven bidirectional EV charging platform.

The program at PSU is groundbreaking because it brings together EVs, a bidirectional EV charging system, and advance information on hourly electricity pricing – called a Transactive Energy Rate (TER), enabling the university to easily make decisions about using the Nissan LEAF batteries as mobile energy storage assets.

Under the program, PSU sent energy stored in the EVs' onboard batteries to offset the ALLWell Center's building load for approximately 90 hours during a 6-month period. One MWh is equivalent to the electricity used by about 330 homes for one hour.

Through the NHEC application, TER forecasts electricity pricing one day in advance. Daily alerts about the next day's hour-by-hour electricity prices are sent by NHEC to Fermata Energy's AI-powered bidirectional charging platform, which then analyzes those rates, simplifies the information, and advises PSU about times the vehicles can discharge the batteries to maximize value for the university. The university controls whether to discharge by parking the EVs and plugging them into the Fermata Energy bidirectional charger.

"Through this program, we better understand how we use electricity and can



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actively reduce our electricity costs. We could do that with stationary energy storage systems,

but EVs are more affordable and are easy to manage," said Donald Brix, president of Plymouth State University. "NHEC has always been a great partner for us. Fermata Energy's technology puts the EV batteries 'behind the meter,' sending electricity to the ALLWell Center to reduce our costs. Anything left over is shared with the grid. Not only did the university save money, but we provided a fantastic learning experience to our students."

The day-ahead electricity pricing enables PSU to buy electricity from the New Hampshire Electric Cooperative at low prices and store that energy in the EV batteries. When the price of electricity is higher, PSU can then discharge the batteries and sell the energy back to NHEC. This is known as electricity arbitrage. The successful outcome of this hourly electricity pricing program creates a pathway for NHEC to compensate its members for

power exported from Distributed Energy Resources, such as EV batteries and solar.

"V2G is working today. Bidirectional EVs are valuable assets that can help stabilize the grid by dispatching energy stored in batteries - when and where that energy is needed most," said David Slutzky, founder and CEO of Fermata Energy. "The NHEC program is one of the country's most innovative rates

The Nissan LEAF is one of the few EVs currently on the road and able to participate in bidirectional charging. Fermata Energy's bidirectional charging platform manages the EV's state of charge, sends alerts to customers, and allows fleet owners to both charge and discharge EV batteries.

Until recently, commercial fleet EV operators could only use unidirectional chargers, meaning the power went from the grid to the EV, costing the EV owner money. Unidirectional charging is also an unpredictable electricity demand that utilities need to manage and plan for. Bidirectional charging changes that dynamic.

Fermata Energy's platform can also monitor building load data, helping to manage electricity usage better. The technology is referred to as vehicle-to-everything and includes V2G (vehicle-to-grid), V2B (vehicle-to-building), and V2H (vehicle-to-home) projects.

Fermata Energy has V2X bidirectional programs working in several New England utilities, including Green Mountain Power, Eversource, and Rhode Island Energy. These programs have proven effective at offsetting surging customer demand by dispatching power from customer-owned batteries. ♻️

and works very well with our AI-driven, vehicle-to-grid platform."

"We are fortunate to have such great collaborators like Fermata Energy and Plymouth State University (PSU) on this project," said NHEC Vice President of Power Resources and Access Brian Callnan. "Technology from Fermata Energy allows us to purchase the necessary grid services to serve our members from PSU, who happen to be a member themselves. We're thrilled to see members serving members with this program."

Callnan continued, "Bidirectional charging and TER allow the university to redefine their electric vehicles as a distributed energy resource (DER) that benefits them and all our members in the electric cooperative."

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