Data Analytics: A Cooperative Story

Technology Case Study

DELAWARE ELECTRIC COOPERATIVE

CFC supports forward-thinking members as they implement innovative technology plans. Here is how one cooperative is building toward its future.

DEC
DELAWARE ELECTRIC CO-OP
"We Keep the Lights On"

Overview

Delaware Electric Cooperative (DEC) is a 105,000-member cooperative with a mostly residential service territory. The system's footprint is a mix of suburban, rural and beach areas. Most of its recent growth has been in its beach-side territory[1].

Over the past decade, the cooperative developed a focused effort to procure, leverage and implement technological and programmatic solutions to harness the power of AMI data to optimize system performance and member satisfaction.

Like many cooperatives, power supply costs represented a significant expense to Delaware, and the cooperative recognized a need to improve reliability to strengthen its relationship with its members.

Initially, DEC harnessed data analytics leveraging real-time forecasts of wholesale power costs from its generation and transmission cooperative (Old Dominion) and regional transmission organization (PJM) to address its challenges.

In 2008, the cooperative instituted its Beat the Peak program to address one of its largest costs: coincidental peak demand. The program notified members about opportunities to save on their bills during peak pricing periods. The incentive has saved members more than $34 million[2].

Today, the cooperative makes strategic decisions utilizing a comprehensive data dashboard that tracks roughly 150 key performance indicators (KPIs) from the power supplier, engineering, social media and a host of other sources to drive its strategic decision-making.

Key Takeaways

- **Technological innovation is augmenting cooperatives' ability to collect massive volumes of data about their systems' performance and member behavior.**

- **Learning how to analyze and apply meaningful insights is critical.**

- **Predictive analytics and artical intelligence show potential to help cooperatives more effectively forecast load demand and better manage system outcomes.**

- **Clearly communicating the value of data-driven decisions to members augments cooperatives' credibility.**

- **The next level of cooperative reliability will likely be driven by data analytics.**

DEC's Approach to Load Forecasting

DEC utilizes a performance portal that includes real-time load forecasts generated internally for the cooperative's load and links to the PJM system-level forecast. These forecasts provide critical insight into the variable cost of power up to 14 days in advance and create a significant opportunity for member engagement through the Beat the Peak program.

1. Karaim, Reed. RE Magazine, Co-op Tech: Data That Tells A Story. 2020
2. Delaware Living, DEC to Issue Fewer Beat the Peak Alerts in 2021. 2021

By using short-term load forecasting, DEC provides real-time estimates of savings to members via Beat the Peak notifications. The portal allows DEC to keep running totals of savings in front of members throughout the year and reinforces their role in managing costs.

The Beat the Peak program uses multiple communication channels to notify members of cost savings, including outbound e-mail blasts; smartphone messaging via push notifications and texts; and "Peak Alert" indicators on smart thermostats in member homes.

Predictive analytics play a key role in helping DEC forecast load demand and manage system efficiencies. DEC recently expanded its efforts to analyze information by hiring a data scientist who is designing computer models that will use artificial intelligence (AI) and machine learning to identify long-term trends within the data that could otherwise be missed by the human eye[3].

Infrastructure for a Metrics-Driven Approach

As cooperative data initiatives grew, DEC's seven-person IT department built a performance portal tracking roughly 150 KPIs with visually compelling graphics to better inform the cooperative's decision-making with good data. Much of the data is updated hourly, while less time-sensitive information is updated daily or even monthly.

When DEC set up the first, simpler version of its dashboard about a decade ago, the biggest challenge was integrating data from different systems. Today, the performance portal ties directly into the enterprise systems that DEC uses to manage its operations, including the Customer Information System (CIS) provided by NISC, Outage Management (OMS), Supervisory Control and Data Acquisition (SCADA), the automated metering system, the GIS, the outage management system and accounting.

The system underscores DEC's metric-driven management approach, and the results speak for themselves. DEC has seen a three-fold increase in productivity from its operations and produced the lowest "distribution adder" among DEC's peers across the ODEC system[4]. DEC now has the ability to serve 652 meters per employee, which leads the cooperative network. DEC has achieved this while realizing greater than 3 percent growth annually and holding rates steady since 2008.

Over the years, Beat the Peak has saved members more than $34 million, while helping the cooperative reduce costs by shifting load to off-peak periods. The program has been widely adopted by other utilities nationwide over the past decade.

Considering Data Analytics Strategy for Your Cooperative

Cooperatives with limited IT resources frequently use vendors that provide a comprehensive suite of software and tech services, and many of those vendors offer customizable data dashboards. These options can be an excellent place to begin a data analytics dashboard. Systems also may want to consider working with the vendor to individualize off-the-shelf software based on needs and priorities.

AI offers a lot of potential as a complementary technology that allows cooperatives to automate system operations and help identify long-term trends that can be hard for humans to see.

It's important for cooperatives to recognize that the next level of reliability and cost control is likely to be driven through technology. Data analytics are going to play a critical role because they help electric systems understand the story behind the numbers.

For additional information on how CFC can support your cooperative's technology planning, please contact **Leslie.Ebert@nrucfc.coop** in our Strategic Services Group.

3. Karaim, Reed. RE Magazine, Co-op Tech: Data That Tells A Story. 2020
4. Touchstone Energy Cooperatives, 2020 National Survey of Cooperative Difference, Data Driven Decisions Drive Performance. 2020