Jump River Electric Cooperative, Inc.

Since 1938

Your Touchstone Energy® Cooperative

May Heatwave Exposes Grid Vulnerabilities

Although the official start to summer is still weeks away, a mid-May heatwave hit our service territory. Dormant air conditioners weren't the only things being put to the test as record heat melted the region.

The regional electric grid, managed by MISO (Midcontinent Independent System Operator), was strained with high electricity demand and limited generation resources. On May 12, MISO declared a Maximum Generation (Max Gen) Warning. MISO uses Max Gen procedures to help address grid constraints. In some circumstances, system conditions during a Max Gen scenario will call for electricity demand reduction measures, such as the use of our load management program. On May 12, JREC worked closely with our wholesale power provider, Dairyland Power Cooperative, to be prepared in case there was a need to reduce our cooperative's electricity demand.

"Although there was no call [from MISO] to shed load outside of normal daily energy management programs, plans were being put in place to reduce demand if needed," said Ben Porath, Dairyland Power Cooperative's Executive Vice President and Chief Operating Officer. "Depending on the weather and available generation resources, we could have quickly advanced to a Max Gen Event and, possibly, needed to implement our load management resources to achieve load reduction."

"Every Max Gen Warning or Event scenario is unique. We must react to emergency grid conditions in a real-time manner and may have to call upon our members to start reducing their electricity demand at a moment's notice," said Assistant Manager Kurt Harris. "Using our load management program for this purpose ensures we can quickly reduce demand to avoid overloading generation resources. This use of load management is different than non-emergency full load control events which help avoid purchasing power during the most expensive times of the summer or winter. Using load management for Max Gen purposes supports grid reliability by reducing our electricity demand to levels that can be met by available generation resources. If demand exceeds what the grid can fulfill, rolling blackouts can occur."

Experiencing a Max Gen Warning so early in the season could be a sign of things to come. A press release from MISO in late April and the short-term outlook from the U.S. Energy Information Administration this spring warn of an expected shortage of available generation resources during peak electricity demand this summer.

Some key reasons for the projected shortfall include:

- Higher, volatile natural gas prices in the United States
- Coal-fired and nuclear power plant retirements outpacing the installation of new generation resources
- A significant amount of new generation resources coming online are wind and solar, which are intermittent and not always available when needed
- Electricity consumption continues to return to pre-COVID-19 pandemic patterns, increasing in the commercial and industrial sectors.

JT Smith, MISO's executive director – market operations, said a 2022 seasonal assessment indicates about a 5-gigawatt (GW) deficit between an expected peak forecast of 124 GW vs. 119 GW of expected "regularly available generation." For comparison, 1 GW is 1,000 megawatts (MW) of power or 1 million kilowatts (kW), which is approximately the size of the entire Dairyland Power system. Dairyland's 24 member cooperatives serve 284,000 homes and businesses in a four-state region.

This deficit leaves MISO's North and Central regions – the regions where Dairyland's member cooperatives serve – at an increased risk of rolling blackouts to help keep the grid online.

Dairyland runs annual drills with its members to prepare for a potential rolling blackout event. To-date, load reduction measures have not reached the point of load shedding – including during the February 2021 Polar Vortex where Texas and other states did endure rolling blackouts and partial grid failures. Dairyland's System Operations Center also works closely with MISO to ensure the power grid remains stable and reliable each day.

"Our System Operators are in daily contact with MISO to understand where power needs are and how Dairyland's resources can best support the regional grid," Porath said. "We can't control the weather or other generation resources, but we do take maintenance and preparedness of our own generation stations as seriously as we do safety."

"The fact is, we are facing the possibility of power shortages this summer, but participation from members in the Summer Shift program or enrolling an eligible device in our load management program can help reduce demand during the highest electricity peaks and aid our ability to keep the lights on and costs under control," Harris said.

Relieving Congestion

Even when new generation resources are brought online, MISO may experience transmission congestion, which means the grid operator has trouble moving the electricity from where it is generated to where it is needed. This can result in not only lost opportunities to utilize renewable energy when available, but also higher costs to consumers.

In May, one of the congested areas impacted the flow of electricity from wind farms in Iowa and southern Minnesota to the rest of the MISO North and Central regions.

Dairyland is partnered with American Transmission Co. (ATC), and ITC Midwest, LLC, to build the Cardinal-Hickory Creek (CHC) transmission line. CHC is a 102-mile, 345-kilovolt (kV) line from Dubuque County, Iowa, to Dane County, Wis. It would help relieve congestion in MISO, reduce energy costs for consumers, improve electric grid reliability, support decarbonization goals and help support the interconnection of renewable generation in the Upper Midwest.

There are 115 renewable generation projects totaling nearly 17 gigawatts dependent upon the construction of Cardinal-Hickory Creek transmission line – enough to power millions of homes with clean energy. This includes nearly 1.5 gigawatts of renewable generation from Wisconsin.

JREC is an equal opportunity provider and employer.