MINNKOTA

MESSENGER

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On the cover: Minnkota engineers Jay Bushy (left) and Kara Laframboise look over designs for the Walle substation site surrounding them.

***Minnkota Messenger** is published six times a year by Minnkota Power Cooperative. Its mission is to communicate Minnkota's perspectives and concerns to its members, elected officials, employees and other business audiences. For editorial inquiries, call (701) 795-4282 or email bfladhammer@minnkota.com.*

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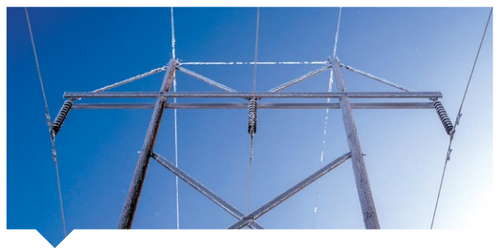
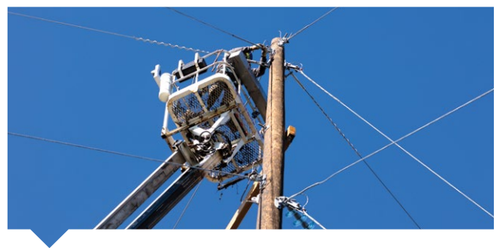
Minnkota Power Cooperative is a generation and transmission cooperative headquartered in Grand Forks, N.D. It supplies wholesale electricity to 11 member-owner distribution cooperatives, three in eastern North Dakota and eight in northwestern Minnesota. Minnkota also serves as operating agent for the Northern Municipal Power Agency, an association of 12 municipal utilities in the same service region. Together, the Joint System serves more than 162,500 consumers.

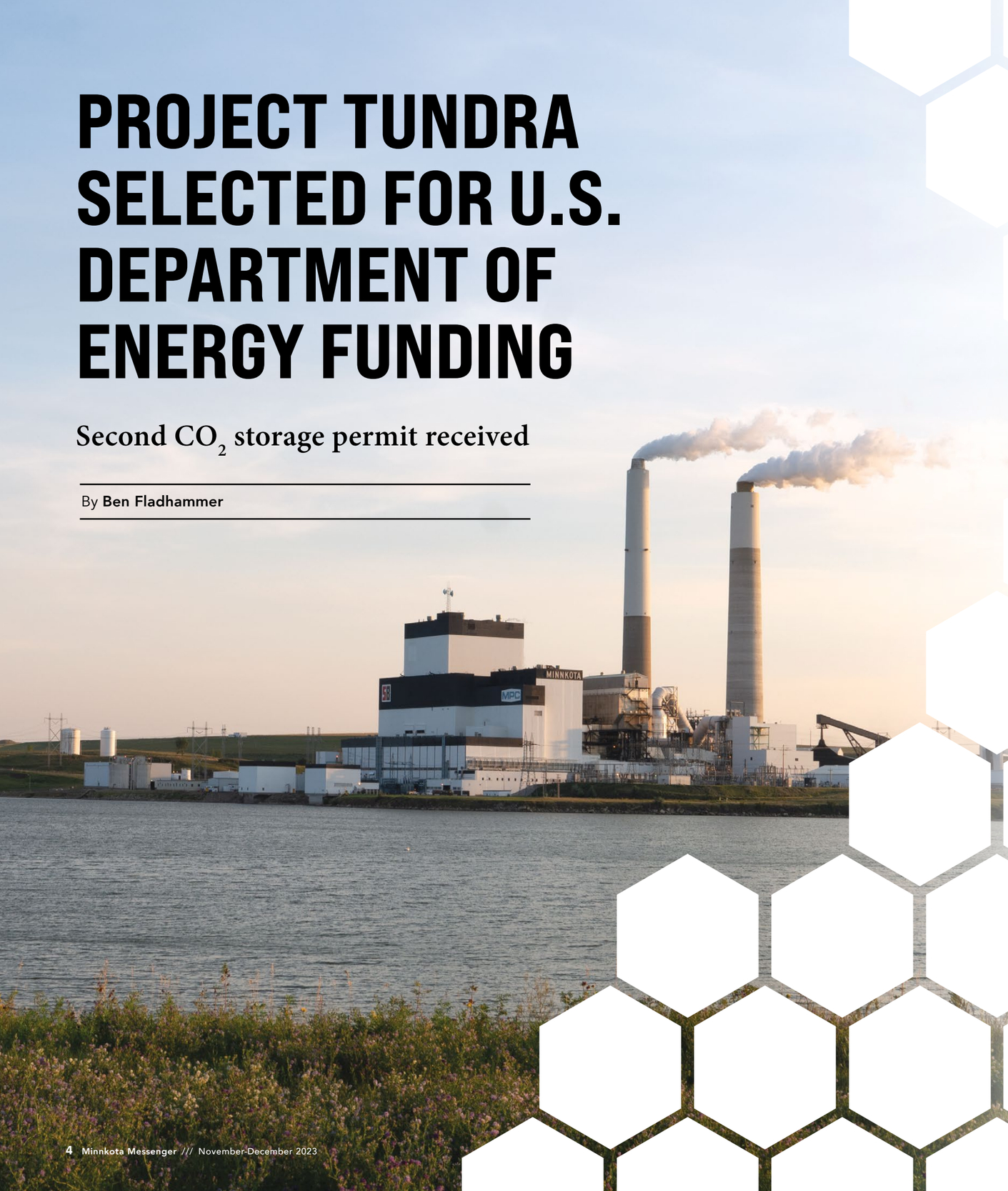




PROJECT TUNDRA SELECTED FOR U.S. DEPARTMENT OF ENERGY FUNDING

Second CO_2 storage permit received

By **Ben Fladhammer**



Project Tundra reached major milestones in the fourth quarter of 2023 that help position the project for a final decision in the upcoming year.

The U.S. Department of Energy announced on Dec.14 that it has selected Project Tundra as a recipient of funding through the Carbon Capture Demonstration Projects Program. The funding award is under negotiation for up to $350 million.

"We're grateful that the Department of Energy recognizes the importance of developing carbon capture systems and is positioning the United States to be a leader in the advancement of this critical clean energy technology," said Mac McLennan, Minnkota president and CEO. "Innovation is our path forward through the energy transition. Project Tundra has the potential to help pave the way toward a future where electric grid reliability and environmental stewardship go hand in hand."

The project also received approval of a permit on Oct. 4 that will provide additional space to safely and permanently store carbon dioxide (CO_2) near Center, N.D. The Dakota Carbon Center West storage facility has the capacity to store 122 million metric tons of CO_2 over a 20-year period. Combined with the already permitted Dakota Carbon Center East facility, Project Tundra has the capability to store 222 million metric tons of CO_2 over two decades in Oliver County.

The vision for Project Tundra is to advance next generation carbon capture and storage technologies at the Milton R. Young Station, a power generation facility located near Center, N.D. The project is being developed by Minnkota Power Cooperative, TC Energy, Mitsubishi Heavy Industries and Kiewit and its affiliates.

Through Project Tundra, up to 4 million metric tons of CO_2 are planned to be captured annually from the Young Station and stored in geologic formations approximately one mile underground near the plant site. If Project Tundra moves forward into construction, it will be the largest post-combustion CO_2 capture project in the world.

"We remain grateful for the strong support we've received from area landowners, the city of Center and Oliver County," said Mac McLennan, Minnkota president and CEO. "The science has shown that we have ideal geology to store CO_2 in the region, but none of that matters if we don't build and maintain relationships with the people in the area. We look forward to continued engagement with these stakeholders as Project Tundra moves ahead."

Project Tundra is currently in its final development phase. The completion of advanced engineering and design work on the carbon capture facility is scheduled for the spring of 2024. A final decision on whether to move forward with the project is expected in mid-2024.

WELCOMING WALLE

Minnkota's new transmission substation will fortify power reliability, support regional load growth

By **Kaylee Cusack** /// Photography **Michael Hoeft**

Some people look to the horizon to seek out sunsets, changing fall foliage or perhaps a vast stretch of open water. Minnkota engineer Jay Bushy was wired differently. He sees horizonal beauty in an amalgamation of steel, insulators and switches called Walle substation.

"I heard it was up, and I wanted to go look," remembered Bushy, the sitework/civil engineer for Minnkota's newest transmission substation just south of Grand Forks, N.D. "And as soon as I got through the curve on Highway 81, it just stuck out. It was very pronounced. That thing is up about 50-plus feet in the air, so you can see it for quite a ways," he added with pride.

Walle substation (named for the township in which it stands) is one of Minnkota's largest transmission substation builds to date. When fully energized in the spring of 2024, it will receive 230-kilovolt (kV) power from Minnkota's transmission lines, step it down through a transformer and send it on its way as 69-kV electricity for distribution substations in the area.

The new infrastructure is a product of a multiyear Minnkota system study completed by Minnkota's power delivery planning department. The study determined that a transmission substation near southern Grand Forks would be critical to keep electric reliability high for a quickly developing region.

Minnkota lineworker Weston Meyer completes work on Walle's dead-end structure.

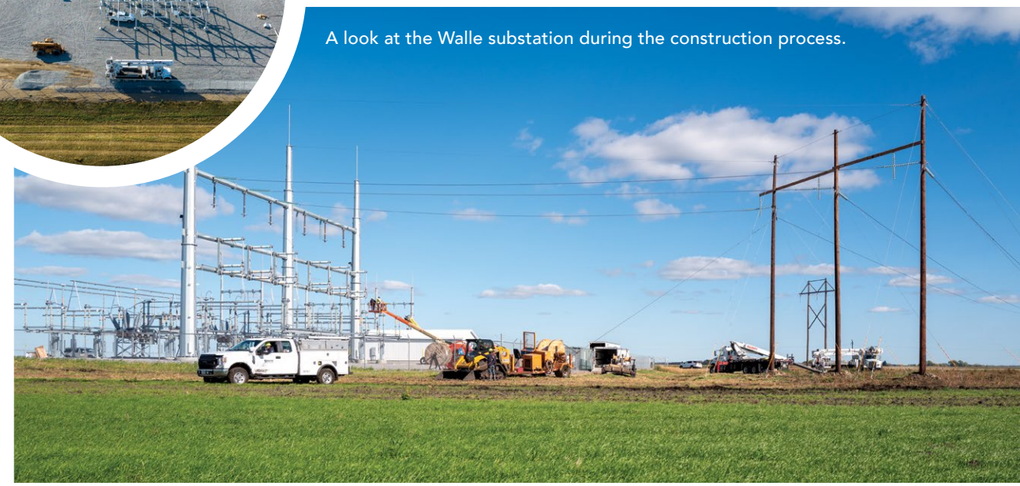
"This substation will allow for additional load growth. And reliability is a big factor. The investment is worth it because this will help out in the future," said Ryan Brorby, Minnkota substation engineering manager. "This will prevent transmission congestion, and we won't find ourselves in a power bind."

Work to prepare for Walle started back in 2022, when Bushy and substation engineer Kara Laframboise began initial designs for the site and equipment. In February of 2023, Minnkota's line crew began the task of moving existing power poles on the 230-kV line to make room for the substation. In May, the sitework of grading and preparing the substation pad began. Soon, the construction work shifted to a set of local contractors who would complete the bulk of the build under Minnkota's supervision.

Things were rolling smoothly – but supply chain challenges threw some hurdles into the path of completion.

"If we hadn't had delays with the transformer, we would have been able to fully energize everything this year," Laframboise said, explaining that transformers are in high demand and short supply nationwide, ballooning lead times for the essential equipment. On top of the wait, Minnkota faced the high costs that accompany supply-and-demand economics.

"You can look at it this way," Laframboise explained. "The transformer that we purchased for the Walle substation is the same size transformer that we purchased for the Lake Park substation back in 2017. It has doubled in cost from what it was back then."



A look at the Walle substation during the construction process.

Team effort

In addition to the transformer, getting steel to the substation site was also tricky. Product lead times continued to expand, pushing back delivery dates by weeks. Even for Minnkota's line crew, the wait for materials necessitated flexibility and patience.

"There are so many people at Minnkota that touch this," Brorby said. "Even though we did it through a contractor, our crews were still heavily involved."

For a project this large, many teams within Minnkota were pulled into planning and execution. The right-of-way department worked with landowners in the area of the substation, technical maintenance technicians and electricians fine-tuned panels and connections within the control building, the procurement team focused on getting the materials needed – the list of internal champions was endless.

Many external partners also came together to help support Walle substation. Nodak Electric Cooperative, one of Minnkota's member-owner cooperatives, was heavily involved in the project, which was happening right in the community they serve.

"They gave us a new service out at the new substation in time for our contractors," Laframboise said. "They had to bury underground line across one area, under a road, to another area to get to us. They were really great to work with, and they did it really quickly."

The City of Grand Forks also became a strong partner for Walle substation, knowing that a new transmission substation would support their goals for economic development. City inspectors visiting the site commented on the remarkable quality of the sitework organized by Bushy and his team. With so many developments happening around the city this year, they were pleased to have an "easy" item to check off the list.

It turns out that beauty can take many forms: an easy inspection, power reliability, locally grown partnerships or even a large transmission substation named Walle.

"Everyone says, 'A substation is getting built,' and they get a little jumpy about that, thinking it's going to be this ugly-looking thing," Brorby said. "What I've heard around the community is that everyone was impressed and happy with how the process went."

Minnkota's line crew works together to reroute a 230-kV line around Walle substation.

Photo courtesy of Travis Anderson

A 20-foot hole is bored to hold a new laminated power pole near Walle substation.

Crews use a large crane to lift the structure into the bored hole.

A metal ring ensures the hole does not cave inward during pole placement.

A lineworker uses a plumb bob to make sure the pole base is level.

2024 RATES PROJECTED TO BE STABLE FOR SEVENTH STRAIGHT YEAR

Minnkota remains in strong financial position despite inflation and supply chain challenges

By **Ben Fladhammer** /// Photography **Michael Hoeft**

For the seventh straight year, the Minnkota Power Cooperative Board of Directors has approved a budget with no change to the wholesale electric rates. Stability in Minnkota's rate structure comes at a time when cost pressures are increasing across the cooperative's operations.

"In times of inflation and supply chain challenges, we strive to be both resilient and adaptable in our operations," said Mac McLennan, Minnkota president and CEO. "We're dedicated to working with our members to navigate these cost pressures and find ways to keep rates as stable as possible while still making the necessary investments in our infrastructure to assure reliability and performance."

In 2024, Minnkota's capital budget includes $62.1 million in projects, tools and equipment. Additionally, another $17.4 million in projects that are reimbursable to Minnkota will be completed during the year, including infrastructure relocation and changes associated with the Fargo-Moorhead Flood Diversion Project.

The capital budget is highlighted by Minnkota's ongoing commitment to addressing aging infrastructure and improving service to the members. The cooperative will rebuild or uprate three substations and complete two major sections of transmission line reconstruction. Upgrades to demand response infrastructure and the addition of distribution automation technology to improve power delivery system visibility at 16 substations will continue.

From a power production standpoint, Unit 1 at the Milton R. Young Station will undergo a 42-day scheduled maintenance outage to complete projects and conduct thorough inspections in an effort to keep the unit operating reliably and efficiently. Major outages are scheduled on both Young Station units every three years.

"This is a larger capital budget than we've historically pursued," McLennan said. "There are major projects scheduled at our power plants and across our entire power delivery system. These investments are critical to ensuring we are positioned to provide long-term reliable power to our membership. The added project work in 2024 will require a significant level of focus, hard work and determination from our staff."

The economy in Minnkota's service area remains strong with consistent growth coming from the major population centers and the agricultural industry. The budget anticipates the sale of 4.2 billion kilowatt-hours (kWh) to the Class A members in 2024, resulting in a 1.2% increase in member revenue compared to the previous year's budget.

Minnkota's financial position is also supported by previous years of strong operational performance. The cooperative has a deferred revenue plan in place to manage shortfalls and unanticipated expenses, as well as a Resource Transition Fund to address extraordinary market events and future power supply needs.

Minnkota is rated as an investment-grade utility in 2023. The cooperative currently has an A- rating and stable outlook from Standard and Poor's. Fitch Rating Services rates Minnkota at BBB+ with a stable outlook.

"We're fortunate to be in a solid financial position as we continue to navigate significant industry change, while also managing through this period of inflation and supply chain constraints," McLennan said. "If the current economic conditions continue, we recognize that an adjustment to rates may be needed to ensure Minnkota can continue to deliver reliable and sustainable electricity to the membership."

EERC geologic engineer Ian Feole and BNI Coal geologist/hydrologist Derrick Placek measure and package a core sample near Center, N.D.

‘CRITICAL’ OPPORTUNITY FOR NORTH DAKOTA

Minnkota Power Cooperative joins industry research partners in capitalizing on rare earth elements

By **Kaylee Cusack** /// Photography **John Kary** and **Jennifer Erickson**

From where Ian Feole stood on Sept. 18, he could see a 9-million-pound coal dragline scooping earth just beyond the adjacent field. Looking farther, the familiar 550-foot stacks of Minnkota’s Milton R. Young Station power plant rose on the horizon. Everything in this area south of Center, N.D., was huge, unmissable.

But Feole was digging for something so small, it would be imperceptible to his human eye.

“The goal is to find enough rare earth elements across the state to make a viable industry,” the geologic engineer explained as a crew drilled for a coal-seam core sample 120 feet below the surface.

Feole and his team at the Energy & Environmental Research Center (EERC) in Grand Forks, N.D., are among many North Dakota entities taking a deep dive into the promise of critical minerals and, more specifically, rare earth elements (REEs). Researchers at the EERC are focused on determining the concentration of critical minerals in North Dakota’s lignite coal. At the same time, the University of North Dakota College of Engineering and Mines Research Institute (CEMRI) is developing the technology needed to extract and process REEs for the commercial uses that harness their unique properties.

“Those properties make them truly irreplaceable in an incredible variety of consumer products and applications – things like your smartphones and computer drives, but also military systems and energy systems,” CEMRI Executive Director Dan Laudal said of REEs. “The challenge is that our domestic supply chains right now are heavily reliant on foreign countries to be able to supply our needs. The federal government recognizes this as a risk, so they’ve been aggressively ramping up research and development funding, over the past several years, to help address it.”

A local drilling service prepares for the next core extraction.

(Above) A freshly extracted core sample of the lignite coal seam waits to be logged.

Water is used to make the drilling and sampling process smoother and more efficient.

CEMRI and its research partners at the EERC are both recipients of a portion of this federal funding. Minnkota Power Cooperative is a proud industry sponsor of both endeavors, including a partnership in CEMRI's latest phase of REE research. In April 2023, CEMRI was awarded $8 million through the Bipartisan Infrastructure Law to pursue Front-End Engineering Design (FEED) studies for a commercial REE plant. These plans are based on a process technology CEMRI has been scaling up over many years, evolving into a pilot-scale facility.

CEMRI and West Virginia University are competing to enter the next phase of this research. If selected, CEMRI could be the recipient of $125 million in additional federal funding to build and operate a REE plant in North Dakota, potentially located next to Minnkota's Young Station.

"It's a truly exciting opportunity and I'm thrilled to be a part of it," Laudal said.

In our backyard

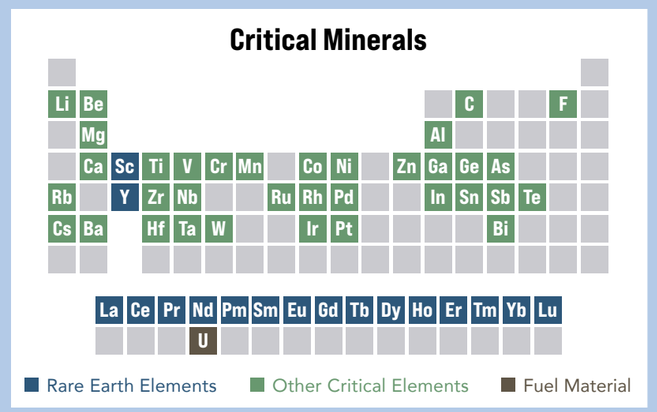
Rare earth elements are a set of 17 metallic elements that can be found near the bottom of the periodic table. Some of these 17 have properties that make them "special" in manufacturing technology – they are luminescent, electrically conductive or magnetic in ways that support digital magic. They're not as rare as the name implies, but ways to feasibly mine and process them are. Through diligent core sampling like that done by Feole in September, EERC has found that North Dakota's coal seams contain extractable quantities of REEs.

John Kay, the project lead of EERC's Williston Basin Carbon Ore, Rare Earth, and Critical Minerals (CORE-CM) initiative, says a REE concentration of more than 300 parts per million (PPM) enters the suitable range for national interest. In the Williston Basin, they are finding many areas in the 600 PPM range, with certain spots exceeding 1,000 PPM. "It looks very promising. The Williston Basin is a good location to think about this kind of extraction," Kay said.

The region has an additional advantage. As the home of several established coal mining and power generation operations (such as Minnkota and its partner BNI Coal), mining permits and infrastructure challenges are already overcome. REEs are often found in the top and bottom few inches of the coal seam that is already being mined for energy. With one additional process in the middle, REEs could be extracted, creating an entirely new industry.

"Other areas and regions aren't as fortunate," Kay said. "Ours is a very flourishing industry that's already going. We just get to jump in and kind of elbow our way in and say, 'Is there room for us?' And of course, everyone says, 'Sure, come on in."

EERC's Feole explains the unique properties of rare earth elements and how they differ from other critical elements.




An up-close look at a core sample that will be analyzed for critical minerals.

How are critical minerals used?

- Batteries, fuel cells and energy
- Ceramics
- Defense applications
- Electronics
- Specialty glass
- Home use
- Industrial equipment
- Magnets for electronics
- Medical industry
- Solar power
- Steel and other metals
- Transportation/ aerospace

Value added to the region

North Dakota isn't alone in its search for critical minerals and REEs. The race is on in many states to find extraction and commercialization methods. There are several reasons, but two rise above: supply chain security and economic opportunity. Right now, upwards of 85% of the world's REEs come from China, and, anecdotally, it's never a good idea to have all of your eggs in one basket.

"We're always going to have to rely on imports," Kay said. "But what this does is, if an outside source decides they economically want to influence something and they start controlling what they're able to provide, the hope is that our domestic capabilities level out those hills and valleys, and that we have something else we can rely on."

By extension, a new domestic industry providing the U.S. economic protection would also foster economic development in communities home to REE extraction and processing. New industries bring in new companies, new companies bring in new workers, and workers bring in their families. The number of stores, restaurants and services expands with population, creating a cycle of community growth.

An emerging REE industry in western North Dakota would also strengthen its hallmark energy production industry. As REEs are extracted, coal is stripped of much of its sodium content, allowing it to burn cleaner in electric generation. The industries would become mutually beneficial, each bolstering the other.

"If this develops here, it means the Young Station has checked the box again on why it's a valuable facility," said Craig Bleth, Minnkota Vice President of Project Development. "It would be good for the future of the plant, as well as all of the employees who have built a life in this industry, in this state."

Although North Dakota's REE leadership will serve the nation as a whole, Minnkota is honored to leverage innovation to support a key cooperative principle closer to home – concern for community.

"What a better thing for the state as a whole? We want to grow, and this is a way to grow. This is a way to keep our local people in the state. It's all good," Kay said. "It helps us maintain what we're doing, and at the same time, make it a little better."

REMAINING RELIABLE

By **Emily Windjue**

Our region is powered by the collaborative efforts of Minnkota Power Cooperative, its member cooperatives and the Northern Municipal Power Agency participants. Engineers, electricians, lineworkers and so many others work to identify where improvements can be made to strengthen reliability of electricity throughout the entire service territory. Every year, Minnkota's crews tackle a series of projects within our member service territories that improve service, increase our load capabilities and keep our critical power infrastructure in tip-top shape.

Minnkota has several reliability programs geared toward the maintenance of substations and power lines, including both the uprating of equipment or complete facility rebuilds. The engineering team at the cooperative also identified a series of one-off projects that are set to help maintain load growth and keep our electric grid reliable.

As we look back on another successful year of power delivery projects, we wanted to highlight one major project in each member cooperative area that will help ensure reliable, affordable power well into the future.

ROSEAU ELECTRIC
Moranville – Williams 69-kV line rebuild

For several years, Minnkota has been working to remove the last remaining miles of low-capacity copper wire from its transmission system. This past summer a 20-mile stretch of line between the Moranville and Williams substations was rebuilt and replaced. The crews replaced the old wire with new, high-efficiency aluminum wire. Additionally, the original wooden poles were replaced with ductile iron structures. Minnkota rebuilds large stretches of line every year as part of a continued line maintenance and reliability program.

CASS COUNTY ELECTRIC
Frontier ripple injector

For the members who participate in the nationally recognized off-peak heating programs, ripple injectors are needed and strategically placed throughout the Minnkota system to send the signal when load control is switched on. Minnkota has been working for years to update its legacy ripple injector equipment, but with the rapid growth in the Cass County Electric service area, a new ripple injector was added to the Frontier substation in Fargo to ensure a strong load control signal is maintained in the region.

CLEARWATER-POLK ELECTRIC
Winger substation expansion

Minnkota has been working on a series of projects referred to as the Northwest Minnesota Upgrades, which will help increase the reliability throughout the entire northwestern region of Minnesota. Part of these upgrade plans includes expanding the Winger substation that feeds Clearwater-Polk Electric and other Minnesota cooperatives. Some of the upgrades that took place at the Winger substation included the expansion of the Minnkota 230-kilovolt (kV) transmission substation and the addition of a new transformer.

NODAK ELECTRIC
New Walle substation build

The Walle transmission substation was built and energized in response to the steadily increasing load across the entire Grand Forks region and projections for future growth. Walle will be a major asset to Minnkota and its members and was built with continued reliability in mind. Read more about the Walle substation on page 6.

RED LAKE ELECTRIC
Owen substation expansion

The Owen substation is a unique substation in Minnkota's system because it not only feeds Minnkota's member-owner Red Lake Electric, but it also feeds generation to the Northern Municipal Power Agency (NMPA) municipal in Thief River Falls. Minnkota engineers identified significant load growth in the region and determined the Owen substation required an expansion. The substation was split to include two transformers that feed the two entities separately, allowing more capacity for the entire region.

WILD RICE ELECTRIC
Badger substation build

Wild Rice Electric was approached by a local grain elevator about expanding its operation near Erskine, Minn. The member co-op and Minnkota made plans to build a new substation to serve the needs of this load and ensure electricity stability throughout the surrounding area. Most construction projects take around three years to plan, build and close out, but with the immediate predicted load growth on Wild Rice's system, Minnkota's Power Delivery team worked hard to plan and build this substation on an accelerated timeline.

BELTRAMI ELECTRIC
Distribution automation systems

One way Minnkota's Power Delivery team is making the Beltrami service territory more reliable is through the addition of distribution automation systems at Battle, Helga, Leech Lake and Northern substations. Distribution automation systems are comprised of technology that provides Minnkota's operators with more visibility across the power delivery system. A better understanding of system conditions helps operators respond to outages faster and allows them to open switches and reroute power more efficiently.

RED RIVER VALLEY CO-OP POWER
Stockwood substation uprate

The Stockwood substation in the Red River Valley Co-op Power service territory received an upgrade of its transformer capacity in 2023. To make the transformer at Stockwood more efficient, and therefore have increased capacity, fans were added to help aid the natural convection that occurs inside the transformer. Keeping the equipment cooler is key in allowing more load to flow through the substation.

CAVALIER RURAL ELECTRIC
Hampden substation rebuild

Cavalier's service territory has experienced significant load growth during the fall season related to the region's agricultural industry. Minnkota's engineers identified the increased load on the aging Hampden substation and recommended a complete rebuild of the substation that has been in service for more than 50 years. The finished project will help the region support the increased load well into the future.

NORTH STAR ELECTRIC
New Roosevelt substation build

Minnkota works closely with its member-owners to identify the right time to add substations to the grid. With the continued growth in North Star Electric's service territory near Lake of the Woods, a new distribution substation was needed to provide reliability to the region. Adding the substation helps relieve congestion on distribution lines and allows more power to flow to designated areas in North Star's territory.

PKM ELECTRIC
Robbin and St. Vincent transformer replacement

Minnkota replaced the aging transformers at the Robbin and St. Vincent substations in the PKM service territory. A unique part of this maintenance project was that the new transformers replaced six mini transformers that were common during the original construction of both substations. The new transformers allow the substations to operate more efficiently and will operate for decades to come.

Dan Inman, Minnkota Vice President and Chief Information Security Officer, warned the 90 GridEx players at Minnkota headquarters that they should be prepared to feel some stress during the exercise.

THE BEST STRESS TEST

Minnkota and its members prepare for the worst during GridEx

By **Ben Fladhammer** /// Photography **Michael Hoeft**

Every two years, Minnkota Power Cooperative invites physical and digital mayhem into its offices. Cellphones are buzzing, emails are piling up and emergency response plans are put to the ultimate stress test during GridEx – North America's largest grid security exercise.

On Nov. 14-15, about 90 employees from Minnkota and its member cooperatives were scrambling to respond to a barrage of simulated attacks on the electric grid and the personnel responsible for keeping it safe.

"It's going to feel like the world is falling apart," warned Dan Inman, Minnkota Vice President and Chief Information Security Officer, at the beginning of the exercise. "That's by design. We want to test our processes, plans and procedures in a worst-case scenario to find out what we're doing well and where there are areas for us to improve."

It didn't take long for the group to face adversity.

Soon, a letter arrived with a suspicious substance, ransomware attacks disabled IT networks and gunfire began targeting field employees and critical energy infrastructure. Power outages spread almost as quickly as social media threats and misinformation.

With so much happening all at once across the entire organization, the only way forward is by working as team.

"In GridEx, it's neat to see how all of our different departments and business units communicate, especially in a crisis situation," said Theresa Allard, Minnkota's compliance manager and a member of the GridEx planning team. "People become accustomed to their own world and what they're good at, but in reality, it's all of these moving parts that have to work together to get things accomplished."

While successes were recognized, identifying shortcomings and process failures in a judgment-free environment is a crucial aspect of going through GridEx. As the scenarios continue to build with new information, it's difficult for even the most prepared entity to navigate the situation perfectly.

"Of course, when you start throwing everything at them at once, people tend to get a little frazzled, but that's part of the game as well," Allard said. "We're trying to get people to experience that feeling of being overwhelmed and slightly panicked."

Travis Jacobson, Minnkota Physical Security Administrator, helps facilitate discussion during one of the sessions.

At the end of each of the four sections of the exercise, the players gathered to discuss the strengths and opportunities for improvement discovered.

Red River Valley Co-op Power's Rich Whitcomb and Jared Person participated in GridEx for the first time in 2023.

Co-op camaraderie

Minnkota's plans for GridEx started in January and were built throughout the year. The exercise is designed at a high-level by the North American Electric Reliability Corporation (NERC) through its Electricity Information Sharing and Analysis Center (E-ISAC) for the 250 participating organizations. Minnkota personnel customize information to help test specific plans, processes and procedures.

It was the third GridEx for Minnkota employees as full participants in the exercise, but the first time with the inclusion of representatives from the Minnkota member cooperatives. About 30 member cooperative employees made their GridEx debut this year.

"We really didn't know what to expect at the beginning," said Rich Whitcomb, CEO of Red River Valley Co-op Power. "What was interesting about the whole exercise was that each individual injection has actually happened somewhere before in real life.

Then, as the events compounded, it really allowed us to analyze our current preparedness plans and find out where we had good sections to work off of and where we were coming up short."

Fellow first-time player Jeremy Seibel, Beltrami Electric Cooperative's IT manager, felt the stress of the scenario as his digital infrastructure was bombarded with different attacks and threats. Collaboration with his co-op colleagues helped provide real-life context to improve his existing plans.

"It's always great to hear another person's point of view or thought process as well as ideas you might not have thought of on your own," Seibel said. "Efforts that are important to us might not be as important to a different department or vice versa, so being able to blend those ideas together makes our cooperative efforts and response stronger overall."

In addition to the member cooperatives, Minnkota personnel also coordinated with the Midcontinent Independent System Operator (MISO) during the exercise and had an observer onsite from the North Dakota State and Local Intelligence Center.

"Every year that we participate, we're taking that next step to try and make it more realistic," said Brandon Trontvet, Minnkota System Operations and Energy Management System Manager and GridEx planner. "One major thing this year was bringing in the member cooperatives. It was wonderful to have them here and really strengthen those relationships. It adds value when we're able to learn from each other."

First-time player Jeremy Seibel, Beltrami Electric's IT manager, discusses lessons learned following simulated digital attacks on his systems.

Continuous improvement

Throughout the exercise, players documented their actions, observed strengths and concerns. The exercise planners maintained a 26-foot-long timeline with brightly colored sticky notes, each of which captured challenges and responses from the players. The timeline was reviewed during hot washes, a period of time when all players gather to discuss the current state of the game.

While most of Minnkota's version of GridEx occurred in near-real time, the final section of the exercise pushed the timeline ahead a week and required players to access the damage and long-term restoration schedules. Being the scenario impacts the entire North American grid, existing supply chain challenges and material shortages force players to think creatively about alternatives for the next several months – if not years.

Early in 2024, an after action report will be completed documenting how Minnkota and its members take the lessons learned from this iteration of GridEx and apply them to real life.

"We're still digesting the takeaways," Allard said. "Our initial reaction is that we're pretty prepared for a wide variety of scenarios. It's really impressive to see how everybody was able to react and generally do the right thing."

Brandon Trontvet, a GridEx planner, updates the timeline of events during exercise, which was referenced when players gathered for review sessions.

10 REASONS TO CELEBRATE 2023

By **Emily Windjue** /// Photography **Michael Hoeft**

As we near the end of 2023, it's a fitting time to look back and celebrate another successful year at Minnkota. The cooperative's employees, members and communities all played an important role in helping overcome challenges and seize new opportunities. Check out 10 of our favorite moments and accomplishments from the past year.

Minnkota, members sign wholesale power contracts

Minnkota and its 11 member cooperatives strengthened their bonds this spring through the completion of new wholesale power contracts. The new contracts extend through 2060 and are set to automatically renew in two-year increments starting in 2026. Minnkota is extremely grateful for its membership and the strong relationships built through the decades.

Significant power delivery projects completed

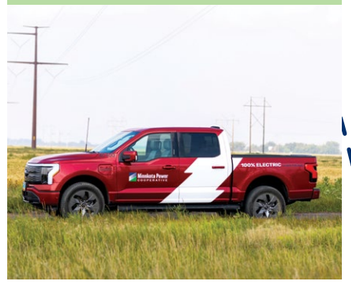
Every year, Minnkota's dedicated power delivery team works to enhance reliability within its entire service territory. Transmission line and substation rebuild projects, infrastructure uprates and the continued implementation of communication technologies all help contribute to a resilient and dependable grid.

Employees reach safety milestone

For the first time in the cooperative's history, Minnkota employees reached 2 million hours worked without a lost-time injury. Uniquely, the Grand Forks and Milton R. Young Station locations independently reached the 1-million-hour mark within two weeks of each other. The milestone is a major accomplishment for all employees and signifies the importance placed on safety at Minnkota.

All-electric Ford Lightning added to the fleet

Minnkota's red-hot all-electric F-150 pickup has been a major highlight of the year! From stealing the show at career fairs to cruising down parade routes, this powerhouse pickup has been showcasing electrification opportunities to people across the region. With an estimated 320 miles of range, this smooth-driving truck is also a favorite of Minnkota's employees and can often be seen working hard at job sites.



Energy market navigation

The landscape of the Midcontinent Independent System Operator (MISO) market has been rapidly changing over the past few years. Minnkota's energy marketing team helped the cooperative transition to a new market structure in mid-2023, while also navigating volatile conditions throughout the year. Strategic engagement in the MISO market is key to ensuring reliable and affordable electricity for the membership.

New Project Tundra partnerships formed

In June, Minnkota's carbon capture initiative, Project Tundra, moved into its final stage of development through new partnerships. TC Energy will lead commercialization activities, Mitsubishi Heavy Industries is the lead technology provider and Kiewit will lead the construction efforts. Project Tundra has seen tremendous support from landowners, community members and other key stakeholders throughout the year.

Employee onboarding revamped

With a changing workforce, employee engagement is a top priority at Minnkota. This year, the cooperative revamped its entire employee onboarding process into a new two-day event called Watts Up at Minnkota. New employees from the Grand Forks headquarters and the Milton R. Young Station received a crash course in the history of Minnkota, learned about its power delivery and power supply operations, and received tours of its Control Center, operation shops and a local substation. This biannual event has also helped new employees foster relationships across all departments at Minnkota.

Employees participate in NATF Review, GridEx

In an effort to foster a culture of continuous improvement, Minnkota hosted its first-ever North American Transmission Forum (NATF) Peer Review this past summer. Fifty peer reviewers from across North America's electrical industry spent two days learning about the people, processes and procedures that drive Minnkota. Employees received both positive feedback and opportunities for improvement, which will be explored in the coming year. Minnkota employees also participated in GridEx – North America's largest grid security exercise to test emergency procedures and crisis plans.

Concern for community

Concern for community is one of the seven cooperative principles that Minnkota adheres to year after year. In 2023, Minnkota showed its support to many nonprofits and charitable organizations, including hosting a Feed My Starving Children mobile food packing event at its Grand Forks headquarters, matching contributions through Giving Hearts Day and CoBank's Sharing Success Program and providing donations through our employee-funded giving program Minnkota Cares.

Young Station employees to the rescue

When a contractor working at the Milton R. Young Station lost his footing and severely injured his knee while on top of some scaffolding, Minnkota's rescue team jumped into action. The team was able to get the contractor down safely and administer First Aid until an ambulance arrived. The team trains every month and consists of personnel from engineering, human resources, safety, operations and maintenance.

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POWERFUL ENGINES OF ECONOMIC DEVELOPMENT

By **Ben Fladhammer**

A new report finds that electric cooperatives have a wide-ranging economic impact in the United States, supporting nearly 623,000 jobs with $51 billion in pay and benefits each year while contributing hundreds of billions of dollars to the economy over a five-year period.

According to this analysis, co-ops' activity contributed $554 billion to U.S. gross domestic product between 2018 and 2022 for an average of $111 billion per year. Co-ops also generated $135 billion in federal, state and local tax revenue over this period.

In the states Minnkota serves – Minnesota and North Dakota – the impacts are in the tens of billions of dollars. In Minnesota, electric cooperatives were responsible for adding $19.6 billion to the state's economy from 2018 to 2022 and supported an average of 20,800 jobs. Over the same five-year period, North Dakota electric cooperatives injected approximately $10.8 billion into the state's economy and supported an average of 11,062 jobs.

The report, "Economic Powerhouses: The Economic Impacts of America's Electric Cooperatives," was commissioned by the National Rural Electric Cooperative Association (NRECA) and the National Rural Utilities Cooperative Finance Corporation (CFC).