

Minnkota Messenger

January-February 2018

Big plans on the hill

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Big plans on the hill



Pembina Gorge Foundation takes over Frost Fire

The honeymoon didn't last long for the Pembina Gorge Foundation after it purchased the Frost Fire Ski and Snowboard Area last summer.

First, in September it learned its triple chairlift would not be operational. Then it lost a lot of customers because of a cold 2017-18 winter and shortened ski runs as

a result of the absence of a chairlift. Yet you would never tell by listening to the leaders who hope to resurrect the hill as a year-round destination spot in northeast North Dakota.

"We have a pretty good strategy in place," said Kristi Wilfahrt, the interim executive director of Frost Fire. "The past

year we've been working to try to understand the needs of the facility and the equipment and putting people in place who are the right fit. We are working with some lead donors

and figuring out the puzzle and how it all fits together."

Frost Fire, which receives its electricity from Cavalier Rural Electric Cooperative (CREC), is open Saturdays and Sundays. Wilfahrt said the Pembina Gorge Foundation has raised about \$1.7 million for a new quad chairlift and other equipment. She said the goal is to raise \$5.5 million to sustain the operation moving forward.

The foundation purchased Frost Fire from Judith Johnson for nearly \$1.1 million. Richard and Judith Johnson ran the resort for more than 40 years. Richard died in 2016.

"The weather has been really tough on us," said Dave Szklarski, operations manager. "When the foundation first purchased it, they were under the understanding that the chairlift was fully operational and maybe only needed some maintenance upgrades. They figured they were going to have to spend like \$80,000 to get it fixed up."

There was an insurance claim because of wind damage.

"When they took the haul rope off three more towers tipped," Szklarski said. "At that point we had an engineer come and look at all aspects. He decided it was not repairable."

As a result, Frost Fire is in the process of acquiring a new Skytrac quad chairlift for \$1.2 million. Work on the project will begin this spring.

Frost Fire is looking forward to having its operation at full strength after a 2017-18 season in which only tubing and short ski and snowboard runs of about 600 to 700 feet



Dave Szklarski, operations manager, gives a skiing lesson to a woman from Brazil. The Brazilian woman is studying in Winnipeg, Manitoba.

were available. A magic carpet conveyor system brings tubers, snow boarders and skiers back to the top of the hill.

"As long as we get that lift going, I think the crowds are going to come back," Szklar-ski said. "Certainly a lot of people are very interested in it. They've been driving farther, they've been going to Detroit Mountain and Holiday Mountain in Canada. A lot of people from Canada have been calling."

Frost Fire is seven miles from Walhalla, N.D., in a tranquil area called the Pembina Gorge. The gorge extends from the Canadian border west of Walhalla and encompasses one of the largest uninterrupted blocks of woodlands in North Dakota of approximately 12,500 acres and the longest segment of unaltered river valley in the state.

In addition to snowboarding, skiing and tubing in the winter, Frost Fire also has a summer theater with live shows. Events such as a Valentine's Day dinner and birthday parties are held in the lodge, and church and school groups come to ski, tube and snow-board from across the region.

"It's a nice place to come and hang out," said Connor Lindenberg, hospitality manager. "It really is something at night with the fire going, lights dimmed and candles lit."

Year-round destination

What Frost Fire officials are hoping to do is turn the area into a year-round recreation spot. A mountain bike terrain park will operate beginning this summer. Mountain bikers will go down the hill and return to the top on the chairlift with their bike. In addition, the group plans to start a program that brings in speakers and instructors to share and teach folk art indigenous to the area.

"We've had so many cool ideas, from raising bees to building a smokehouse," Lindenberg said.

The log ski lodge is homey with leather chairs, a fireplace and some antique art pieces. Quick meals such as soup and sandwich are available at the restaurant and plans call for a more upscale restaurant/bar in the future.

The North Dakota Parks and Recreation Department, which has an office in the basement of the Frost Fire lodge, is a strong partner of the Pembina Gorge Foundation. Countless others have contributed to the

project, including the board of directors.

"The mission of the foundation is to preserve what we have, preserve the gorge, but also enhance that experience for people," Wilfahrt said. "If we lost Frost Fire we'd miss the most tremendous opportunity ever to capitalize on the natural aesthetic there."

Chuck Riesen, CREC general manager, said he's excited about Frost Fire's plans. CREC helped the Pembina Gorge Foundation receive a \$2,000 grant from the Rural Development Finance Corporation to help pay for the chairlift. The cooperative is also helping the foundation acquire a low-interest loan from the Rural Development Finance Corporation.

"They really have an ambitious plan out there," Riesen said. "It's a well-thought-out plan." □



This family enjoyed their day tubing at Frost Fire.



Banner year for Young Station

The 47th year of operation at the Milton R. Young Station was one of the best in plant history.

The two-unit coal-based facility reached milestones in the areas of safety, reliability and environmental performance. When asked about the formula for the successful year, Gerry Pfau, senior manager of power production, said it came down to communication and focus from the 177 employees working on-site near Center, N.D.

“It takes a lot of coordination and teamwork to keep the units online and operating reliably,” Pfau said. “We had great communication throughout the year with our entire staff, which helped us operate safely and efficiently.”

From a production perspective, the Young Station generated 5,330,955 net megawatt-hours (MWh) during the year – the second-highest total ever behind 2008’s 5,412,978 MWh. Cumulatively, the unit’s achieved an availability rating above 95 percent, which is the best since both units have been in operation. Young 1 came online in 1970, while Young 2 began operation in 1977.

“With no major maintenance outages scheduled during 2017, we recognized the opportunity to have a very productive year,” Pfau said. “Fortunately, we had very low forced outage rates, which translated into low power costs for our members.”

The challenge with no significant project work during the year is complacency when it comes to safety, Pfau said. But at year-end, plant employees had gone 536 days without experiencing a lost-time incident. Other statistics, including near

misses, on-the-job injuries and OSHA recordable injuries, are all better than historical averages.

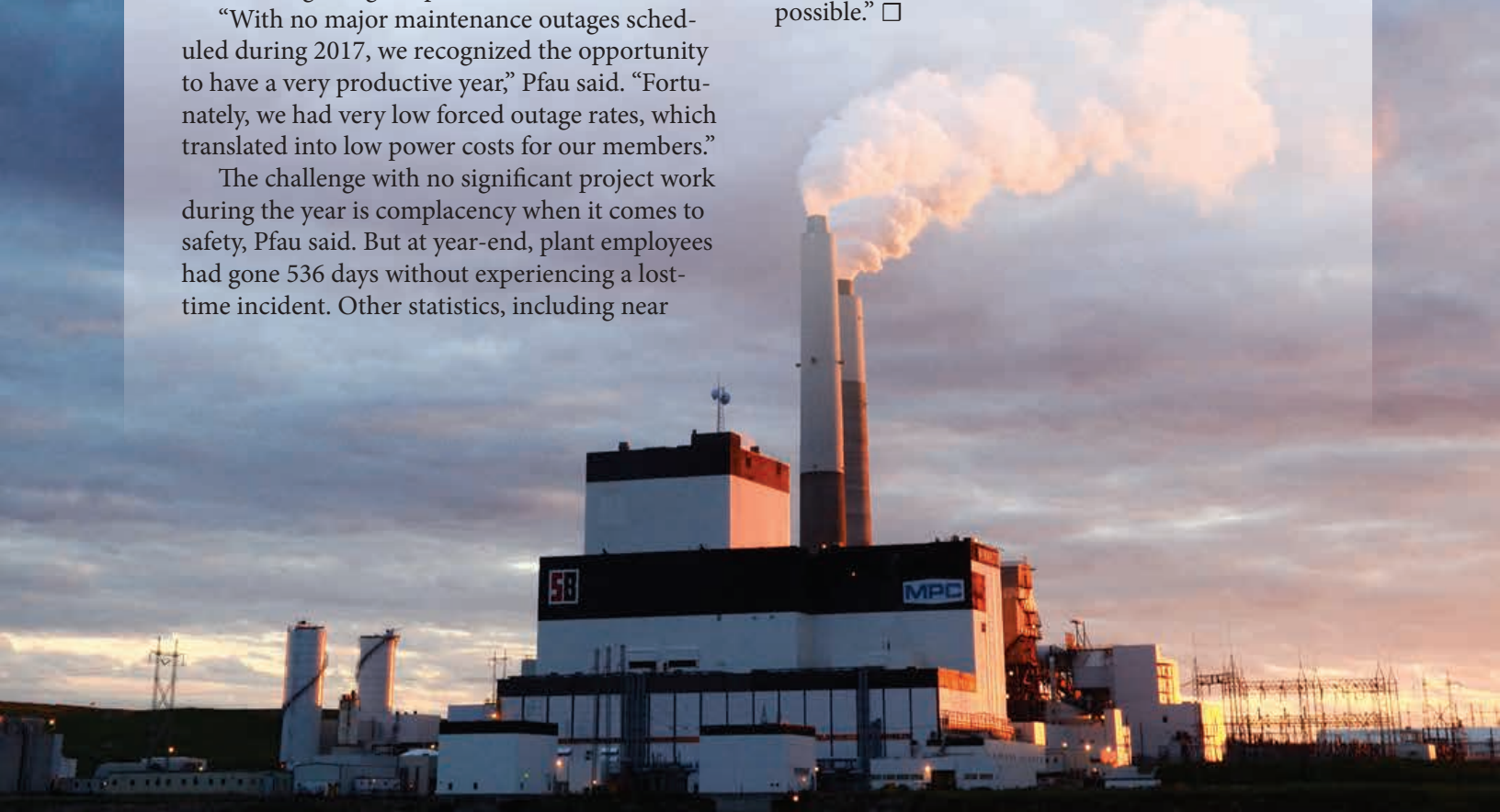
Plant environmental performance was also strong. Both units met 100 percent of their air quality compliance obligations during the year.

Rx initiative

Young Station staff has been working on continuous improvement in the areas of safety, environmental compliance and cost control for more than five years through what is known as Reliability Excellence or Rx. The initiative has helped define, develop and apply processes and procedures that aid in employee knowledge transfer.

An objective assessment of the plant’s operating and maintenance practices was conducted in January 2018. It rated the plant as proactive in almost all areas.

“We’re pleased with the progress made through the Rx initiative,” Pfau said. “But we think there are still areas where we can improve at operating and maintaining the plant so it costs less, reduces forced outages and makes us as competitive as possible.” □



Project Tundra receives boost with support from ND delegation



Sen. Heidi Heitkamp



Rep. Kevin Cramer



Sen. John Hoeven

Grant funding, tax incentives to benefit CO₂ capture

The pursuit of carbon capture technology in North Dakota received a big boost in February thanks in large part to the work of the state's congressional delegation.

Sen. Heidi Heitkamp (D-ND) co-sponsored legislation, which was signed into law Feb. 9, that expands tax credits for CO₂ capture and utilization. In the House, Rep. Kevin Cramer led efforts to co-sponsor CO₂ tax credit reform legislation and was vital in getting support from House leadership.

A week later, the U.S. Department of Energy awarded \$6 million in grant funding for Project Tundra research, which Minnkota is pursuing with Allele Clean Energy, BNI Energy and the Energy and Environmental Research Center (EERC) at the University of North Dakota. Sen. John Hoeven (R-ND) was instrumental in prioritizing and enabling the funding.

"Advancing CO₂ capture technology represents an enormous opportunity for our state and nation," said Mac McLennan, Minnkota president & CEO. "The state of North Dakota has once again proven that it is committed to leading the way in developing energy technologies that help keep coal as an important part of our energy mix."

Minnkota is partnering in Project Tundra, which proposes to retrofit Unit 2 at the Milton R. Young Station with a system that would capture a significant portion of its CO₂ emissions. The CO₂ would then be utilized for enhanced oil recovery (EOR) or safe, permanent geologic storage. Minnkota operates the coal-based energy facility near Center, N.D.

The project is currently in the early feasibility stages. The DOE funding is critical in starting the initial engineering, testing, design work and economic modeling.

"This funding is an investment in bringing these breakthrough technologies one

step closer to application in North Dakota," McLennan said.

If the project moves forward, it will benefit from expansion of tax incentives to help develop carbon capture technology. Known as the FUTURE Act, the legislation expands the 45Q tax credit that incentivizes projects that capture and use CO₂ for EOR, storage or conversion into useable products.

The bipartisan bill, introduced by Sen. Heitkamp, increases the credit to \$35 per ton for CO₂ that is captured and used for EOR and \$50 per ton that is captured and stored in a geologic formation deep underground. In addition to extending 45Q, the bill strengthens support for carbon capture technologies by increasing the "commence construction" window for carbon capture projects from five to seven years.

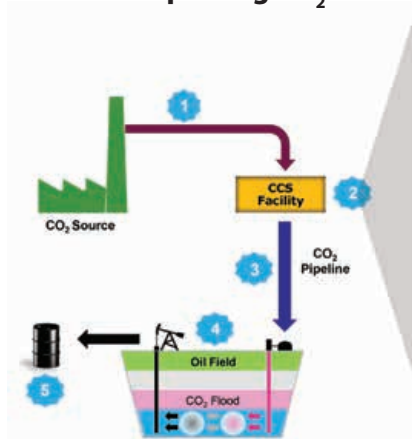
"The leadership of North Dakota's delegation on energy issues has been nothing short of remarkable," McLennan said. "We look forward to working together to support an all-of-the-above energy strategy for our country that is driven by innovative new technologies." □

"The leadership of North Dakota's delegation on energy issues has been nothing short of remarkable."

— MAC MCLENNAN
President & CEO
Minnkota Power
Cooperative



Capturing CO₂ for Enhanced Oil Recovery



1. Acquire flue gas from the facility
2. Capture and condition carbon for transport via pipeline
3. Transport CO₂ to nearby oil fields
4. Inject CO₂ into EOR-favorable oil fields
5. Increase oil production at qualifying wells

Polar vortex 2.0

Minnkota manages frigid winter temps

Brutally cold weather and near-record demand for electricity ushered in the new year in Minnkota Power Cooperative's service area.

As temperatures plunged well below zero, Minnkota's baseload facilities responded to the call and operated at maximum output when cooperative members needed the energy most. Minnkota also made purchases from the MISO wholesale energy market and strategically utilized its demand response program to shape consumer energy consumption during peak periods.

"Our baseload plants consistently perform well during these extreme weather events," said Todd Sailer, Minnkota senior manager of power supply and resource planning. "We have a dependable fuel supply in coal and dedicated employees who work together to provide a reliable and affordable resource to meet our members' load requirements."

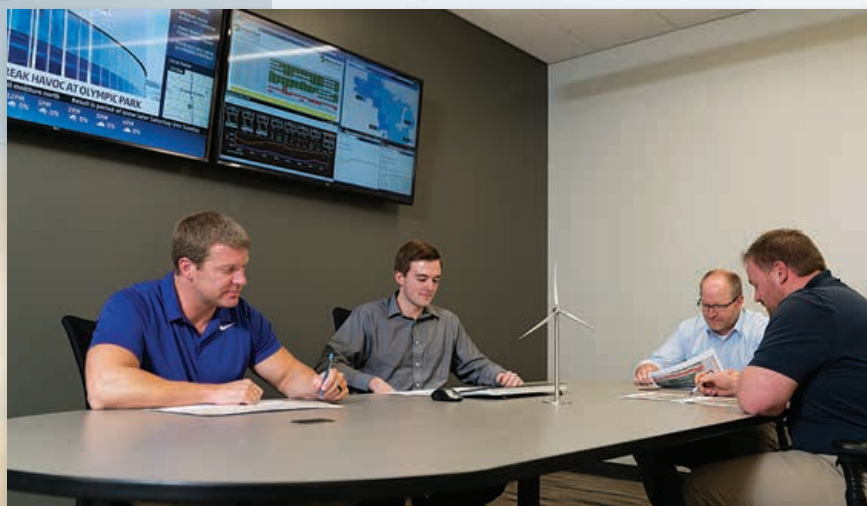
The Minnkota-operated Milton R. Young Station, a two-unit coal-based facility located near Center, N.D., served as the primary generation resource for the Minnkota members during the extreme cold in late December and early January. The Young Station is mine-mouth generation plant, which means the plant and coal mine are located in close proximity to eliminate transportation costs and issues.

Other generation facilities in the MISO market were impacted by the extreme cold weather. Natural gas prices spiked due to pipeline issues and increased demand for heating needs. There were extended periods when the region's wind resources were idle due to low wind speeds and turbine shut-downs caused by frigid temperatures.

"When you get temperatures that are 20 to 25 below zero, we'll have situations where the wind turbines will actually shut down to protect the mechanical equipment," Sailer said.

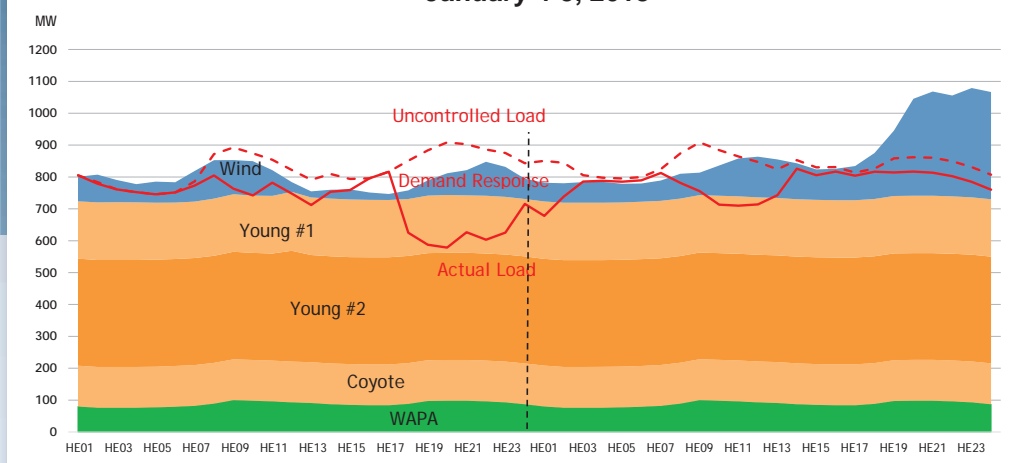
Managing the market

As the northern-most serving electric utility in the contiguous United States, Minnkota is unique in that demand for energy on its system peaks during the winter months. Energy sales to Class A Minnkota members were the second-highest ever for December and third-highest ever in January. The Polar Vortex during the winter of 2013-2014 still holds the record for most



(Left to right) Brock Vaagene, energy marketing supervisor, and energy marketers Jakoby Ripplinger, Dan Trebil and Tom Dostal review system data following the extreme cold temperatures in January.

Minnkota Load and Generation January 4-5, 2018



This chart shows Minnkota's system load and available generation on Jan. 4-5. The green represents hydro resources, the shades of orange represent coal-based resources and the blue represents wind. Minnkota is able to manage the variability of its resources through its demand response system, which is able to control up to 350 megawatts in the winter.

sales and highest demand for energy in the system.

"There were some similarities between what we saw from a market perspective this winter and during the Polar Vortex," Sailer said. "Our energy marketers go to great lengths to project the performance of our resources and understand how the market may be impacted by issues or events outside our system."

In 2017, pricing for surplus power in Minnkota's region of the MISO market averaged around \$20 per megawatt-hour (MWh). With natural gas price spikes and wind limitations, market prices routinely rose above \$200 per MWh during this winter's cold spell. Purchasing energy during this time frame would potentially cost cooperative members millions of dollars. Instead, Minnkota utilized demand response to temporarily controls loads, including electric heating, water heating and large commercial accounts, in an effort to limit purchases during high-cost periods.

"Using our demand response system, we're able to limit our exposure to the

volatility of the market," Sailer said. "That ultimately saves co-op members money."

National conversation

The resiliency of the grid during extreme weather events has been a major topic of discussion following the U.S. Department of Energy's Notice of Proposed Rulemaking (NOPR) directing Federal Energy Regulatory Commission (FERC) to "accurately price generation resources necessary to maintain reliability and resiliency." The NOPR specifically cited the Polar Vortex as an example of the strain that can be put on the grid during extreme weather events.

FERC ultimately rejected the proposal, but it prompted a national conversation on the best approaches to ensuring the stability and security of the nation's grid.

"The dialogue surrounding grid resiliency shouldn't be a one-time event," Sailer said. "The grid is evolving at a rapid rate. As an industry, we need to monitor the impacts of these changes and make sure we are well-positioned to keep the lights on no matter what the weather brings." □



Polaris, Roseau Electric team up

Snowmobile, ATV manufacturer takes advantage of PowerSavers rebates

Polaris is investing in Roseau and Roseau Electric Cooperative is investing in Polaris.

This partnership has brought literal brighter days to the Snowmobile and All-Terrain Vehicle manufacturer at its production welding department in Roseau.

Polaris has installed new flat panel LED lights in most of its manufacturing office areas and new LED fixtures in its production welding department, making for a brighter, cleaner operation. The company says rebates offered through Roseau Electric and the PowerSavers program have helped to make energy efficiency and process updates more affordable.

In January, Roseau Electric presented Polaris with a rebate check for \$41,541 for both the new LEDs and a new 2,300-ton plastic injection molding machine that have been installed. The PowerSavers' rebate program has become a crucial part of Polaris' project planning process, according to Kurt Bickler.

Polaris Facilities Manager Bickler said there are times the decision whether to do upgrades is dependent on the rebates available to the company.


"On the LED lighting project, it will be the make or break whether the project gets approval," he said. "With the technology today, it just makes sense to move forward to make these energy savings changes."

The lighting upgrades are part of a more than \$2.5 million renovation of the production welding department that includes adjacent offices. Bickler said the right balance is needed when developing a lighting project.

"Our goal for the lighting project was to maintain or improve the amount of overhead lighting while incorporating kilowatt-hour savings," he said.

Since 2010, Polaris has had 2.2 million in kWh savings through efficiency projects and received more than \$186,000 in rebates thus far through PowerSavers.

The same day Roseau Electric provided its rebate, Minnesota Energy Resources provided Polaris with an additional rebate for the Clean Air America air filtration system. Polaris installed the clean air units inside the production welding department in 2017.



A forklift drives down a well-lit aisle at Polaris.



Employees of Polaris, Roseau Electric and Minnesota Energy Resources show the energy efficiency rebate checks Polaris recently received from Roseau Electric and Minnesota Energy Resources. From left, Dave Dirks, Polaris; Kurt Bickler, Polaris; Ryan Severson, Roseau Electric; Tracey Stoll, Roseau Electric; Nathan Hanson, Polaris; Pam Sarvela, Minnesota Energy Resources; Ron Rockis, Polaris; Ryan Sprabary, Minnesota Energy Resources; Paul Bertucci, Minnesota Energy Resources; and Deland Broten, Polaris.

Polaris is excited about the renovations it is doing to its original 1963 building. The changes have made for a cleaner, safer work area. In the welding department alone, in addition to the lighting, Polaris saw-cut and replaced all of its concrete flooring, changed out the plumbing and added new fixtures, replaced the electrical distribution equipment, and installed a new 3,000-amp electrical service.

Some lighting projects and office remodeling remain, as Polaris continues to strive for opportunities to incorporate savings and efficiency into all of its renovation projects.

Other recent additions are low-profile Automated Guided Carts (AGCs). The AGCs glide silently throughout the plant over a magnetic strip on the concrete floor and have been designed to deliver parts to several departments in manufacturing. If someone were to walk in front of it, the AGC stops and waits. To summon the AGC, you just press a button in a work center. The AGC is then connected to metal carts filled with parts to make a powered train that delivers the parts to where they were requested.

Another productivity improvement is the new injection molding press. The machine is 40 to 50 percent more efficient than the unit it replaced. The plastic presses make fenders, doors, hoods and other items for the snowmobiles and ATVs.

Ryan Severson, Roseau Electric assistant manager, said the rebates help drive the re-

gion's economy while at the same time making the company competitive on a world stage.

"We work hand and hand with Polaris as much as we can," Severson said.

The lighting project is reminiscent of a 2007-08 project in which Polaris changed out metal halides with fluorescents.

"As the technology evolves, now we're replacing fluorescents to LEDs," Bickler said. "They get to be sizable, large projects."

Minnkota supports the wise use of electricity by administering the PowerSavers program on behalf of Roseau Electric Cooperative and the participating electric cooperatives and municipals. Through the program, consumers have access to a wide array of energy efficiency and conservation programs. Since 2010, PowerSavers utilities have helped consumers save more than 200 million kWh.

Tracey Stoll, Roseau Electric general manager, said he's pleased PowerSavers was able to help a key customer in the renovation project.

"This is a big local presence for us, obviously," he said. "Polaris is 25 to 30 percent of our load. They are our biggest customer by far. It's nice to see the changes."

Many things have changed since the original building opened in 1963. It since has undergone 34 additions. Yes, the company, which also manufactures neighborhood electric vehicles, has outgrown itself many times. □



Kurt Bickler of Polaris talks with Tracey Stoll, Roseau Electric general manager, and Pam Sarvela of Minnesota Energy Resources.



Instructor Dean Hunter explains National Electric Code changes to students at one of two Grand Forks courses in February.



30th year the biggest yet for contractor training

A record number of electricians filled event centers and conference rooms in eastern North Dakota and northwest Minnesota early in 2018 to learn the latest on electrical code rules and requirements.

The 30th annual Minnkota-sponsored continuing education courses were attended by 739 electricians, each of whom earned eight code credits that are necessary for license renewal in Minnesota, North Dakota and South Dakota. The courses were held in Grand Forks (2), Fargo (2), Bemidji and Fergus Falls.

“Minnkota originally began offering these courses due to the limited opportunities for electricians in our service area,” said Ben Fladhammer, Minnkota external communications and marketing supervisor. “Having well-trained contractors is an essential, yet sometimes overlooked, part of a community – especially in rural areas.”

Attendance has increased every year for the last five years, and is up 24 percent from 2014. Keeping the attendance fee at \$75 requires help from other sponsors, including

Northern Municipal Power Agency, Otter Tail Power Company and Western Area Power Administration.

Dean Hunter of Midwestern Electrical Seminars has provided instruction and materials at each course for the last nine years. As demand has grown, Hunter has worked with Minnkota to offer additional courses to keep class sizes smaller. Hunter says that helps keep students engaged throughout the eight-hour class.

“I think our classes have been really well received,” Hunter said. “We try to keep it entertaining, they get a good meal and, at the end of the day, they hopefully learn something too.”

Indications are that next year could be even bigger.

“It just continues to grow because Minnkota is looking out for the contractors and giving them a pretty good deal,” Hunter said. □



Students listen during an eight-hour class in Grand Forks. About 120 students attended each of the six courses offered by Minnkota.

PKM's new CEO is a familiar face

The new CEO at PKM Electric Cooperative is a familiar face to many longtime members.

Mike Schmidt was selected by the board of directors in January to take the reins at the Warren, Minn.-based cooperative. A 34-year employee at PKM, Schmidt previously served as assistant manager, where he focused on finance and business operations. He replaces Charles Riesen, who retired at the end of January after 45 years of service. Riesen will continue to manage Cavalier Rural Electric Cooperative in Langdon, N.D.

Schmidt is no stranger to the area. He grew up in the center of PKM's service territory on a potato and grain farm between Karlstad and Stephen, Minn. He moved back to the area in 1982 after graduating from Concordia College, Moorhead, Minn., where he majored in accounting and business administration. He is a CFP (Certified Financial Planner) and a graduate of the NRECA Management Internship Program at the University of Wisconsin, Madison. For the last decade, Schmidt has been closely involved with the management of the cooperative, which serves about 3,800 members in the northwest corner of Minnesota.

"I have good experience with the day-to-day operations of PKM from my previous role as assistant manager," Schmidt said. "The past two years have been really good years for the coop by all industry benchmarks. That's obviously something we'd like to keep going."

As for service, Schmidt said members shouldn't expect major changes. The cooperative has performed well in the areas of safety and system reliability, while also maintaining stable electric rates. Schmidt said he will focus on keeping the cooperative financially healthy, while holding the line on rates.

"The biggest challenge we have is with energy sales and our density," Schmidt said. "PKM has 1.6 customers per mile of line.



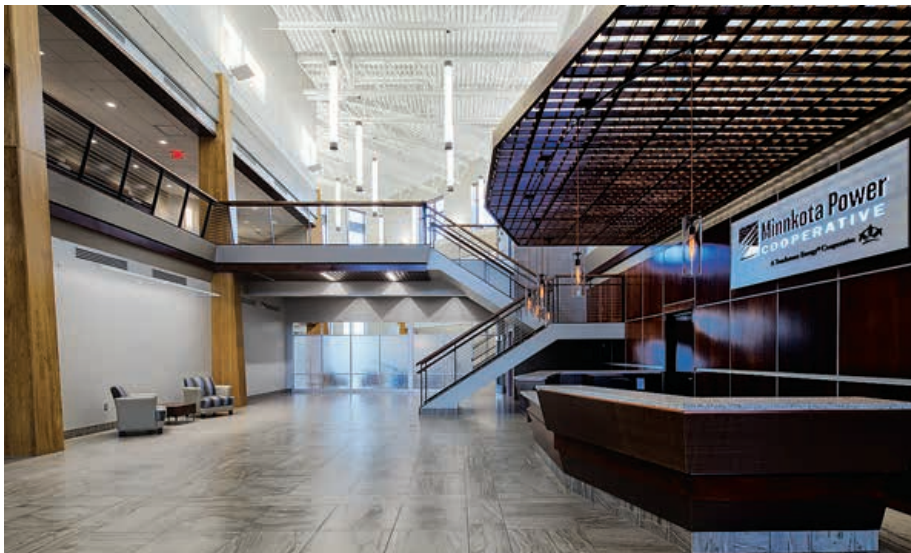
Mike Schmidt, the new CEO at PKM Electric Cooperative, stands near the cooperative's front entrance in Warren, Minn.

There are only 27 co-ops in the nation out of 850 that have less than that. When you have a low density, it's difficult to recover your fixed costs."

As CEO, Schmidt said he plans to focus on long-term workforce planning at the co-op, which currently has 15 employees. PKM has experienced several retirements in recent years, and more are anticipated in the not-too-distant future.

"We have good people here at PKM," Schmidt said. "In a small co-op, when people retire they take a lot of knowledge with them."

Schmidt and his wife, Deb, have three grown children, Katie, Kelsey and Danny, and one grandchild. In addition to spending time with family, Schmidt has a cabin at Lake of the Woods and enjoys hunting and fishing. □



Minnkota, Square Butte annual meetings to be held April 6

Minnkota Power Cooperative and Square Butte Electric Cooperative will host their annual meetings on Friday, April 6, at the Minnkota Power Cooperative Corporate Campus in Grand Forks.

While Minnkota hosts its 78th annual meeting, Square Butte will host its 44th annual meeting.

At the meetings this year, reports on operations and year-end results will be presented, along with planned generation and transmission projects. Other business will include the election of directors and adoption of policy resolutions on issues of importance to the Minnkota and Square Butte cooperatives.

Registration begins at 8 a.m. The two meetings will begin at 9 a.m., with Minnkota Chairman Collin Jensen, Roseau, Minn., and Square Butte President Mark Habedank, Twin Valley, Minn., presiding.

A membership social will be held on Thursday, April 5, at 4 p.m., at the Minnkota campus, which is located at 5301 32nd Avenue South in Grand Forks.

Minnkota's 11 member distribution cooperatives supply electricity to more than 135,000 consumers in a 35,000-square-mile area. Square Butte owns Unit 2 at the Milton R. Young Station and is governed by the cooperatives associated with Minnkota. □

Minnkota Messenger

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January-February 2018

Minnkota Messenger is published bimonthly to communicate Minnkota Power Cooperative's perspectives and concerns to its members, elected officials, employees and other business audiences.

For subscription or editorial inquiries, call (701) 795-4282 or send email to bfladhammer@minnkota.com.

Minnkota is a generation and transmission cooperative supplying 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 150,000 customers.

Visit Minnkota's website at www.minnkota.com.



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On the cover: Two people ride the magic carpet to the top of the hill at the Frost Fire Ski and Snowboard Area near Walhalla, N.D. *Story on pages 2-3.*