



OPENADR UTILITY CASE STUDY

Transactive Energy Rate

New Hampshire Electric Coop/Bellawatt

PROJECT GOALS

New Hampshire Electric Coop (NHEC) planned to launch a Transactive Energy Rate (TER) in late 2022 to help members reduce their overall energy costs while also anticipating broader Distributed Energy Resource adoption in the coming years.

Launching a TER requires technical infrastructure to publish and communicate a dynamic, day ahead price signal to member DER devices, have them respond accordingly, and communicate their energy usage information back to the utility for billing settlement. Bellawatt was asked to build and manage this infrastructure and other key program components on behalf of NHEC.



WHAT WAS THE CHALLENGE?

Our main challenges centered around program data requirements, interoperability, and overall adoption. Certain program requirements can raise an aggregator's participation costs and may be prohibitive – our goal was to ensure a low barrier to entry to encourage TER participation.

We needed to find a communication protocol which:

- Contained all data required for the TER program
- Enabled interoperability for different devices and OEMs
- Was internationally recognized and used industry wide
- Is cost effective, secure, robust, and flexible

WHAT WAS THE SOLUTION?

The TER program uses OpenADR as a communication protocol between DERs and NHEC's billing system.

We created the registration portal and API so members/aggregators can register their eligible DERs and participate in the TER program. In tandem, we designed and developed the back-end infrastructure, including Virtual End Nodes, Virtual Top Nodes, a TER application and connected a bi-directional EV charger during a pilot phase.

Following the OpenADR communication protocol, NHEC sends price signals to the application we created, and daily usage data is received from the DERs. The TER application then sends the usage data to NHEC's billing system.

Why did you choose OpenADR over other standards?

OpenADR is NHEC's preferred standard and was recognized by many aggregators during our initial research and interviews. In addition to its industry recognition and implementation, it also addressed many of our technical challenges we noted during our research and development.

bellawatt



For more information
please visit
www.openadr.org



QUOTES

“New Hampshire Electric Cooperative is collaborating with GM. Their Energy Cloud will respond to our Transactive Energy Rate, which we are currently piloting. This is an hourly rate, transmitted using OpenADR.”

Dave Erickson
 Director of Access and Distributed Resources
 New Hampshire Electric Cooperative



“Want a preview of the future of Electric Vehicle interactions with electric utilities? We at Bellawatt built a system for utility customers to sell energy from their EV batteries back into the grid. One EV partner vehicle generated \$900 in credits... that’s insane!”

Miroslav Lysyuk
 Chief Product Officer
 Bellawatt



THE RESULTS

What are the benefits of using OpenADR?

OpenADR provided us with the following benefits:

- OpenADR is device/matrix agnostic, and allows for interoperability between different systems
- OpenADR uses secure communication protocols to protect sensitive information
- OpenADR is flexible; it can accommodate TER, Demand Response, V2X programs and pricing structures
- OpenADR is cost effective and does not require proprietary communication systems or licensing fees

With these combined, we launched a production ready TER program – complete with a comprehensive member registration process and end-to-end utility to DER communication – in January 2023.

Quantifiable results from our NHEC TER Pilot include:

- 1 MWh returned to the grid for energy discharged during times of peak utility demand
- \$1000+ in aggregator value for energy automatically discharged when prices were favorable (ex. Prices >\$1/kWh)
- 3MWh used for charging during hours when prices are low (avoiding spikes and peak prices)

Overall benefits of the NHEC TER program are:

- Driving DER adoption through hardware sales acceleration or “Bring Your Own Device” initiatives
- Encouraging energy efficiency by incentivizing customers to use less electricity during periods of high demand
- Supporting grid reliability by helping manage demand and preventing grid overload to improve reliability
- Reducing DER payback time for end users through participation in the energy market
- Staying competitive in a rapidly changing market and giving customers incentives to join NHEC



About OpenADR Alliance

The OpenADR Alliance brings together system operators, utilities, aggregators, controls vendors and solution providers to support the growth of this international standard (IEC 62746-10-1) Industry stakeholders worldwide work to foster the development, adoption and compliance of the OpenADR standard through collaboration, education, training testing and certification. There are currently over 250 certified OpenADR products. Collaboration includes technical working groups – most recently the creation of an Electric Vehicle Interest Group.