Tim Stewart,
CEO/Manager

SAFE AND RELIABLE ELECTRICITY

The process behind the promise

Clark Electric Cooperative
Your Touchstone Energy® Partner

What happened in Texas? Could it happen here? Those two questions have been on many people's minds since the polar vortex in February 2021. The questions are straightforward; the answers are more complex.

During the February polar vortex, extreme cold was experienced in our region and throughout a vast area of the United States, including states like Texas that rarely suffer single-digit temperatures.

Our region withstood the recent Polar Vortex for **three primary reasons:**

- A reliable, properly regulated interconnection
- Balanced energy supply
- Well maintained and winterized equipment

Texas operates its own, deregulated grid—the Electric Reliability Council of Texas (ERCOT). Our wholesale power supplier, Dairyland Power Cooperative, is part of the **Mid-continent Independent System Operator (MISO)** regional transmission organization (RTO). RTOs are sometimes referred to as the **"air traffic controllers"** of the energy infrastructure world. MISO is federally regulated and works with its member utilities to ensure a reliable balance of supply and demand on the region's grid.

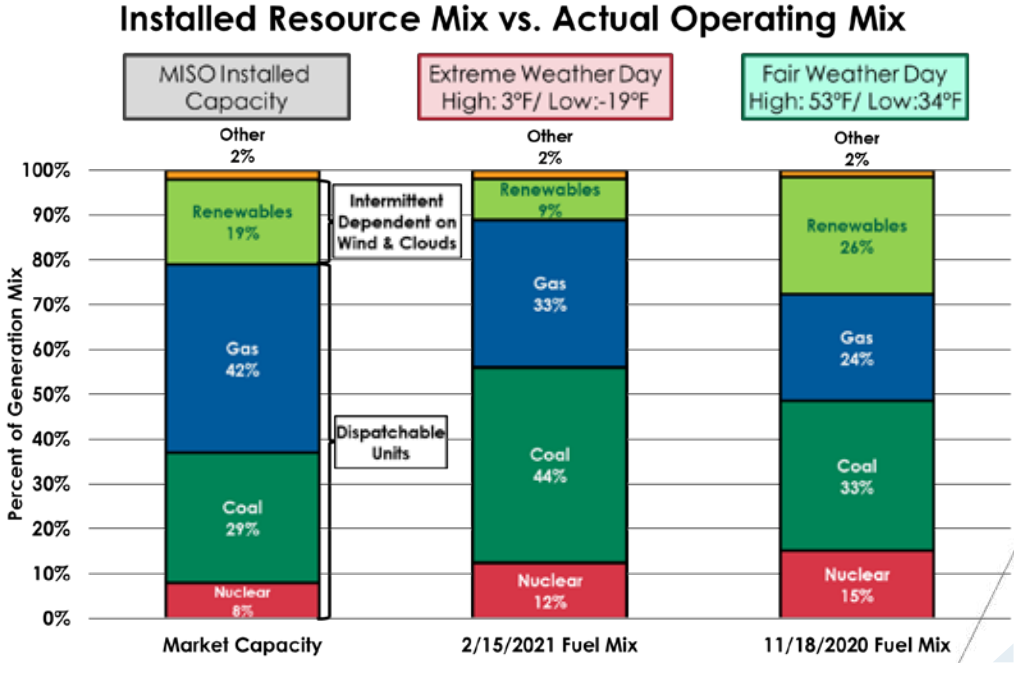
Both MISO and another RTO, the Southwest Power Pool (SPP), were operating under Maximum Generation Events during the polar vortex. SPP implemented rolling blackouts throughout its region, successfully avoiding systemwide failure. Rolling blackouts are emergency measures that drastically curtail electricity use with the purpose of avoiding a catastrophic event, as seen in Texas. They are a harsh reminder of the importance of a **reliable, carefully controlled grid**.

Although ERCOT prepares for varied forecasts like every balancing authority, its planning for extreme winter temperatures was inadequate. As an example, RTOs help direct power plant availability by managing when and which resources are offline for maintenance to ensure regional reliability. It is essential to have a sufficient and balanced mix of generation available.

Here in the Upper Midwest, we also know how to **dress for winter**. We keep ourselves safe and warm with proper outerwear… and we apply the same principles to our electrical facilities.

Infrastructure in our region is built for extreme cold, with insulation and heated pipes combatting polar vortex temperatures. This includes wind turbines, which are designed with heating technology to de-ice blades. Wind turbine manufacturers have cold climate solutions available to developers in northern regions. Despite this, wind turbines become unable to generate electricity in the range of 20 to 30 below zero.

It is important to acknowledge that **every resource has its strengths and limitations**. For example, wind and solar energy have the clear advantage over fossil fuels in terms of emissions. However, both are reliant on weather factors (sun and wind) for reliable generation. Although natural gas is a reliable, baseload resource, natural gas pipeline systems are nearly fully subscribed during extremely cold conditions, which can limit capacity for power production.



Source: Dairyland Power Cooperative

As a critical services provider, Clark Electric Cooperative is thankful for the dedicated employees for working safely in challenging conditions to keep the lights and heat on.

Dairyland's John P. Madgett (JPM) coal-fired power plant broke gross daily generation records twice in just over a week, once on Feb. 8 and again on Feb. 17. "This achievement is due to excellent plant maintenance and operational practices, which allows JPM to respond to

market demands even in times of extreme weather.

In fact, all of Dairyland's baseload units (JPM, Genoa #3 Station and its share of the Weston #4 plant) **ran at peak output** for multiple days. In addition, when natural gas became in higher demand for home heating, Dairyland's Elk Mound site switched to fuel oil for operations.

Dairyland's backbone power supply assets (coal-fired and natural gas peaking plants) are capable of reliably producing energy, no matter what the weather brings. At the same time, reducing carbon intensity through diversification of generation resources is central to Dairyland's power supply planning.

A sustainable energy future means:

- **Steady, measured investments in renewable energy**
- **Bridging resources, such as natural gas that can ramp up quickly to produce energy when the sun doesn't shine and the wind doesn't blow**
- **Infrastructure investments to support intermittent energy resources**
- **Beneficial electrification technologies, such as electric vehicles and emerging energy storage solutions**

GEOTHERMAL INVESTMENT TAX CREDIT EXTENDED THROUGH 2023

The pandemic relief bill Congress passed in December 2020 also included some economic stimulus components. One item didn't get as much fanfare as others but is relevant to cooperative members.

The Federal Investment Tax Credit (ITC) for residential geothermal heat pump systems—which was due to expire at the end of 2021—was extended. New installations can qualify for a 26 percent credit through 2022, and 22 percent in 2023 with the tax credit expiring as of Jan. 1, 2024. Eligible expenses include labor, onsite preparation, assembly, equipment, piping or wiring to connect a system to the home, and some electrical upgrades.

"We are ready to work with members who want to learn more about geothermal heat pumps," HVAC Manager Greg Shaw said. "The efficiency of a geothermal heat pump is the best on the market. Although the up-front installation can be more expensive than a furnace or air conditioner, the extended tax credit can help members, in addition to lower monthly energy costs. Clark Electric Cooperative also offers an incentive for installing a geothermal heat pump."

The Environmental Protection Agency (EPA) considers geothermal heat pumps the most energy-efficient, environmentally clean, and cost-effective systems for heating and cooling buildings. All types of buildings, including homes, office buildings, schools, and hospitals can use geothermal heat pumps.

Many members currently use two different systems to heat and cool their homes: a furnace and an air conditioner. When it's time to replace both, a member should consider whether to repurchase two separate systems or to put that cost toward a geothermal heat pump, which can heat and cool a home. For every unit of electricity used to power a geothermal heat pump, the system delivers more than four units of heating or cooling. That's over a 400-percent efficient system. The energy savings from a geothermal heat pump result in a five-to-10-year payback for most homeowners.

Clark Electric Appliance and Satellite. Inc. meets the criteria to qualify for incentives and the tax credit. Some additional information to consider:

- Geothermal heat pump equipment must be ENERGY STAR certified
- The credit can't be claimed for installations on rental properties
- Contact your tax preparer to ensure you receive any tax credit you may be eligible for

Contact Greg Shaw at Clark Electric Appliance and Satellite, Inc. for more information.

INVESTMENT TAX CREDITS (ITC) FOR GEOTHERMAL SYSTEMS

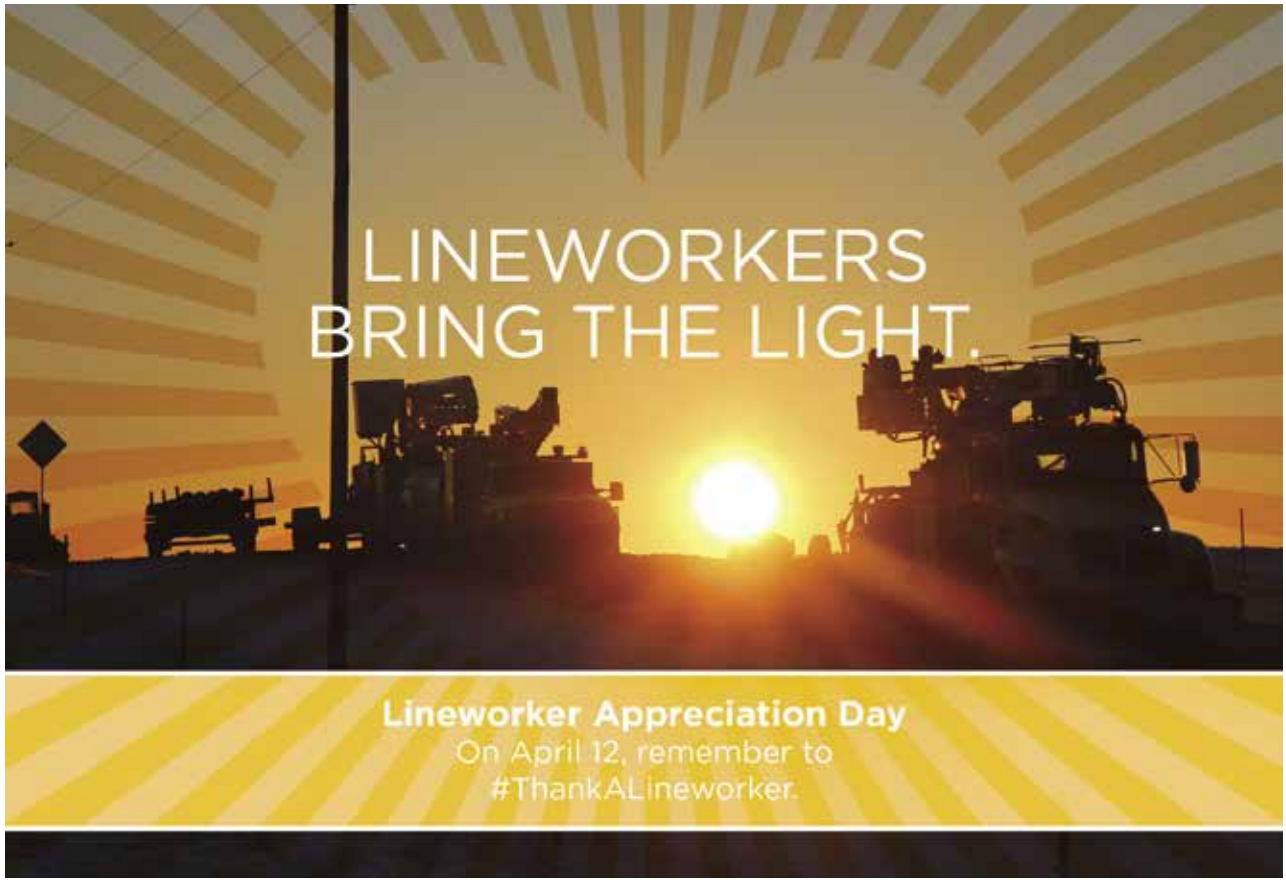
	12/31/21	12/31/22	12/31/23	01/01/24 & beyond
Geothermal Heat Pump (residential)	26%	26%	22%	expires
Geothermal Heat Pump (commercial)	10%	10%	10%	expires

How do Geothermal Heat Pumps Work?

Geothermal loops are installed below the soil's frost line, which has a year-round temperature around 50 degrees Fahrenheit. Compared to the weather above the ground, the temp feels cool in the summer and—relatively—warm in the winter. A non-toxic fluid flows through the geothermal system's underground coils. In the winter, the liquid pulls heat from the ground into the home where it helps warm the air inside. In the summer, the process reverses, pulling heat from the home. This warms the fluid in the geothermal loop, which is cooled as it flows through the underground coils before returning to the home.

The most common geothermal systems utilize either a vertical or horizontal-loop system. When installing the system, the loops need plenty of distance to carry liquid to either absorb heat from the ground to warm the home or distribute the heat from the home to the soil, thus naturally cooling the liquid. A vertical-loop field will have multiple holes drilled 50 to 400 feet below the ground surface to install the pipes (which create the "loop"). A horizontal-loop field will bury the pipes a few feet below the frost line, but the field will extend across a large yard. Depending on the size of a lot, most geothermal fields are vertical loops.

For more information on geothermal heat pumps, go to Geothermal heat pumps - U.S. Energy Information Administration (EIA).



LINEWORKER APPRECIATION DAY IS APRIL 12

This is the time of year when we take a moment to appreciate all that our lineworkers do to keep the power flowing. National studies consistently rank power line installers and repairers among the most dangerous jobs in the country, and for good reason. Laboring high in the air wearing heavy equipment and working directly with high voltage creates the perfect storm of a dangerous and unforgiving profession. But electric lineworkers are up to the task. These brave people are committed to safety, as well as the challenges of the job.

When the weather gets nasty and most of us hunker inside, our linemen head out, no matter the time of day, or day of the week it might be. Our line workers are the first responders of our electric distribution system, and they work around the clock on high voltage lines. Clark Electric Cooperative's lineworkers are responsible for keeping power flowing day and night, regardless of national holidays, vacations, birthdays, weddings, or other important family milestones. Beyond the years of specialized training and apprenticeships, it takes internal fortitude and a mission-oriented outlook to be a good lineworker. In fact, this service-oriented mentality is a hallmark characteristic of lineworkers. The job requires lineworkers to set aside their personal priorities to better serve their local community.

Family Support System

To perform their jobs successfully, lineworkers depend on their years of training, experience, and each other to get the job done safely.

Equally important is their reliance on a strong support system at home. A lineworker's family understands and supports their loved one's commitment to the greater community during severe storms and power outages.

This means in times of prolonged outages, the family and their lineworker may have minimal communication and not see each other for several days. Without strong family support and understanding, this challenging job would be all the more difficult.

Community Commitment

At Clark Electric Cooperative, our lineworkers' mission-focused mentality of helping others often extends beyond their commitment to their work at the co-op. Lineworkers are often familiar figures in the community. They can be found coaching youth sports teams, on local first responders, fire departments, and serving on local boards.

Thank You

On April 12, 2021, when you flip a light switch, power up your computer, turn on your TV, or perform any of the countless tasks that electricity enables you to do, take a moment to appreciate the hardworking linemen who make that possible.

"KEEPING THE LIGHTS ON"
SPECIALTY PLATES NOW AVAILABLE

New specialty license plates recognizing the state's electric utility workers are now available. Anyone can order the "Keeping the Lights On" plates for a one-time fee of $15. Personalized specialty plates are an additional $15.

A group based out of the Clark Electric Cooperative area launched the effort to make the plates available almost a year ago. To get to this point, they gathered and submitted 500 signatures from licensed Wisconsin drivers who committed to purchasing the plates for the one-time fee, which covers the cost of production.

The group also raised the funds for the development and design fee, which was $15,500. The purpose of the plate is to honor and recognize all persons working to ensure Wisconsinites have access to safe, affordable, and reliable electricity.

Vehicles that qualify to display the specialty plates include automobiles, motor homes, private trucks weighing 8,000 pounds or less, and farm trucks weighing 12,000 pounds or less.

The group promoting the "Keeping the Lights On" specialty plates achieved their goal ahead of schedule as they had hoped to complete the process and make the plates available to the public by April of 2021.

To order, go to: https://wisconsindot.gov/Pages/dmv/vehicles/title-plates/utl.aspx and fill out the application.

Local DMV customer service centers do not have the Keeping the Lights On license plates for immediate issue but can process applications and the plates will be mailed to you.

Energy Efficiency Tip of the Month

Some manufacturers set water heater thermostats at 140 degrees, but most households, usually only require them to be set at 120 degrees.

Consider lowering your water heater's temperature to save energy and slow mineral buildup in the heater and pipes.

Source: www.energy.gov

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