

CASE STUDY

Weather Is Always on the Screen at VELCO

Vermont's transmission operator uses weather intelligence to plan ahead, assess grid conditions, and investigate faults.

ABOUT VERMONT ELECTRIC POWER

Weather is woven into Vermont Electric Power Company's (VELCO) daily decision-making. The utility manages the state's high-voltage transmission network, overseeing reliability, coordinating outages and maintenance work, and supporting the power grid that serves its communities.

For Jason Pew, Senior Director of Operations and Energy Management Systems, weather intelligence is an important part of helping his team stay ahead of changing conditions and make informed decisions before work begins.

"We always have a weather screen up in the control center, and we're always monitoring the what-if scenarios," Pew said. "Half of our job is making sure we're in a good position today. The other half is making sure we're prepared for if and when the other shoe drops."

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THE CHALLENGE

Using weather to plan the next day's work

VELCO's operations team continuously evaluates weather conditions and risks — such as thunderstorms, lightning, snow, and ice — that could affect both grid reliability and upcoming field work scheduled for the following day.

"We'll try to make that decision anywhere between 7 and 10 a.m. for the next day," Pew said.

Making those decisions in advance helps VELCO assess whether work should proceed before crews are staged in the field, while keeping safety and system reliability in mind.

VELCO is also expanding how it uses weather data in operational planning. The utility is preparing to use DTN temperature data as it implements ambient-adjusted ratings. The initiative will incorporate forecast temperature data into operational systems used to determine transmission-line limits.

"Each day, we study the next day and use the output from our systems to assign the line limits," Pew said. "Currently, we use static, seasonal ratings for future studies. As we get deeper into it, we'll likely start looking at a week in advance using temperature-based limits."

SEEING POTENTIAL WEATHER IMPACTS AT A GLANCE

Identifying days that require greater attention and preparation

One of the tools VELCO uses to support operational planning is DTN Energy Event Index (EEI), which provides a 1-to-5 rating that helps utilities assess the potential operational impact of upcoming weather conditions. A rating of 1 indicates minimal concern; a rating of 5 signals weather conditions that may require increased attention and preparation.

For operators responsible for coordinating outages and monitoring reliability, EEI provides an easy way to identify days that deserve closer attention.

"When you wake up in the morning, and you have a rating of 1, and then you see Friday is at 4, you start thinking about what's happening on Friday and what you need to do to get ahead of the weather," Pew said.

The simplicity of the information is part of what makes it useful.

"At a glance, it's clear what weather conditions are coming our way, he said. "We don't have to sit there and read or decipher — the systems we have in place have already done that for us."

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USING LIGHTNING DATA TO NARROW FAULT INVESTIGATIONS

Lightning data adds context to identify transmission faults

Weather intelligence also plays an important role when investigating transmission system events.

VELCO uses DTN lightning data to help operators determine whether a lightning strike may have contributed to a fault and where crews should focus their attention.

“A lot of times our faults are correlated with lightning,” Pew said.

Operators compare fault-distance information from relay systems with the timing and location of nearby lightning strikes. Together, those data points help narrow the likely problem area and focus field investigations.

“We know where to send people within a couple of spans of our transmission system,” he said.

The information provides additional confidence as operators work to understand what caused an unexpected event and where to begin looking for answers.

WEATHER INTELLIGENCE BUILT INTO THE DAILY WORKFLOW

VELCO relies on DTN every day, multiple times a day

For a group that monitors weather every day, confidence in the information they use is essential. Pew said there are plenty of free weather applications available, but they are no longer part of his routine.

“I don’t open [free weather apps] anymore,” he said. “I go right to DTN.”

Whether reviewing forecast trends, monitoring precipitation and wind, assessing planned outages, or preparing for changing conditions, DTN has become a consistent part of how VELCO’s operations team works.

“At the end of the day, it’s a great product, and we certainly rely on it and use it every day, multiple times a day.”

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