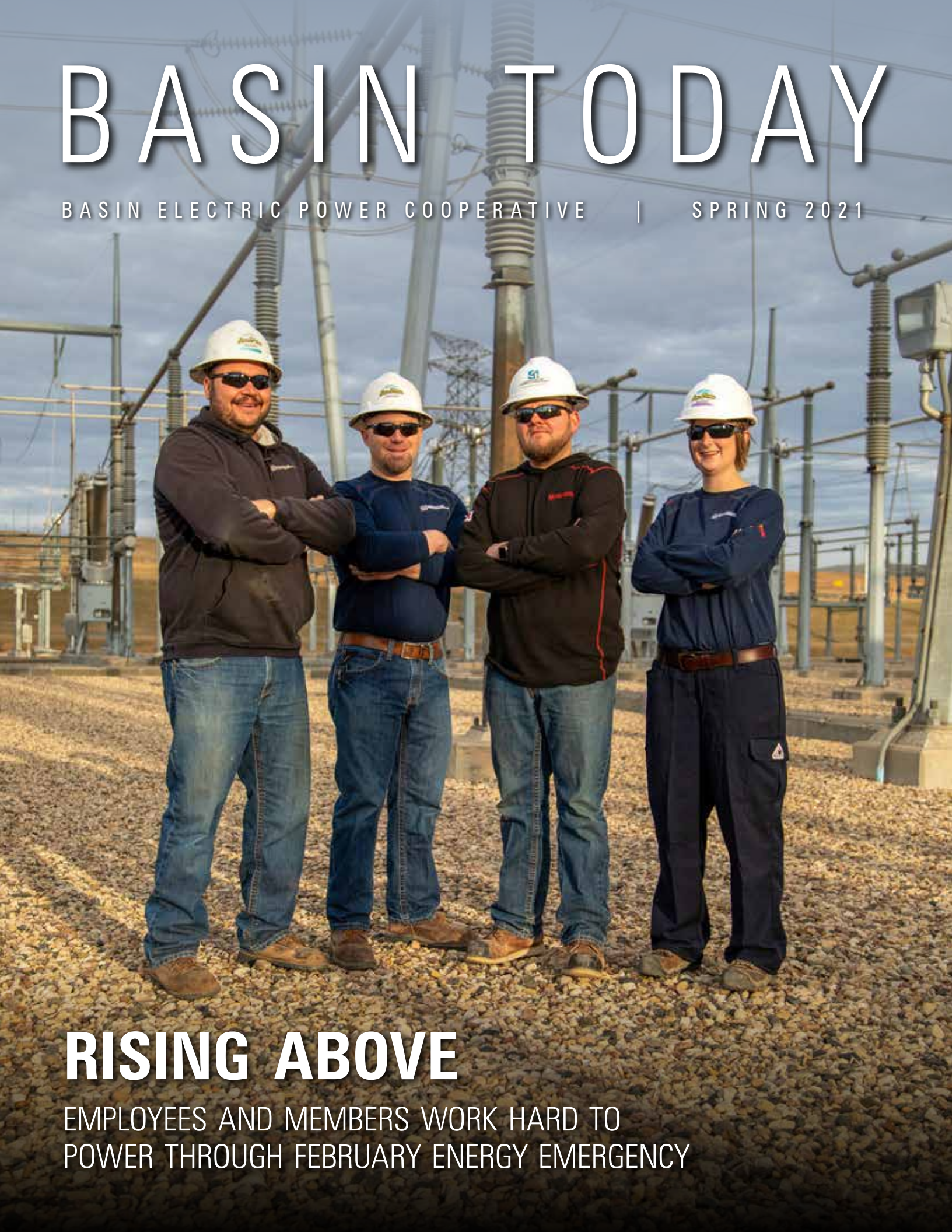
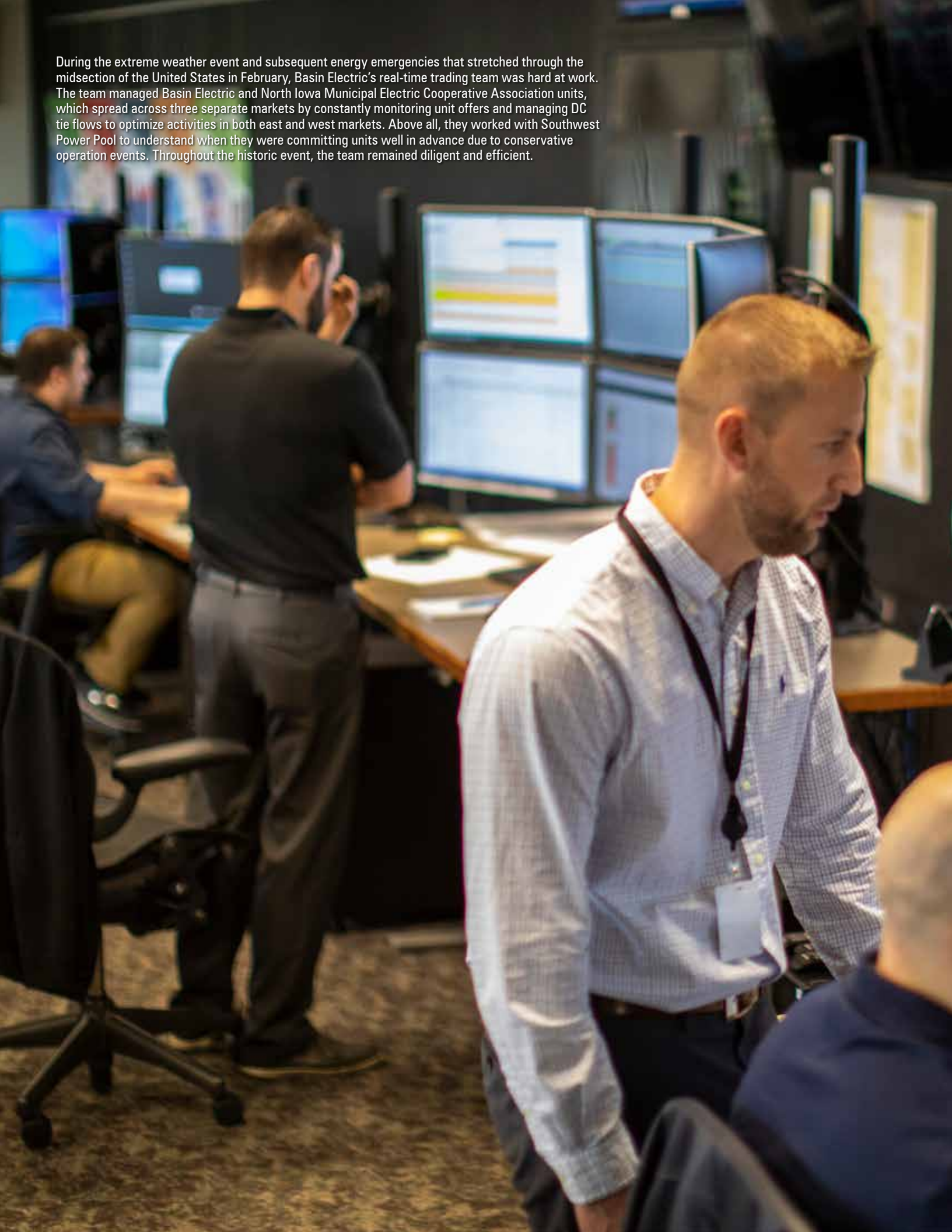
BASIN TODAY

BASIN ELECTRIC POWER COOPERATIVE | SPRING 2021



RISING ABOVE

EMPLOYEES AND MEMBERS WORK HARD TO POWER THROUGH FEBRUARY ENERGY EMERGENCY



During the extreme weather event and subsequent energy emergencies that stretched through the midsection of the United States in February, Basin Electric's real-time trading team was hard at work. The team managed Basin Electric and North Iowa Municipal Electric Cooperative Association units, which spread across three separate markets by constantly monitoring unit offers and managing DC tie flows to optimize activities in both east and west markets. Above all, they worked with Southwest Power Pool to understand when they were committing units well in advance due to conservative operation events. Throughout the historic event, the team remained diligent and efficient.

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ON THE COVER

Jason Richter, Karl Edler, Brenden Lier, and TiAnna Stevens, employees from Basin Electric's Transmission System Maintenance division, stepped up on Feb. 14 for what became a marathon battle in the cold. After a breaker in Leland Olds Station's switchard malfunctioned, taking one of the power plant's units offline at a time when demand for electricity was climbing to critical levels, the team worked through the night in subzero temperatures to reconnect the unit to the grid before the energy emergency began. Read more on page 10.

IN EVERY ISSUE

FEATURE STORIES

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PAUL SUKUT

POWERFUL COMMITMENT, POWERFUL CONNECTIONS

What were you doing on Valentine's Day?

Likely, many of you were inside your warm and cozy home that Sunday night celebrating the love you share with family. Supper might have been special: spaghetti sauce on the stovetop, a prime rib in the oven, maybe green beans in the microwave.

For many of us, we were just coming out of a several-days-long cold snap, with high temperatures way below zero. It was sunny that day in many places, and it felt like the worst of winter might be behind us.

But for those of us in the energy industry, we had started to hear what was coming. Some of us were learning on Valentine's Day afternoon that because the cold temperatures were reaching south all the way into Texas, and the weather was going to be like that for several days, an emergency event was brewing. The power plants, power lines, and natural gas pipelines were going to be more stressed than ever before – infrastructure that was keeping the midsection of the country safe during that cold weather.

Southwest Power Pool, a regional transmission organization that Basin Electric joined in 2015, let us know on Valentine's Day that it would be issuing energy emergency alerts by the next morning, if not overnight. You can read more about what triggers a decision like that, and events that occurred over the next several days in the pages of this magazine.

We all learned a lot over the course of the next week. Southwest Power Pool had never issued an energy

emergency alert past a level 1 before Feb. 15. And the board operators at Western Area Power Administration (WAPA), which serves as Basin Electric's transmission operator, were thrust into making quick decisions when the situation reached the point that load needed to be shed to maintain the integrity of the transmission system.

We have heard from WAPA that it had very little notice to make big decisions about which load to drop, and subsequently, sometimes had maybe a minute to communicate that decision with our members. I know these operators did the best they could under unprecedented conditions.

At Basin Electric, our employees did everything they could to help power our members through the week. As a generation and transmission cooperative, we had some of the most valuable assets on the system – power plants that were pumping out megawatts. We often call our baseload generation the workhorses of our fleet — the coal-fueled plants that we can count on to deliver the megawatts asked of them, efficiently and consistently. Our peaking fleet, fueled by natural gas and one plant in particular by fuel oil, ramped up, and when the wind blew, our wind turbines did their part by producing more than was forecasted.

Some of our members initiated load management within their systems to alleviate load pressure. Some were without power for up to an hour at a time, during a time of year when even a short power outage feels scary.

In the thick of that week and in the weeks following, some have questioned if Basin Electric had not joined Southwest Power Pool, would our members have had to go through the rolling outages they did?

I think it's a good question. You have to think back to why we joined a regional transmission organization in the first place. Changes in membership loads and market access created challenges in serving our membership at the lowest prudent cost. To meet membership load obligations, we need to be able to purchase power from the markets at times and sell surplus power when it is available.

Had we not joined Southwest Power Pool, we would have found ourselves on an island over the last six years. During this event, it's true, our generation ended up helping utilities as far south as Oklahoma when their generation and fuel sources froze up. But over the long haul, market purchases also help us provide reliable power to our members, and more affordably.

In this issue, you'll meet the lineworkers who worked all day on Valentine's Day, in-and-out of extremely cold temperatures, to bring Leland Olds Station Unit 1 back onto the grid after a failure in the switchyard. They put in those long hours because we knew an energy emergency was looming and that power was going to be vital over the coming days. The lineworkers were given the choice to have another crew come in and relieve them, but they wanted to stick with the job.

They didn't enjoy a Valentine's Day around their family's dinner table or cuddled up on the couch that night. Instead, they wanted to complete that job, to make sure the rest of us were warm.

Powerful commitment, powerful connections. Makes me proud to work in this cooperative family.

Paul Sukut, CEO and general manager

NRG Cosia Carbon XPRIZE announces winners

In the culmination of a six-year engineering competition, the NRG COSIA Carbon XPRIZE announced the final winners for both the coal – and natural gas – tracts.

CarbonBuilt and Carbon Cure have been crowned the winners and each will receive $7.5 million to continue advancing their carbon utilization technologies.

Some of the competitors of the coal tract tested at the Wyoming Integrated Test Center, a carbon capture and utilization testing center attached to Basin Electric's Dry Fork Station in Gillette, Wyoming.

CarbonBuilt created a low carbon dioxide concrete replacement. Their process reduces emissions through utilization, which permanently embeds carbon dioxide into the concrete.

http://bit.ly/CarbonXPRIZEwinners

Turbine, generator enclosure for new gas unit arrives at Lonesome Creek Station

The turbine and generator enclosure for Lonesome Creek Station's new sixth unit reached the job site in February.

The generator arrived separately earlier in the month.

The equipment's journey started on a ship in Hungary, a voyage that took two months. After the ship reached the Port of Houston (Texas), the turbine and generator enclosure were transferred to two trucks, which travelled 1,800 miles through several different routes and unprecedented storms and winter weather in the southern states before reaching the construction site at Lonesome Creek Station.

The turbine weighs approximately 105,000 pounds and the generator enclosure just under 80,000 pounds. Both were roughly 30 feet long, 14 feet wide, and almost 15 feet tall.

http://bit.ly/LC6Turbine

Basin Electric member director named NRECA board president

Chris Christensen, a director of Basin Electric Class C member NorVal Electric Cooperative in Glasgow, Montana, has been elected to a two-year term as president of the National Rural Electric Cooperative Association (NRECA) board of directors.

Christensen is NRECA's immediate past vice president and previously served as secretary-treasurer. Joe Martin, board president at Basin Electric Class C member Mountain View Electric Association in Limon, Colorado, was elected NRECA's secretary-treasurer.

Two other directors from Basin Electric's membership have served as NRECA presidents in the past: Bob McClurg of Riverton Valley Electric Association (now part of High Plains Power in Riverton, Wyoming), and F.E. "Wally" Wolski of Wyrulec Company in Torrington, Wyoming.

http://bit.ly/ChristensenNRECApresident

Final remaining original incorporator of Basin Electric has died

Leroy Schecher, the last living member of the group who signed the papers to incorporate Basin Electric passed away in March.

Schecher became manager of Grand Electric Cooperative in Bison, South Dakota, on June 9, 1961. The incorporation of Basin Electric was just a month earlier on May 5.

Schecher served as general manager of both Grand Electric and West River Cooperative Telephone Company; general manager of Minnesota Valley Cooperative Light and Power Association in Montevideo, Minnesota; and interim manager of FEM Electric Cooperative in Ipswich, South Dakota. He also helped incorporate the former North Central Data Cooperative (now National Information Solutions Cooperative) in Mandan, North Dakota, and the Cooperative Response Center in Austin, Minnesota.

Schecher was inducted into the South Dakota Cooperative Hall of Fame on Sept. 11, 2007.

http://bit.ly/FinalIncorporator

Basin Electric system reaches new all-time system billing peak

Becky Kern, Basin Electric director of long-term utility planning, said final billing determinants completed for February 2021 show Basin Electric hit a new all-time high system billing peak of 4,242 megawatts (MW).

Kern said Basin Electric's February 2021 member peak sale level surpassed the previous all-time high system member sale level by about 182 MW. The previous all-time high peak was 4,060 MW, set in January 2019.

Kern said the peak is attributable to the widespread cold temperatures that occurred in mid-February.

http://bit.ly/All-time-peak-Feb21

Wyoming Municipal Power Agency the newest member of Basin Electric

Basin Electric directors adopted a resolution approving the membership of Wyoming Municipal Power Agency (WMPA) at their board meeting on Feb. 9.

At Basin Electric's annual meeting in November 2020, members approved a change to the bylaws allowing an association of municipalities located outside of an all-requirements member service territory, on an all requirements basis, to become a Class A member in District 9.

Along with its member load, WMPA brings with it approximately 50 megawatts of generation to Basin Electric's portfolio.

http://bit.ly/WMPAmember

Zap Line Subdivision Rail Bridge destroyed by fire

A replacement bridge was constructed and back in service in less than two weeks. Photo courtesy of BNSF Railway.

The Zap Line Subdivision Bridge, a railroad bridge on the BNSF Railway track near Sanger, North Dakota, caught fire and burned on April 1. This is the second railroad bridge fire in less than one year that has directly affected Dakota Gas and Basin Electric.

The fire and its damage interrupted all inbound and outbound railcars from Dakota Gas and in and outbound railcars supplying coal for Dakota Gas, Antelope Valley Station, and Leland Olds Station.

The new bridge was in service less than two weeks later.

Chemicals produced at Dakota Gas were unable to be shipped while the bridge was out of service. The products most affected were tar oil, naphtha, and diesel exhaust fluid. Fertilizers were fairly unaffected.

http://bit.ly/ZapLineFire

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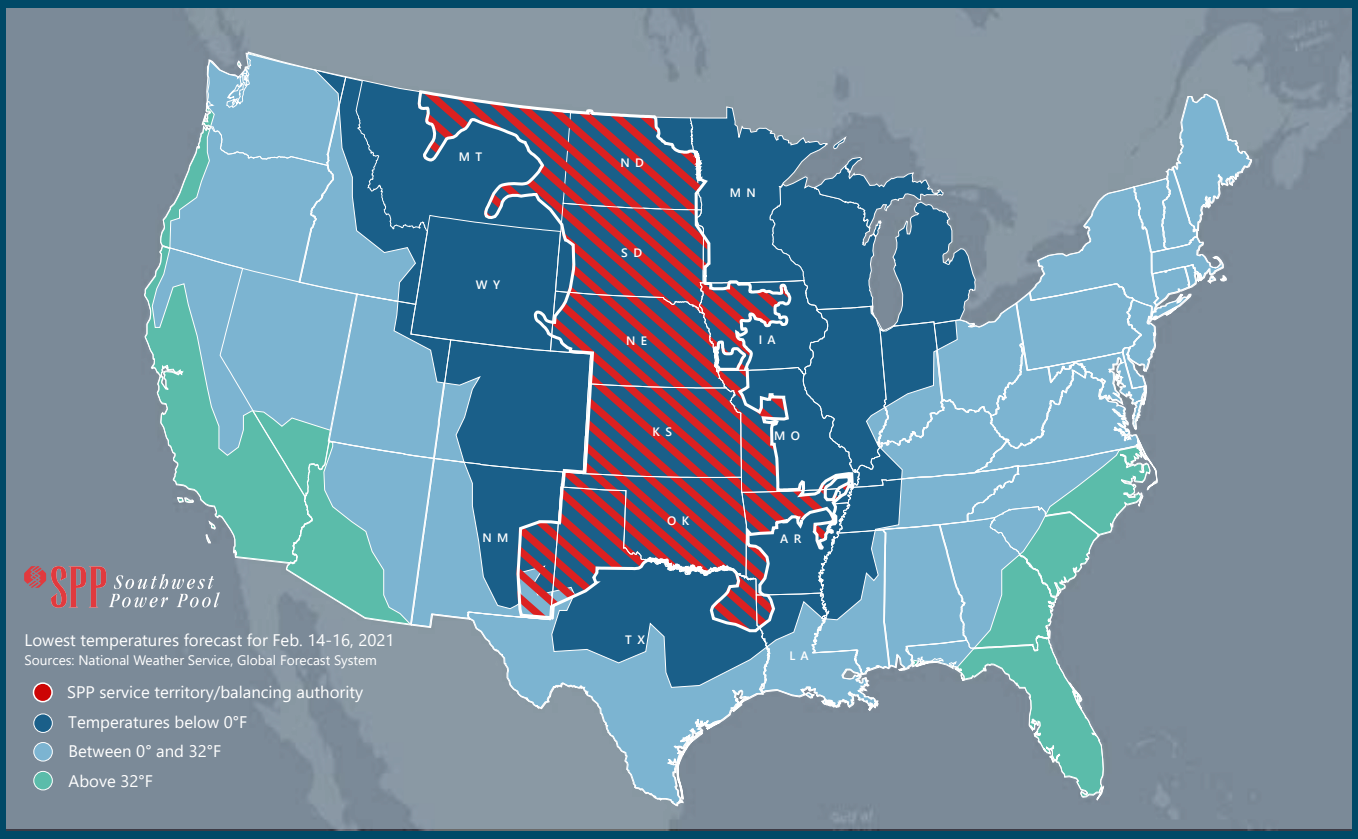


Map courtesy of Southwest Power Pool.

ALERTS, WATCHES, AND WARNINGS

HOW WE ARE NOTIFIED OF POTENTIAL AND IMPENDING ENERGY EMERGENCIES

By Angela Magstadt

Most of us are familiar with the long, high-pitched beeps that interrupt television and radio programs. It's mostly in the summer and winter when the National Weather Service notifies us of potential weather emergencies. These beeps and computer-generated voices inform us of severe weather watches or warnings and we are conditioned to know what to do with the information they provide.

There are similar notifications the Southwest Power Pool (SPP) uses for energy emergencies – alerts that tell us what to do if there are issues occurring that threaten its ability to provide energy to customers across its 14-state service territory. These alerts, however, are not nearly as well-known because prior to the week of Feb. 14, the energy emergency alert had only been issued once, and never progressed beyond the initial level of severity.

Because these alerts are so rare, and the aftermath that has the potential to follow them can be serious, it is important for Basin Electric, its member cooperatives, and members at the end of the line to understand what these alerts mean so they can take the proper precautions – just as they do when they hear the beeps signaling potential severe weather.

Following are some of the questions that arose during the unprecedented events of the week of Feb. 14 and answers provided by the SPP's communication team; Tom Christensen, Basin Electric senior vice president of Transmission, Engineering, and Construction and Valerie Weigel, Basin Electric director of asset management and commodity strategy.

What is a resource alert?

SPP issues a resource alert when severe weather conditions, significant outages, uncertainty in the wind forecast, and/or uncertainty in the load forecast are expected in its balancing authority area.

What is a declaration of conservative operations?

A declaration of conservative operations is given to SPP's member utility operators directing them to operate conservatively to mitigate the risk of worsening conditions. Declarations of conservative operations have been issued several times – even within the past year. Lloyd Linke, senior vice president of operations for the Western Area Power Administration's Upper Great Plains Region (Basin Electric's transmission operator), compares this declaration to acting more cautious in a situation that has the potential to become dangerous, such as not going out in a boat when a severe thunderstorm has been predicted.

What is an Energy Emergency Alert?

There are three levels of Energy Emergency Alerts (EEA), and SPP fluctuated back and forth between all three levels throughout the week of Feb. 14 (see the timeline on page 9).

EEA level 1 signals that SPP foresees or is experiencing conditions where all available resources are scheduled to meet firm load obligations and that SPP may be unable to sustain its required contingency reserves. SPP has issued an EEA level 1 in the past.

EEA level 2 is triggered when SPP can no longer meet expected energy requirements and is considered energy deficient. At this point, SPP is using available energy reserves, is requesting assistance from neighboring utility operators, and is doing everything it can short of interrupting firm load commitments. EEA levels 1 and 2 can be compared to a severe thunderstorm or tornado watch – conditions are right for the thunderstorm or tornado to happen.

EEA level 3 signals that operating reserves are below the required minimum. During this level, SPP directs its member utilities to be prepared to implement controlled interruptions of service if necessary. At this point, SPP has done everything it can short of curtailing firm load, and it is very likely members will be asked to shed load. Two instances of controlled interruptions of service happened during the events in mid-February. An EEA level 3 can be compared to a severe thunderstorm or tornado warning – the storm has been spotted and is headed your way.

How often has SPP implemented controlled interruption of service?

SPP has been coordinating energy services since 1941 and has never issued an Energy Emergency Alert beyond a level 1 before the February event. This was also the first time in SPP's 70-year history that SPP called for controlled interruptions of service.

What caused constraints on the electric grid?

Extreme and prolonged cold weather across SPP's service area, natural gas supply issues, decreased natural gas generation due to supply and freezing issues, and decreased wind generation and operation all contributed to this energy emergency.

What is the difference between blackouts and controlled interruptions of service?

The term "blackout" is typically associated with uncontrolled, cascading outages. When blackouts occur, the power goes out without warning and can be prolonged and difficult to recover from. Controlled interruptions of service are planned and not prolonged. Controlled interruptions are done to avoid issues such as cascading outages and equipment damage, which could lead to grid collapse, also known as a blackout.

When SPP asked end-use consumers to conserve energy, did those conservation efforts actually help?

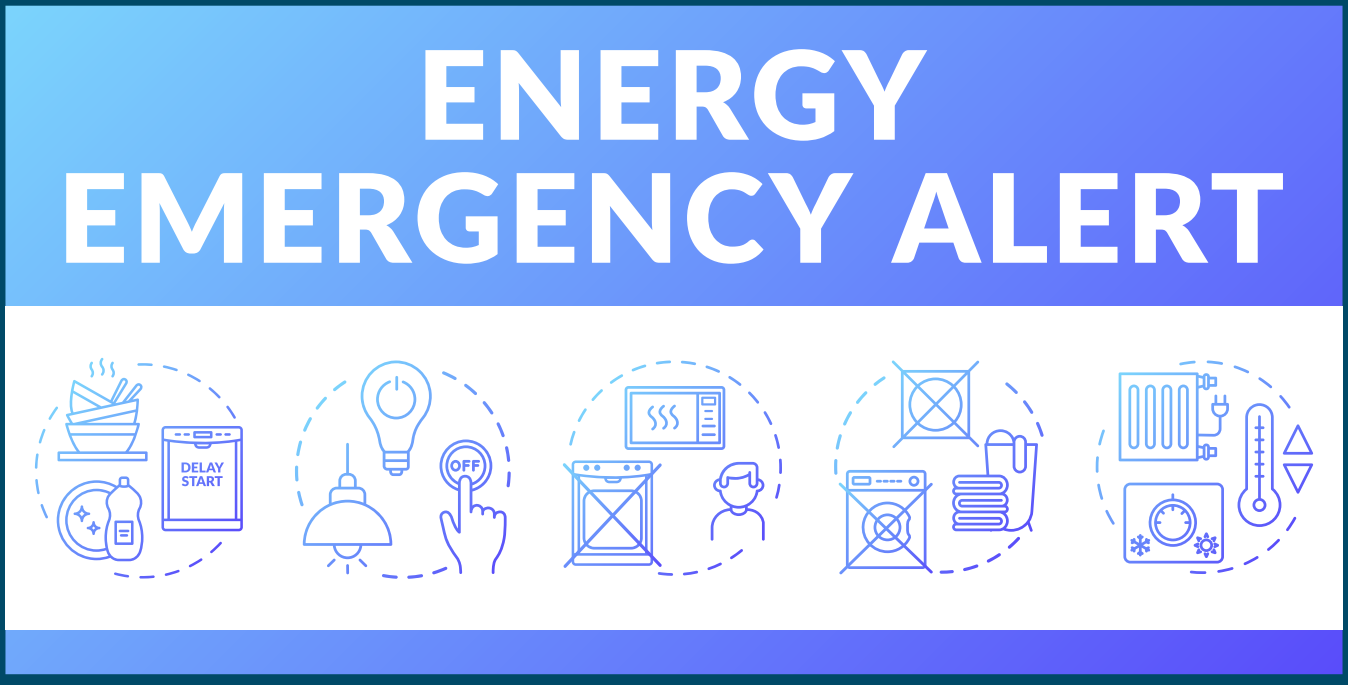
Yes. SPP forecasted a system-wide peak of 45,000 megawatts on Feb. 15, and thanks to conservation measures taken by end-use consumers, the actual peak was 43,661 MW. That 1,339 megawatts equals electricity for over 1 million homes, or nearly all the energy generated from both Leland Olds Station and Antelope Valley Station. This extensive conservation helped delay coordinated interruptions of service for a longer period of time than originally anticipated and minimized the number of members that had to shed load.

What has Basin Electric done to help its members maintain reliability in situations like this?

This energy emergency is a prime example of why Basin Electric believes so strongly in an all-of-the-above energy strategy. The power Basin Electric uses to serve its member load obligations comes from many different sources, including coal, renewables, natural gas, water (hydroelectricity), oil, and recovered energy. Basin Electric also purchases power from the market.

This event highlights the value of Basin Electric being a member in markets like SPP and Midcontinent ISO (MISO). The SPP market provides a mix of more than 800 generators that can supply energy to the market in varying conditions. That is the benefit of the market. If we can't show up with all of our resources, somebody else is able to provide them for us.

Because Basin Electric's resource portfolio is so diverse, the co-op's power supply is very reliable – if one source isn't producing, there are other options available to fill in the gaps. Without all these diverse sources, the interruptions in service would have been much more significant.



Social media graphics were created to encourage energy conservation the week of Feb. 14. Extensive energy conservation across SPP's 14-state service area resulted in a peak 1,339 megawatts lower than predicted on Feb. 15. That equals electricity for over 1 million homes, or nearly all the energy generated from both Leland Olds Station and Antelope Valley Station.

FEBRUARY ENERGY EMERGENCY TIMELINE

FEB. 9

SPP issued a declaration of conservative operations in response to the cold-weather event, effective until further notice.

FEB. 15

MIDNIGHT

SPP requested members and market participants conserve energy for the next 48 hours to mitigate the risk of more widespread and longer-lasting outages.

5 A.M.

EEA Level 1
(this was issued on Feb. 14 to take effect at 5 a.m. Feb. 15)

7:22 A.M.

EEA Level 2

10:08 A.M.

EEA Level 3

SHORTLY AFTER NOON

SPP directed member utilities to implement controlled interruptions of service

2 P.M.

SPP restored load, enters EEA Level 2

FEB. 16

6:15 A.M.

EEA Level 3

12:31 P.M.

EEA Level 1

6:28 P.M.

EEA Level 2

FEB. 17

1:15 P.M.

EEA Level 1

6:20 P.M.

EEA Level 2

10:59 P.M.

EEA Level 1

FEB. 18

9:30 A.M.

EEA ended

Jason Richter and Brenden Leier were two members of the TSM team that worked many hours in subzero temperatures to get Leland Olds Station Unit 2 back onto the grid prior to the energy emergency alert the morning of Feb. 15.

RISING ABOVE THE NEGATIVE

EMPLOYEES BATTLE BELOW ZERO TO GET UNIT ON GRID

By Erin Laverdure

North Dakotans are a hardy bunch. They have to be. The weather swings in the state are legendary. It's not uncommon to experience all four seasons in a matter of days. In mid -February, that season was decidedly winter. The state sported temperatures in the minus-30-degree Fahrenheit range, crowning a cold snap that blanketed almost the entire middle part of the country.

In typical North Dakota fashion, life moved on despite the deep freeze. People continued to work, however, some critical equipment in the Leland Olds Station switchyard decided it had enough of the cold. A breaker malfunctioned, taking the power plant's second unit offline at a time when demand for electricity was climbing to critical levels in the region.

Employees from Basin Electric's Transmission System Maintenance (TSM) division stepped up for what became a marathon battle in the cold. They prevailed, reconnecting the unit to the grid before the energy emergency began.

Broken breakers

It was 2 a.m. on Valentine's Day. While much of the world was cozy and warm in bed, Karl Edler, Basin Electric substation electrician, and TiAnna Stevens, Basin Electric system protection technician, were en route to the Leland Olds Station switchyard near Stanton, North Dakota, to investigate an alarm on a breaker that took Unit 2 offline. A breaker is designed to open and interrupt the flow of electricity when system protection equipment detects a fault.

Leland Olds Unit 2 has two breakers in the 345-kilovolt substation that keep the generator connected to the grid when closed. One of the breakers was out of service due to previous issues with one of its isolating disconnect switches. Stevens and Edler found the second breaker had tripped, and the trip circuit resistors had burned up. The resistors would need to be replaced before the breaker could be put back into service. The Leland Olds switchyard breakers' age and design are known issues and are scheduled to be replaced in 2024 as part of Basin Electric's Aging Infrastructure Initiative.

The team isolated the breaker and reported back to the supervisor. "We needed more hands. It was a bigger problem than we anticipated," Stevens says.

Jason Richter, Basin Electric lead substation electrician, joined the callout around 5:30 a.m. He and Stevens worked together with Edler to make a plan: fix the breaker that had tripped that morning, and work on the other breaker's disconnect switch while they were on site. The plan, however, was foiled by cold weather and aging equipment.

The job required a man lift from the Beulah (North Dakota) TSM shop about 30 miles away. When Richter went to get the equipment, he found neither the man lift nor the truck to haul it would start in the cold. Brenden Leier, substation electrician apprentice, worked on the equipment so Richter could get back to the switchyard. Leier got both running and arrived at the switchyard with the equipment, and food, late that afternoon.

Stevens says they welcomed the food. "You're not thinking about food when you get a callout at 2 a.m.," she says.

Edler and Leier worked on repairing the burned resistors. Stevens and Richter worked on switching and placing

clearances. Multiple times throughout the day, the team thought they had the issue resolved, so they turned down offers of a relief crew. "It got to the point we thought we were almost done, but then something else happened," Stevens says.

They encountered trouble with several switches, which connect or disconnect electrical equipment to or from power lines. Broken linkages had to be fixed. Arms that weren't making good contact had to be adjusted. Motors that operate the switches didn't work, so switches had to be hand operated. Components being stubborn in the cold needed lubrication.

"One thing after another didn't operate, didn't work," Richter says. "Several switches wouldn't close. We had to hand-crank most closed. And then we couldn't get that breaker closed. We tried and tried and tried."

Richter says the crew was ready for relief around 11:30 p.m. when they made one last attempt to close the breaker. Finally the team's persistence and flexibility paid off, and they were able to close one of the breakers.

Leland Olds Unit 2 was back putting 440 megawatts onto the grid prior to the Southwest Power Pool issuing the Energy Emergency Alert Level 1 the morning of Feb. 15.

One step at a time

"It was definitely cold. We had coveralls on and over-boots to help keep our steel toes from getting cold. We had hand warmers. We did what we needed to do. I didn't think much about it because my mind was so busy," Stevens says. By the time she returned home, she had been gone for nearly 24 hours.

TiAnna Stevens and Jason Richter switching the bus in and out to work on equipment. Clearances from WAPA are necessary to work on substation equipment.

Leier was out for about 12 hours and says it was a blur. "When I arrived, the plan was already made and there was a list of things to get done. We just started knocking off one thing at a time. By the end of the day, we had just enough fuel in the man lift to get it loaded back onto the trailer," he says.

"The day went fast. It was constant. There was no down time. Just in the substation, I walked 17,000 steps that day. It was crazy," Richter says. "The positive I can pull out of it, there was no wind. Minus 37 to someone else, they'd say, 'Are you crazy?' Kind of, I guess. You have to live here to know that."

Richter has put in a lot of long days in the past, but he says Feb. 14 was his longest in the field. "It's about integrity. The job had to get done," he says. "Take one step at a time and work through it. If I would've looked at the broad picture of what was going on as the day went on, it would've been overwhelming."

Jason Richter and Karl Edler working on a MOD (motor operating device). The crew worked on multiple MODs and switches on Feb. 14.

Michael Hessman is the only employee stationed at Spirit Mound Station, a fuel oil-based peaking power plant near Vermillion, South Dakota.

HOW BASIN ELECTRIC'S POWER PLANT PROFESSIONALS PREPARED FOR, AND PERFORMED, DURING FEBRUARY'S WIDESPREAD, UNPRECEDENTED ENERGY EMERGENCY

By Tracie Bettenhausen

As cold weather rolled into the Upper Great Plains in early February, electricity was essential, keeping homes warm and systems running. This is how people keep power plants running.

Blockbuster week

For 11 years now, Michael Hessman has proudly worn the label, "Maytag repairman," as the only employee at Basin Electric's Spirit Mound Station, located near Vermillion, South Dakota.

Spirit Mound is a peaking power plant, meaning it runs about a dozen times a year, usually during periods of extreme hot or cold weather. It uses fuel oil, and while there is capacity on site to hold up to 8 million gallons of the fuel, Spirit Mound rarely stores more than 1 million gallons because it takes quite a few run hours to use that fuel up.

Early in February, Hessman put in an order for more fuel oil, something he only had done only twice before: in 2008 and 2019. "We were getting day-ahead calls, which never happens," he says, meaning he was getting notice from Basin Electric marketing that he would likely need to be ready to run the next day. "I'm usually the last guy they call, or the most expensive guy they call."

The oil arrives on the plant site via the NuStar Energy

Pipeline, a multi-use pipeline near the plant. Sara Erhardt, Basin Electric buyer, says a supplier near Sprit Mound has access to the pipeline, but "We're at the mercy of the correct product flowing through that pipeline when we need it, and whether that product has already been allocated to somebody else," Erhardt says. Since another product was already in the pipeline, the Feb. 9 order wasn't available to arrive until Feb. 17.

Learning of the pipeline delay, Hessman realized additional oil would be needed prior to the pipeline delivery. "Well, the cold snap was coming. So on Feb. 13, that Saturday, we had conference calls to talk through, how can we get fuel to these units without shutting down?" Hessman says. "We ended up lining up truckloads of fuel to come in on Valentine's Day."

Hessman slept at the plant overnight and called in help from Deer Creek Station, Basin Electric's nearest power plant located in Brookings County, South Dakota, to help with offloading the fuel. "We did 10 truckloads on Valentine's Day. We had run out of fuel on Saturday, so we went into an outage. We were in contact with marketing and ran through our plan. Each day for the next three days, we received the fuel, burned it, and then put the plant in outage until the next morning when we got more fuel. It was 12-hour shifts," Hessman says.

While the truckloads of oil bridged the gap, Spirit Mound Station was headed for a blockbuster week. Erhardt says the plant originally ordered 400,000 gallons on the pipeline. Mid-morning on Feb. 17, she was asked for an additional 400,000 gallons.

"So within a five-hour timeframe, we went from getting 400,000 gallons to getting 800,000 gallons. We always want to help in any way we can," Erhardt says. "There were lots of phone calls, lots of communication, you drop everything and put it on the back burner until you get it to a place where you know it's going to work. It worked out because they had the fuel and the pipeline was available. There are a lot of factors that come into play when you are expediting something."

Sara Erhardt buys fuel for Spirit Mound Station, among other duties, and says good relationships with vendors are key to getting what's needed quickly.

All told, Hessman says it took about 27 hours to bring in the 800,000 gallons of fuel. Erhardt says between the truckload deliveries and the pipeline, slightly more than 958,000 gallons of fuel oil were delivered Feb. 14-18.

"We try to keep very good relationships with the facilities of course, but also with our vendors and their employees, because when times like this come up, we're not their only customer," Erhardt says. "They need to get fuel to other places as well, and they do their very best. But their hands are tied sometimes too, and I think good working relationships with vendors we use help so much, especially in times like this."

To understand how unusual this February was, "There are years I didn't run this station at all. Since we've been in SPP (Southwest Power Pool), I run about once a month, way less in 2020 due to COVID and not needing as much power," Hessman says. "This February, I used 835,000 gallons. That's the same amount I used in the past eight or nine years."

Each Spirit Mound unit will use 6,000 gallons of fuel oil an hour, to generate 120 megawatts total. Each truckload holds about 7,200 gallons.

Moisture and cold

Cold weather can cause issues in the unlikeliest of places.

Take coal cars, for example.

"Coal, especially lignite, has a pretty high inherent moisture content. Then, you have the snow or moisture in the air that contributes," says Joe Leingang, Basin Electric superintendent of fuel and transportation. "At Leland Olds Station, we take pretty extraordinary measures to minimize that problem. We have liners in the coal cars and they use chemical release agents. But just the same, we sometimes have as high as a 15% carryback. So think of that, you're shipping, you're paying freight on 15% of the tons, or 15 tons per car, twice, sometimes three times. …

"At Laramie River Station, it's a little bit better because of the lower inherent moisture content in the coal. Also, the climate is more temperate in Wyoming with lower humidity rates," Leingang says. "But once the coal gets on the stockpile and it's been sitting there for a while, or if there's any moisture in the air, that becomes a problem there as well."

Leingang says it's the operator's preference to take coal straight from the coal cars into the power plants, rather than try to take it off the coal stockpile.

"They can get the coal off the stockpile, but it's just a whole lot tougher situation," he says. "There needs to be a lot of manual intervention, overtime hours in the coal yard, the coal needs to be crushed, which is harder on equipment."

Prepared for the cold

Operators at Basin Electric's natural gas-fueled peaking plants begin preparing for cold snaps well before winter. Because these plants don't run all the time and are valued for their quick start-up times, extra care goes into the planning.

In the fall, operators check and blow out water systems that won't be used through the winter, and check all heat tracing and insulation, according to Joe Fiedler, Basin Electric manager of distributed generation. "As the temperatures get subzero, we'll monitor our heat trace circuits. We have automatic alarms on a lot of those circuits, so we know if any have failed and we get it repaired," he says.

Fiedler says operators will run lube oil systems, for example, because the lube oil tanks are heated. "We can limit the unit's output to minimum and keep them running. It's much better to keep fluids circulating than it is to shut them down and let them get cold, and then try to restart at -25 degrees. It's just much better if we can keep those warm oils circulating."

Finally, the operators use another trick that many non-plant operators might be familiar with. "We also have water systems that we'll automatically recirculate, so it'll push the fluid through the systems and then back to the tanks. That way there is water flowing through the lines every once in a while, like every four hours," Fielder says. "It's like if you have ever lived in a trailer house – if you leave your faucet dripping, it's less likely to freeze up."

The prep work is similar at the coal-based power plants. "Going into the fall season, we go through and check all our heaters by making sure they cycle on and off and are heating. In some areas we bring in spare heaters to keep things from freezing," says Troy Tweeten, Basin Electric senior vice president of Operations. "Up here, we are a little more prepared for the cold, compared to down south, like in Texas. The issue they have there is that their boilers aren't even enclosed, so they don't even have an option to keep heat in the building."

Cooperative-wide, Basin Electric operators saw early on that with new peaking plants, additional winterization was necessary.

"We put enclosures around the water system at Pioneer Generation Station. That wasn't in the original design, but after freezing up a winter or two, we decided that was the only way we could ensure that when it got really cold we wouldn't freeze these systems up. Sometimes heat tracing and insulation aren't enough," Fiedler says. "We built a whole building around the HRSG (heat recovery steam generator) at Deer Creek Station because the first winters they had so many things freezing up. There's been a fair amount of money stuck into winterization at these sites over the past couple years, and for the most part, we've done very well. … We've been making improvements so that when we hit events like this we aren't sitting like Texas was, with days of being frozen."

Fiedler says several of the operators at the peaking plants are cooperative members and knew every megawatt was important during the energy emergency. "You have local co-ops starting to make calls to customers and telling them, 'You could be without power for several hours,' and "Prepare by having water on hand,'" Fiedler says. "It starts to hit home when it's happening in your backyard."

Decision and future planning

In 2020, several major power plant outages were postponed due to safety concerns related to the COVID-19 global pandemic. In addition to not wanting to bring hundreds of workers from various states onto Basin Electric's plant sites, the cooperative also didn't want to potentially overwhelm local hospitals or clinics.

The work done during outages is meant to keep power plants operating with minimal issues for several years. During the energy emergency, some plants did face trouble with coal ash and tube leaks, but operators were able to keep the plants online until the emergency was over.

"Postponing the outages from 2020 because of COVID and not having all the contractors there to do that work, did make us take on a little more risk. … We did make it through the cold spell without seeing any of the impacts of the delayed outages from 2020. All of the events at Dry Fork, Laramie River Station Units 2 and 3 – none of those issues would have been related to any issues from delaying the outages. Even though there were tube leaks on LRS Unit 2, that unit wasn't scheduled for an outage until next year. So, that issue was just a coincidence," Tweeten says. "Yes, you do get those tube leaks that come up every now and then, but the ash problems, those were unexpected, just the kinds of things that happen due to coal quality and how the boiler is firing. It's funny, you'd think it was problems related to the delay on the 2020 outages, but it wasn't."

Tweeten says he is proud of his operators for keeping the units operating when they were needed most.

"Even though it took more work to get the ash cleaned out of the boilers at Dry Fork Station and Laramie River Station Unit 3, or fixing the tube leaks at Laramie River Unit 2, we needed those plants to stay online when that power was needed the most and we were able to do that," he says.

Clyde Moch, Basin Electric superintendent of operations for North Dakota, Wyoming, and Montana distributed generation, at Lonesome Creek Station near Watford City, North Dakota.

Basin Electric has been exploring the possibility of extending outage cycles to four years, rather than the current three-year cycle. In North Dakota, a boiler inspection is required by law every three years, but could be completed during a minor outage.

Tweeten says the events of February's energy emergency haven't changed his thinking on a longer outage cycle. "As far as trying to extend outages to a four-year cycle, it doesn't necessarily impact the events that happened in this cold weather event," he says. "The reason I say that is we do preparation work during the outages no matter how long they are to make it to the next outage. So when we are on a three-year cycle, we are trying to make it to three years. So we will initially have to do more repairs up front to stretch it to a four-year cycle. For example, we may have to do extra pad welding on boiler tubes to stretch them to a four-year cycle. Also, we may be able to do other work during shorter outages (one to two weeks) in the shoulder months to keep up reliability."

Tweeten says the Operations department has meetings planned to go over the event and talk through next steps. "We have a protocol meeting in May and we'll review what went good and what went bad," he says. "We want to document everything we saw happen during this cold weather spell and prevent some of these things from happening again. To try to keep the lights on."

A DAY IN THE LIFE OF… STATION OPERATOR

ZACHARY WAGER

By Lindsey Chumley

Working in the energy industry was not initially on Zachary Wager's radar, despite his father working at Dry Fork Station in Gillette, Wyoming. Some good advice, however, directed Wager's path to a career that fit him, and just happens to be at the same facility as his dad.

"I was at a point in college where I didn't know what I wanted to do and my dad gave some good fatherly wisdom," Wager says. "He brought up the idea of possibly being an operator. I grew up watching my dad fix things as a mechanic, but he thought maybe I would want to maintain things, which is what operators really do – they maintain, watch over, and get to control the equipment. I did my research and was 100% on board."

In one year, Wager swiftly earned an associate's degree online from Bismarck (North Dakota) State College in power plant technology. He then began working as a student intern at Dakota Gasification Company in the spring of 2014. In December of that same year, he was hired on full time at Dry Fork Station. Since starting at the plant, Wager has moved up into a few different roles and now works as a station operator. The plant is close to where Wager calls home in the Black Hills, South Dakota, area.

On a daily basis, Wager looks at the boiler, where the main combustion of the coal takes place, and at all of the equipment that goes with it. He describes how an operator's worst enemy is complacency. "When there's something out of order in an operator's area, you can pick it out. It might have the slightest different tune from the shift before, or even the round before," Wager says. "I've learned it's important to trust your eyes, ears, smell, and touch, because that might alert you to an issue that is not being picked up yet on the control system."

Wager's skills were put to the test on Feb. 13 around 2 a.m. when buildup within the boiler, known as slag, fell, plugging up the bottom ash system. The timing was unfortunate, as this was during the same week as the unprecedented energy emergency that impacted Basin Electric's membership and much of the midsection of the United States.

That particular night, Wager had been keeping an eye on a specific area of buildup by looking through an inspection port, which is a 3-4-inch opening. Because the boiler is so hot, Wager had to look into the boiler through a shield. From what he could see, the piece of slag did not appear to grow in size or move, and when the boiler is heated up, slag typically stays in place.

Twice during each of Wager's shifts, he opens the bottom ash doors, which are the separating factor between everything above in the boiler and the ash removal system down below. The doors protect a conveyor belt that transfers the ash. When Wager went to open the doors for the second time on Feb. 13, the hydraulically driven doors opened but would not close. "What happened was these massive chunks of slag had dropped down onto the belt. We can only see such a small portion of the buildup through the inspection port, but we found out there was a lot more than we were originally aware of," he says.

From there it was all hands on deck to try to keep the plant online. "I knew I had to open up a bottom ash port to try to break up as much ash as I could access," Wager says. "I moved the belt for the next two-and-a-half hours and as the small ash fed out, the large pieces started dropping down. It came to a point where the large ash was the only thing left on the belt. It became a matter of whether it would fit through the opening. You're moving big pieces of slag through a small opening in comparison and it is a very hard thing to try to accomplish, but you have to try your best. Finally, I thought the slag was going to pass and I was getting pretty excited, but then all of a sudden I got a call from my control board operator that the belt had tripped." Eventually the plant had to come offline in order to resolve the issue by unplugging the bottom ash system.

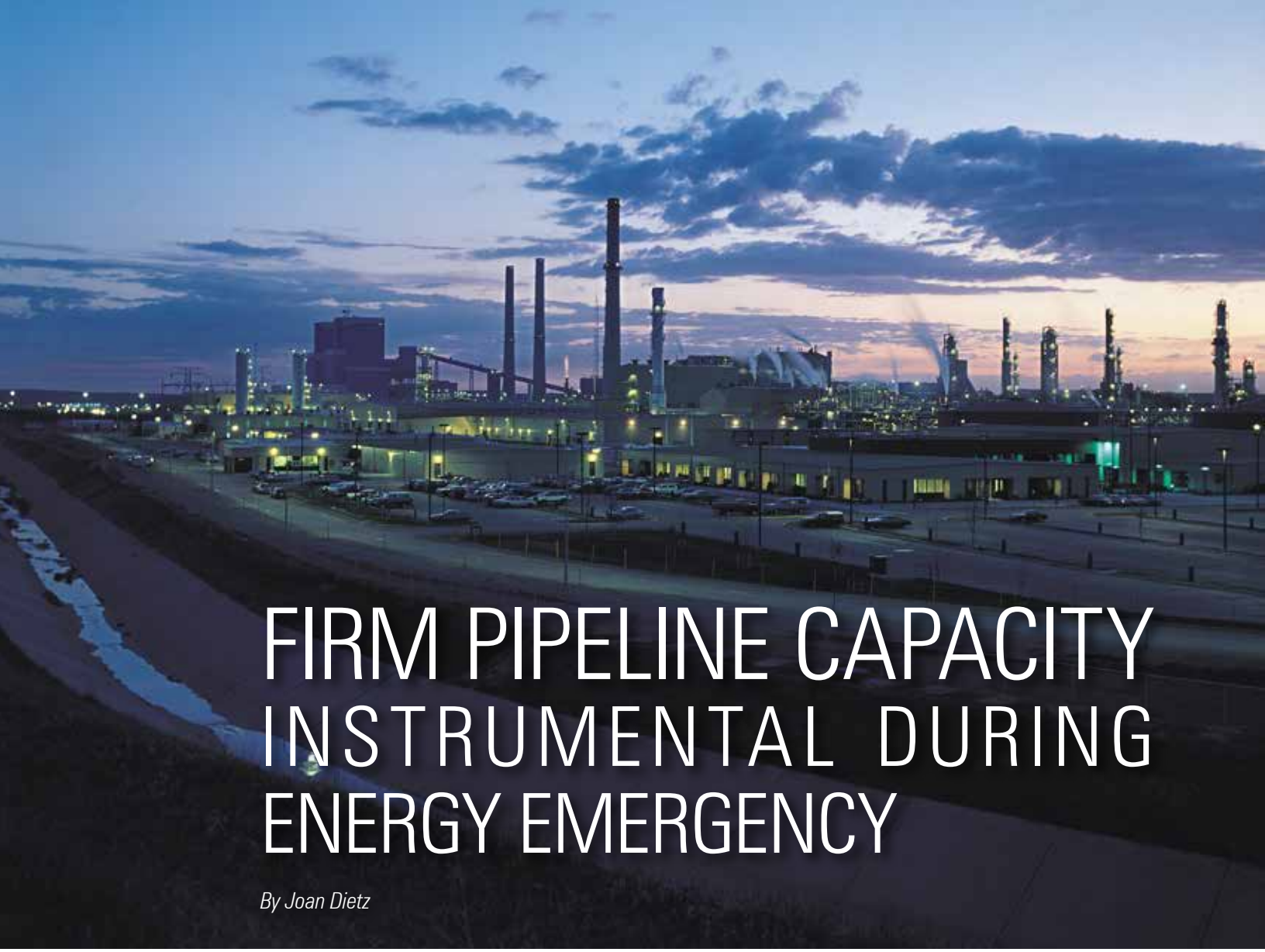
It is in challenging situations like this when operators are needed the most and it is clear Wager does not take his job responsibilities lightly. "I'm such a small component in comparison to the whole picture, but if I can do my part to keep the plant reliable and the power generating, especially when things are in dire need of attention, then I'm helping make a difference," Wager says. "An operator is a key component at the starting point of power generation and I understand how crucial it is for the grid and for our members to have a reliable source of energy."

Wager's passion for his job and the pride he takes in working at Dry Fork Station is apparent. "Our plant is one big office. I've really enjoyed working here. It's one of the best places you can possibly work," Wager says.

It seems things have come full circle from the time when his dad recommended he look into becoming an operator. "I would have never guessed I would get to work with my father, but like this morning, I saw him when I was coming off my night shift and was able to greet him. It's fun talking back and forth about operations and maintenance with him. We both learn a lot from each other," Wager says.

I'M SUCH A SMALL COMPONENT IN COMPARISON TO THE WHOLE PICTURE, BUT IF I CAN DO MY PART TO KEEP THE PLANT RELIABLE AND THE POWER GENERATING, ESPECIALLY WHEN THINGS ARE IN DIRE NEED OF ATTENTION, THEN I'M HELPING MAKE A DIFFERENCE.

Zachary Wager



FIRM PIPELINE CAPACITY INSTRUMENTAL DURING ENERGY EMERGENCY

By Joan Dietz

The energy emergency across the midsection of the United States Feb. 14-20 will be discussed and investigated for months, and likely years to come. And with that, all the components that work together to deliver energy to each members' homes, businesses, and ranches will be reviewed.

Dakota Gasification Company's Great Plains Synfuels Plant in Beulah, North Dakota, fits uniquely in the picture as it produces natural gas as well as having firm capacity on the Northern Border Pipeline, a pipeline used to transport natural gas to the market. It also feeds many of Basin Electric's North Dakota and South Dakota natural gas electrical generation facilities and was instrumental during the February event – keeping those facilities producing electricity during a critical time.

In February, the Synfuels Plant was producing natural gas that was desperately needed. Cold weather shut in many gas producers, but not the Synfuels Plant. Daniel Schaff Gallagher, Basin Electric manager of commodity sales and trading, says because the Synfuels Plant produces gas and has firm capacity of nearly 80,000 dekatherms on the Northern Border Pipeline, it made procuring the gas to transport to the cooperative's gas-fueled units more efficient. "More efficient because we are producing, transporting, and consuming natural gas, so as traders we are able to manage that situation more cost-effectively than if we were only buying a lot of natural gas," Gallagher says. "We can serve some of our own generation using our own production, so looking at it from a physical standpoint, the portfolio provides more options to manage the position effectively and efficiently."

Gallagher says for natural gas purchases, there were other ways to capture value, as well. "In SPP (Southwest Power Pool), we have physically purchased natural gas for the North Dakota units that we have available that was financially hedged. So we had purchases for the northern gas units that were significantly lower than spot market prices," he says.

The highest fixed price natural gas purchases in the Ventura market were around $500/million British thermal units (mmbtu) – normal winter prices are around $3-$4/mmbtu. Gallagher says in Oklahoma there were daily gas prices as high as $1,200/mmbtu due to the trouble cold weather caused in the southern United States.

Dakota Gas also played a role in shedding load during the energy emergency. In addition to load being shed quickly by members, some large load was voluntarily shed within Basin Electric and Dakota Gas' operations.

At the Synfuels Plant, power use was reduced by about 8 megawatts in the gas path for several hours, which was accomplished without reducing natural gas production.

Vice President and Synfuels Plant Manager Dale Johnson says the plant was in close communication with Basin Electric Class C member Roughrider Electric Cooperative in Hazen, North Dakota. "We were asked how the plant could help with load shedding. After some frantic phone calls, Dakota Gas was able to minimize the urea plant rate and save about 2.5 megawatts (MW), which is on the Roughrider Electric system. It happened very quickly, and we were happy to help," Johnson says. In total, Dakota Gas was able to save 10.5 MW of power.

At the nearby Freedom Mine in Beulah, North Dakota, all three draglines were shut down from Feb. 15-19, which saved a little more than 6 MW in the Roughrider Electric system. This, together with the load shed at the Synfuels Plant, allowed power to be kept on in 12,800 homes.

Three draglines shut down (saved 6 MW)

Synfuels Plant conserved power (saved 10.5 MW)

Kept power on in 12,800 homes

MEMBER CO-OPS COMMUNICATE THROUGH CRISIS

By Erin Laverdure

"We're all in this together."

It's a sentiment that resonated through the pandemic, but in February 2021, it took on another dimension. A deep freeze and high demand for power through the central United States exposed just how interconnected we really are via the transmission grid.

Electric cooperative members heard about the Southwest Power Pool (SPP), perhaps for the first time, as their power was cycled off by transmission operators to preserve the integrity of the grid. Interruptions came with little warning, leaving members with questions: Who? Why? How?

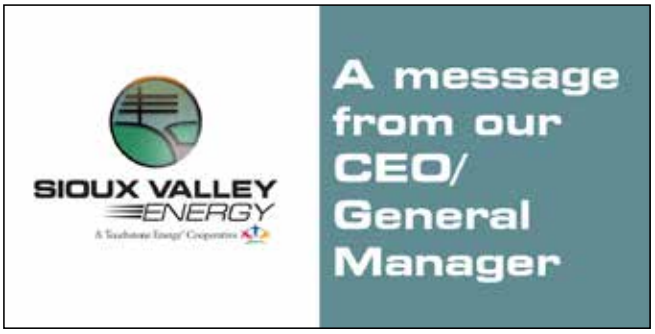
Electric cooperatives stepped up with answers, deploying a variety of tools from their communication toolboxes to prepare, inform, and connect with their members. Here are some examples.

SIOUX VALLEY ENERGY COLMAN, SOUTH DAKOTA

Sioux Valley Energy began advising members to conserve power prior to the energy emergency. However, on Feb. 16, SPP directed the Western Area Power Administration (WAPA) to shed load and open breakers, and 7,035 of the co-op's members lost power. The outages came with little warning, and many members were understandably upset.

Sioux Valley Energy CEO and General Manager Tim McCarthy addressed member concerns directly that day in an open letter on the co-op's website and on Facebook. Excerpts from the letter:

"Our members are upset. Rightfully so! It is dangerously cold in our region at the moment and to go without power for any length of time is more than an inconvenience. However, what I need to convey to all of our members is the consequences of not taking these actions this morning. … Simply put, the system starts to implode and it will shut down in very damaging fashion. … My vow to you is we will do everything we can to keep you informed. We will give notice when we can. However, the truth is, that may not be possible."



McCarthy's letter resonated with many throughout the region. The Facebook post featuring his letter was shared 362 times.

Carrie Vugteveen, Sioux Valley Energy vice president of public relations, says Sioux Valley Energy aims to be transparent with the membership, and McCarthy takes that to heart. "He not only talks about the cooperative's motto, 'Serving Our Members. Always,' he lives it. He believes that Sioux Valley Energy's membership deserves to hear from the leadership of the organization during times of crisis, even if it is a tough message to give and we may not have all the answers," she says.

Read McCarthy's full letter.

http://bit.ly/SiouxValleyOutageLetter

MOR-GRAN-SOU ELECTRIC, FLASHER, NORTH DAKOTA, AND BASIN ELECTRIC'S SECURITY AND RESPONSE SERVICES

Basin Electric's Security and Response Services (SRS) can push outbound messages to co-op members, informing them of outages and other events. Pictured from left: Jolene Johnson, SRS dispatch supervisor, and Seth Neer, service dispatcher.

As unplanned outages peppered cooperatives in the region, Mor-Gran-Sou Electric saw an opportunity to employ outbound messaging via telephone to alert the entire membership of the possibility of outages. Ultimately, members around northwest Mandan and New Salem, North Dakota, were affected the morning of Feb. 16.

"With only a few minutes to prepare a message, we got to work and initiated an IVR (interactive voice recording) message as soon as possible. That IVR message was used as the backbone to our initial message on Facebook and our website," says Jackie Miller, Mor-Gran-Sou Electric chief of staff. The automated calls also freed up their member service representatives to speak to members one-on-one.

Whether it is a typical outage or the recent controlled interruptions of service, Miller says they try their best to keep the lights on and members informed. "Better-informed members make better decisions should their power become impacted. Also, we try to keep the message as condensed and consistent as possible, and SRS (Security and Response Services) is helpful in message preparation," she says.

Jolene Johnson supervises SRS at Basin Electric. She says the outbound messaging capability used by Mor-Gran-Sou Electric is available to any cooperative that uses SRS's services. The co-op provides the message and the specifics of who needs to receive the message, and SRS staff and software can quickly push out the message.

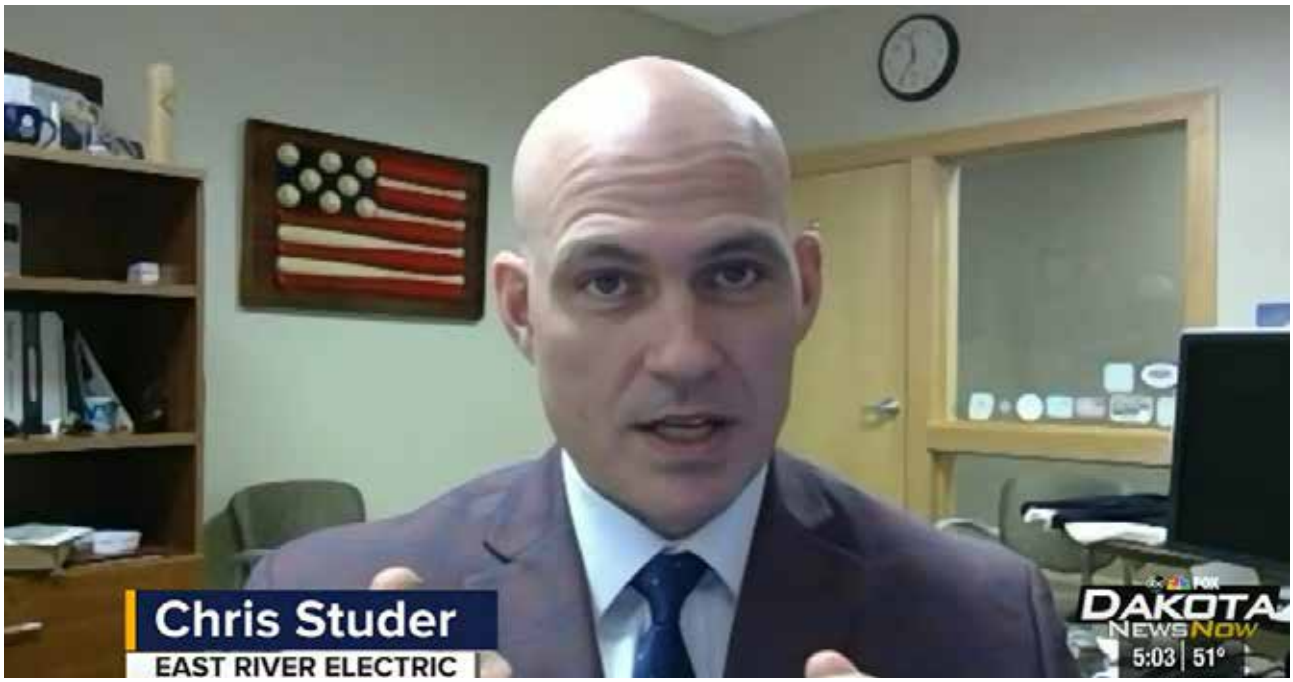
"The new software program is actually very helpful and can reach a lot of members in a very short time. This, along with social media, is a great way to communicate and keep everyone informed about all kinds of emergency situations, disconnects, or planned outages," Johnson says.

WEST RIVER ELECTRIC COOPERATIVE WALL, SOUTH DAKOTA

SPP saw how extended extreme cold in the southern part of its territory could impact overall operations, so they began encouraging conservative operations as early as Feb. 9. West River Electric took early action to pass the conservation message on to their members. Through a series of Facebook posts beginning Feb. 14, they shared tips on how to save energy and explained why it was important for each member to do their part. By the morning of Feb. 16, however, the crisis had escalated and 2,084 West River Electric members faced a 50-minute outage.

Veronica Kusser, marketing and member relations manager for West River Electric, says they took their phones back from the answering service and put all hands on deck to help take member calls. "The outage happened at a tough time for parents getting kids ready for school and getting ready for work themselves. The members were very understanding when we shared information with them," she says.

West River Electric was prepared for a second day of outages that fortunately did not come.



Chris Studer discusses the impacts of the energy emergency on South Dakotans' energy bills in a Feb. 23 interview on Dakota News Now.

EAST RIVER ELECTRIC POWER COOPERATIVE MADISON, SOUTH DAKOTA

East River Electric embraced media relations to help electric consumers in eastern South Dakota understand how they may be impacted and what they could do to help. They were first notified of the possibility of an energy emergency on Valentine's Day. So that afternoon, the East River communications staff mobilized a series of statements, press releases, and social media posts to get the message to the public.

"Our strategy in working with the media during a crisis or emergency situation is to be out front and aggressive in getting our message to the public," says Chris Studer, East River Electric chief member and public relations officer. "We take every media call and respond as quickly as possible because, as a former news reporter, I know all too well that the media has tight deadlines to meet and we at East River want to be included in every story they're writing or broadcasting."

East River Electric's news releases and media interviews were published throughout the week by a variety of news outlets, including newspapers, radio stations, and television stations.

East River Electric CEO and General Manager Tom Boyko later reflected on the event with appreciation for employees in a letter to the editor in the *Aberdeen News*, published March 29. "I would like to thank the dedicated employees at the Western Area Power Administration and Basin Electric for their tireless work throughout the storm, which was an extremely stressful situation for all involved. Employees at those two organizations made split-second decisions to make sure that the electric grid stayed intact to prevent widespread outages that could've taken days to repair."

Examples of East River's media outreach:

KELOLAND TV, Sioux Falls, South Dakota
http://bit.ly/KLColdCreatesEnergyDemand

Hub City Radio, Aberdeen, South Dakota
http://bit.ly/HCRConserve

South Dakota Public Broadcasting, Vermillion, South Dakota
http://bit.ly/SDPBConserve

SIOUX VALLEY ENERGY AND EAST RIVER ELECTRIC

In the days following the unplanned outages, Sioux Valley Energy took to the digital airwaves with their intermediate power supplier, East River Electric Power Cooperative, in a podcast. The 16-minute episode of "Inside the Grid" featured McCarthy, Boyko, and host Jay Buchholz, key account and community relations executive at Sioux Valley Energy, discussing the scenario that led to Sioux Valley Energy's members losing power.

Boyko said as the cold weather system covered the entirety of SPP's footprint, the whole area used more natural gas for heating, making less available for power generation. Also wind generation was low, and overall electricity demand was very high. "Just like your house, if you overload the system, something's going to pop," Boyko said in the podcast. "They had to open some breakers to relieve that load."

McCarthy said he sensed the frustration from members when their power was interrupted, and he wanted to help them understand why. "This is a situation where those of us in the industry had to make some tough choices and take swift and decisive action for the greater good of our members. While not popular in the moment, I hope our members understand we're here to serve as stewards," he said.

The "Inside the Grid" podcast is part of Sioux Valley Energy's targeted communications for commercial and industrial members, which also includes a monthly newsletter. Vugteveen says the podcast was a great avenue to provide additional information and context for the entire membership as well as commercial and industrial members.

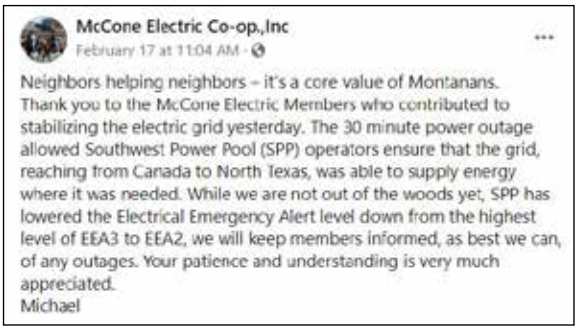
Listen to this and other podcast episodes

http://bit.ly/SiouxValleyPodcast

MCCONE ELECTRIC COOPERATIVE CIRCLE, MONTANA

The ripple effects of the energy crisis spread to eastern Montana, where 1,976 homes, ranches, farms, and businesses on McCone Electric's lines experienced outages on Feb. 16. Michael Hoy, McCone Electric general manager, says office staff quickly called as many key accounts as possible to alert them before losing their phone service to the outages, as well. The cooperative also used Facebook to keep members updated.

The next day, Hoy expressed gratitude for members' efforts and patience in a Facebook post: "Neighbors helping neighbors. It's a core value of Montanans. Thank you to the McCone Electric members who contributed to stabilizing the grid yesterday. The 30-minute power outage allowed Southwest Power Pool (SPP) operators ensure that the grid, reaching from Canada to North Texas, was able to supply energy where it was needed."


McCone Electric Co-op.,Inc
February 17 at 11:04 AM ·

Neighbors helping neighbors – it's a core value of Montanans. Thank you to the McCone Electric Members who contributed to stabilizing the electric grid yesterday. The 30 minute power outage allowed Southwest Power Pool (SPP) operators ensure that the grid, reaching from Canada to North Texas, was able to supply energy where it was needed. While we are not out of the woods yet, SPP has lowered the Electrical Emergency Alert level down from the highest level of EEA3 to EEA2, we will keep members informed, as best we can, of any outages. Your patience and understanding is very much appreciated.
Michael

Hoy says they saw a very positive attitude from the membership once the co-op described the reason behind the outage. "We explained that under 'mutual aid agreements,' other regions of SPP would have supported our area the week before, if power plants would have gone down during our sub-zero temperatures."

Looking ahead, Hoy says McCone will add a form to their Disaster and Emergency Handbook that can serve as a framework for formulating a uniform statement to all members, should the situation arise again.

RAINY DAY FUNDS

HELP BASIN ELECTRIC WEATHER THE STORM

By Angela Magstadt

The rainy day Basin Electric has been preparing for happened in February.

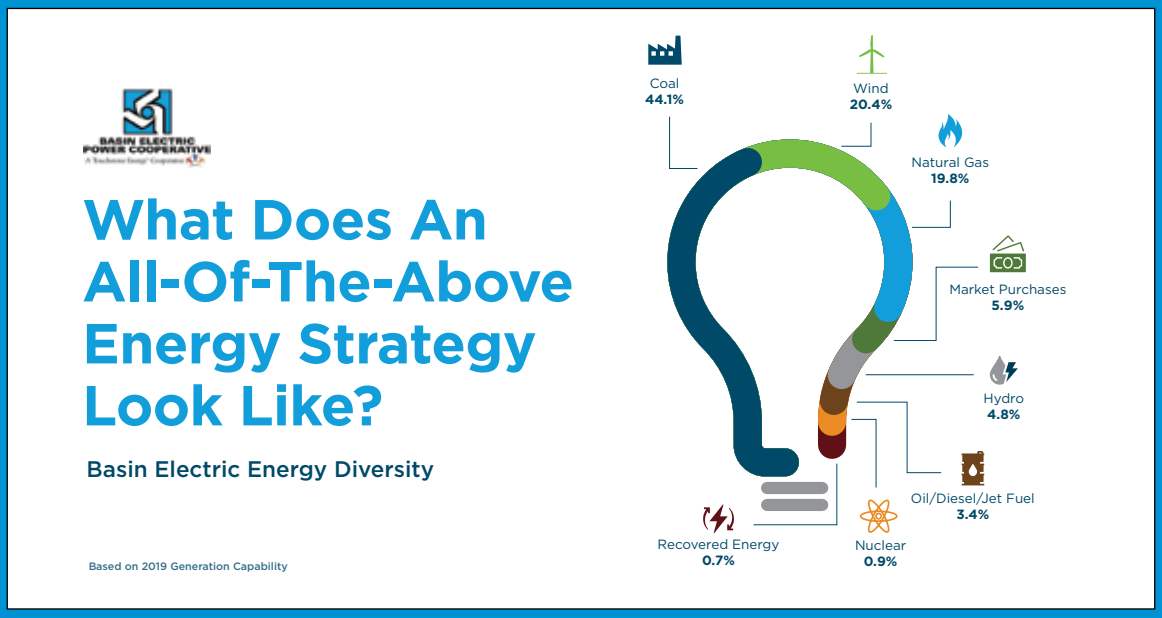
While the storm that began on Feb. 14 didn't literally come in the form of rain, but rather extreme cold temperatures that stretched from North Dakota to Texas, it was just the type of event that had the potential to cause widespread blackouts and drastically increase member rates.

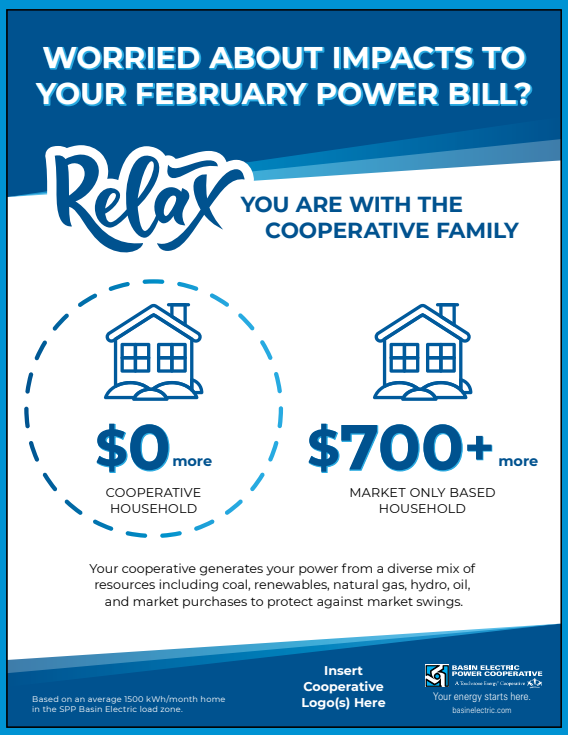
But when end-use consumers in other parts of the country were paying up to $700 for that one month's electric bill, members at the end of Basin Electric lines were able to rest easy because their rates stayed the same as they'd always been.

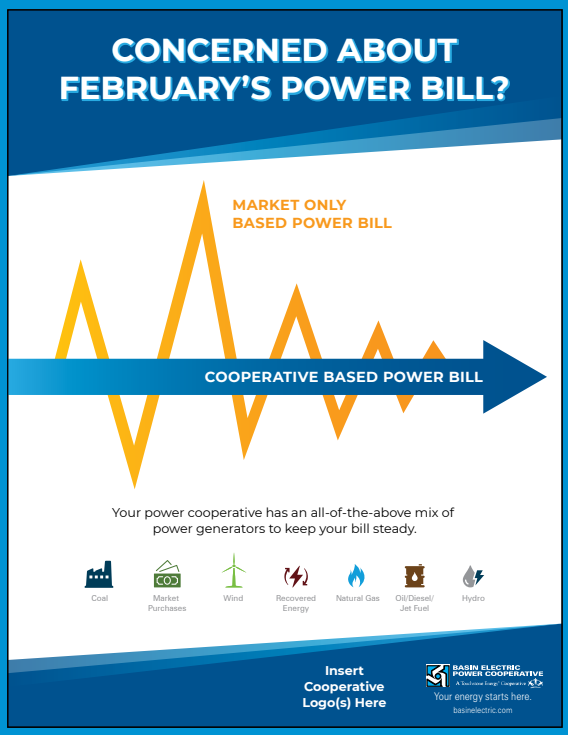
So what did Basin Electric do differently than these other energy providers – the ones that had to borrow hundreds of millions of dollars or even file bankruptcy because of the extremely high gas and power prices during the energy emergency? The co-op planned ahead and saved for situations like this.

"Heading into the cold snap the week of Feb. 14, Basin Electric was well positioned from a liquidity standpoint," says Kelly Bergquist, Basin Electric senior financial analyst. "We had $1.4 billion in cash and unused lines of credit, as well as strategies in place that eliminated the need to materially draw down on that liquidity."

The cost of natural gas was one such strategy. "Over the years we've talked a lot about the natural hedge that exists between Basin Electric and Dakota Gas and that really came into play during February's cold weather event," says Katrina Wald, Basin Electric manager of financial reporting and accounts receivable. "Dakota Gas







was able to maximize natural gas production in February to supply gas to Basin Electric's gas generators."

During February, natural gas prices went from around $2 to $3/million British thermal units (mmbtu) to over $300/mmbtu on certain days. "During that time Dakota Gas sold $40 million of gas to Basin Electric, so instead of paying that to a third party, the co-op paid it to Dakota Gas, keeping that money in the Basin Electric family," Wald says.

The same advantage was seen with Dakota Gas buying its electricity from Basin Electric. "With the high energy prices that month, Dakota Gas incurred a very high electric bill – $47 million compared to its usual $3 million," Wald says. "But instead of paying that to a third party, Dakota Gas paid it to Basin Electric, again, keeping that money in the family. Bergquist compares this to taking cash from your left pocket and putting it in your right pocket.

Another strategy that helped keep Basin Electric's rates stable in February was its all-of-the-above generation mix. As Basin Electric continues to diversify its generation mix to meet its load growth with wind, natural gas, and market purchases, it has also maintained coal generation. Coal-based generation is considered more reliable because it is the only power generation where several days of generation fuel is stored on site.

"Basin Electric's overall power and fuel supply strategies protected us from extremely high prices in the market," Bergquist says.

In addition to the liquidity, Basin Electric has a revenue deferral program that has been put in place for such unforeseen occasions – a kind of "rainy day fund." At the end of 2020 the revenue deferral program was at about $264 million. If the board of directors chooses, it can use some of that deferred revenue to lessen the financial impact of unanticipated events. This helps Basin Electric stabilize margins, maintain its credit rating, keep costs of debt down, and ultimately preserve stable member rates. It definitely pays to plan ahead.

EMPLOYEE SAVES WIFE'S LIFE, CREDITS SAFETY TRAINING EXPERIENCE

By Lindsey Chumley

Safety is a top priority at Basin Electric. One way the cooperative promotes safety is by providing training to its employees, such as the first aid, CPR (cardiopulmonary resuscitation), and AED (automated external defibrillator) training courses through the National Safety Council.

The skills learned during these trainings keep employees safe while at work, but the value of learning these critical skills goes beyond the workplace. One employee knows this firsthand because of a choking incident that happened with one of his family members while at home.

Jason Halvorsen, mechanic operator-journeyman for Basin Electric's Transmission System Maintenance (TSM) division based out of Wheatland, Wyoming, recently used his safety skills when his wife began choking one evening. He credits his years of safety training with helping him react, which likely saved his wife's life.

Ironically, the incident happened the same day Halvorsen participated in his first aid, CPR, and AED training for work, so the steps were fresh in his mind. "I had been

out of town for work the previous eight days and on my first day back, I went in for the training at work. When I got home later, my wife asked me to grill up steaks," Halvorsen says.

During dinner, his wife started choking. When Halvorsen realized she was struggling, he wasted no time leaping into action to perform the Heimlich maneuver. He was successfully able to get enough of her airway unblocked that his wife was able to breathe. They still rushed to the hospital in order to get the object completely removed.

"My wife and I were discussing it afterwards and she asked how I could be so calm during the whole thing. I told her for me, it goes back to when I did the mine rescue training," Halvorsen says.

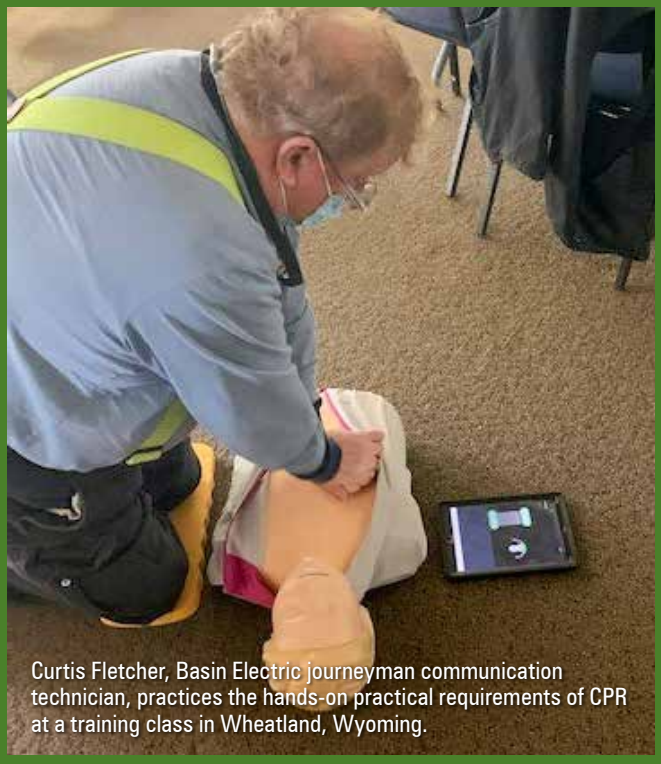
Before joining the cooperative, Halvorsen worked in a coal mine and was part of the mine rescue team there. To serve on the team, he was certified in Basic Emergency Care (one step below an Emergency Medical Technician, or EMT, certification), which required frequent training. Now, as an employee at Basin Electric, he keeps up on his required trainings for TSM and serves on TSM's safety committee.

Halvorsen feels passionate about encouraging people to get certified in first aid, CPR, and AED training. The experience with his wife even prompted him to register his 15-year-old and 18-year-old sons for a class.

"I may have more training than a lot of people, but I think these are skills everyone should have," Halvorsen says. "Even if you only do the training every couple years, it gets you more used to it so you'll know what to do if the situation arises. The more you practice and the more you see it, the better you'll be able to react."

Halvorsen's experience proves the importance of learning these safety skills and shows that whether these skills are used at work or in one's personal life, they can make all the difference.

"This kind of training is something you hope you never have to use, but if a situation arises, you'll be thankful you have it," Halvorsen says.



Curtis Fletcher, Basin Electric journeyman communication technician, practices the hands-on practical requirements of CPR at a training class in Wheatland, Wyoming.

SAFETY TRAINING AT TSM

Basin Electric Headquarters, each power plant, and the Transmission Systems Maintenance (TSM) division are members of the National Safety Council and the local and state safety councils.

Scott Agnew, training coordinator for Basin Electric's TSM division, teaches the National Safety Council version of first aid, CPR, and AED training. The course is required of all TSM employees every two years, along with defensive driving training. "Due to the remote nature of our work and the incredible number of hours our division spends driving, both types of training are mandatory and invaluable," Agnew says.

As part of the first aid course, they cover choking and discuss both what you should and shouldn't do. "I regularly hear stories during this training where an employee either was given the Heimlich maneuver, or had to perform it on someone else. It is a simple skill everyone should learn," Agnew says. "I am glad Jason was able to use his training in this instance."

Kudos

Bettenhausen named Communicator of the Year

The Great Plains chapter of the International Association of Business Communicators (IABC) named Basin Electric Senior Staff Writer/Editor Tracie Bettenhausen its 2020 Communicator of the Year.

"Bettenhausen contributes to outstanding and effective communication programs, encourages professionalism and integrity, is involved in the community, and demonstrates leadership and excellence," the chapter's newsletter said when announcing its selection for the award.

Bettenhausen serves as editor of Basin Electric's websites; manages its blog and social media; writes magazine articles, video scripts, and regular newsletter content; and reports cooperative board meeting information to members and employees.

Schell receives award from member cooperative

Basin Electric Member Revenue Analyst III Melissa Schell received the 2021 Helping Hand Award from Class A member Upper Missouri Power Cooperative.

The award states, "We value your attention to detail, accurately and timely processing our monthly billing. We appreciate your keen understanding of our system, metering protocol, cost of service model, and load profile. You have been a trusted partner, committed to excellence. Our solid trust in you is a result of your commitment to integrity and impeccable attention to detail."

Claire Vigesaa, Upper Missouri Power general manager, said the cooperative awards the Helping Hand Award to those who have helped make the cooperative healthier, including "premiere communications with an emphasis on listening and prompt, accurate service."

Sukut receives award from Central Power

Basin Electric CEO and General Manager Paul Sukut received the Gary M. Williamson Good Turn Award from Class A member Central Power Electric Cooperative at its annual meeting in March.

"It is with a great deal of admiration and in friendship that I proudly present this award to Paul Sukut for his dedication to advancing the Electric Cooperative Program," Central Electric General Manager Tom Meland said when presenting the award. "We thank you for all you have done for the membership of Basin Electric, and in particular, all you have done for Central Power and its members."

Sukut has been employed with Basin Electric since 1983, serving as deputy general manager and chief financial officer before becoming the cooperative's fifth general manager in 2014. He has been quoted as saying, "I grew up in the cooperative world; co-ops are in my blood."

Central Power also presented Good Turn Awards to North Dakota Sen. David O'Connell and North Central Electric Cooperative General Manager Wayne Martian.

O'Connell was elected to the North Central Electric board of directors in 1979. He also served in the North Dakota Legislature for over 30 years. "It is abundantly clear that he has devoted his life to public and cooperative service," Meland said when presenting the award.

Martian has been employed by North Central Electric Cooperative for 40 years, the last 12 as its general manager. "We thank you for all you have done in your capacity as general manager of North Central Electric Cooperative for Central Power and its members," Meland said.

Service awards

Leslie Hintz
35 years
supervisor, instrumentation & control
Leland Olds Station

Dave Martinez
35 years
control room operator
Laramie River Station

John Volk
35 years
electrical & instrumentation maintenance field technician
Dakota Gasification Company

Shirley White
35 years
administrative assistant III
Laramie River Station

Chris Bakken
20 years
mechanic I
Leland Olds Station

Jamie Bauer
20 years
maintenance planner specialist
Transmission System Maintenance

Chris Baumgartner
20 years
senior vice president, member services & administration
Headquarters

Stanley Boeshans
20 years
laborer
Antelope Valley Station

Robert Degenstein
20 years
instrument I
Leland Olds Station

Sarah DePriest
20 years
senior integration architect
Headquarters

Matt Ehrman
20 years
manager, mechanical engineering
Headquarters

Kristen Henke
20 years
enterprise application architect III
Headquarters

Todd Isaak
20 years
lead mechanic
Leland Olds Station

Seth Nehl
20 years
supervisor, maintenance shop
Dakota Gasification Company

Marlow Pfaff
20 years
mechanic I
Leland Olds Station

Darrell Schulz
20 years
maintenance coordinator
Headquarters

Tim Trana
20 years
control room operator
Leland Olds Station

New employees

Michael DeWitt began work as a security operations center administrator II at Headquarters on Dec. 7. Previously, he worked as a systems administrator for Midwest Motor Express in Bismarck, North Dakota. The Nashville, Tennessee, native is also a U.S. submarine Navy veteran.

Austin Mattoon began work as a field technician at the Great Plains Synfuels Plant on Dec. 14. Previously, he worked for Great River Energy as a mechanic in Underwood, North Dakota. The Riverdale, North Dakota, native earned an associate's degree in power plant technology.

Brady Bohl began work as a settlements analyst II at Headquarters on Jan. 4. The Bowbells, North Dakota, native previously worked for Arman Group as a financial advisor in Bismarck, North Dakota. He also works on his family's farm in his hometown during the farming season. Bohl earned a bachelor's degree in finance from Minnesota State University Moorhead.

Nate Wolski started work as a laborer at Leland Olds Station on Jan. 4. He previously worked for Nabors Drilling as a derrickhand in Williston, North Dakota. Wolski also worked for Weber Electric as an apprentice electrician, Acrotech Services as a welder and installer, and Northwest Contracting as a structural welder. The Washburn, North Dakota, native earned an associate's degree in power plant technology from Bismarck (North Dakota) State College.

Eric Barber, hardware maintenance assistant, started work at Headquarters on Jan. 18. He previously worked at Basin Electric Headquarters as a hardware maintenance tech intern. Barber is originally from Providence, Rhode Island.

David Starks started work as a service dispatcher at Headquarters on Feb. 15 and recently transferred to real-time trading. Before joining the cooperative, he worked as a night operator for a subcontractor to Whiting Oil and Gas at Robinson Lake Field. Starks also worked as a lease operator for Hunt Oil. Originally from Ryder, North Dakota, he earned bachelor's degrees from the University of Mary in Bismarck, North Dakota, in pre-med biology, applied mathematics, and general studies, and minors in chemistry and music.

Mariah O'Fallon, service dispatcher, began work at Headquarters Feb. 22. She previously worked as a waitress at Stadium Sports Bar and The Lodge in Bismarck, North Dakota. O'Fallon earned an associate's degree in power generation technology. She is originally from Bismarck.

Retirees

Marvin (Terry) McBain, scrubber operator, retired from Antelope Valley Station on Dec. 23, 2020. He first started at the plant in 1983. McBain says his career was very rewarding.

"Terry was a very competent and knowledgeable operator who was always striving to get the task at hand completed," says Blaine Fischer, Antelope Valley Station scrubber supervisor. "I worked with Terry on and off for the last 35 years and I always enjoyed the time we worked together. He was always helping out his fellow operators and sharing his knowledge of the scrubber. He helped me out a lot when I started as scrubber supervisor. He will be missed."

Ricky Hansen retired as a shift supervisor from Laramie River Station on Jan. 4. He joined the co-op in 2010 as a lead station operator and was part of the startup at Dry Fork Station before becoming a shift supervisor. Before joining the co-op, Hansen worked for Tucson Electric Power as a station operator and EG&G as a stationary operating engineer.

Gary Lockman, Laramie River Station operations superintendent, says Hansen was everyone's friend and adds, "I feel what will be missed most with Ricky's retirement is his endless stories and the number of people he knew. It seemed he never forgot a thing or a name."

Hansen plans to spend his retirement hunting, going to car and motorcycle shows, riding his Harley, and spending time with his grandchildren.

Troy Borud, fertilizer section manager, retired from the Great Plains Synfuels Plant on Jan. 4. He first started at the plant in 1984. Borud says "I was lucky enough to work in numerous areas in operations throughout the plant with my last couple of years as the fertilizer section manager."

Trinity Turnbow, Dakota Gas operations manager, says he enjoyed working with Borud over the past 13 years. "He has more than 35 years of experience and knowledge across the entire plant, and he was always willing to help out in any area that needed it. I will miss Troy's friendship, work ethic, and belief that any problem can be solved. He is someone I leaned on for advice whenever there was a new and difficult challenge. Troy was able to keep a positive attitude even when things weren't going perfect and was always a team player," says Turnbow. "I will also miss Troy's jokes and ability to lighten the mood in our daily morning meetings."

In his retirement, Borud looks forward to golfing, hunting, fishing, and spending time traveling with his wife.

Conrad Kostelecky retired as an electrical and instrumentation field technician from the Great Plains Synfuels Plant on Jan. 15. He worked at the plant for nearly 36 years.

"Conrad was very adaptable, creative, optimistic, and a great problem solver," says Nick Ahlschlager, Dakota Gas supervisor of electrical & instrumentation maintenance. "He worked to learn the new technologies that were ever-changing throughout his career. He would often seek out a way to improve the operation of our equipment and make things better for the next person."

Ahlschlager adds that Kostelecky had an unbelievable memory. "He could recall where a certain piece of equipment was and what we had done to repair it in the past like no one I have ever seen. He also was very good about keeping a cheat sheet of part numbers to help out the people he worked with," Kostelecky says. "He was involved in our instrumentation training program and his experience and knowledge will be hard to replace."

In his retirement, Kostelecky looks forward to "enjoying more time to cook, travel, work on a couple of old cars, hunt, fish, go camping, and spend time with family and friends."

Retirees

Jim Pulver retired as an area planner from the Great Plains Synfuels Plant on Feb 12. He started work at the plant in 1996 as a process operations field technician before moving to an area planner position in 2013.

Previously he worked for Betz as an industrial technical sales representative. He earned a bachelor's degree from Dickinson (North Dakota) State University and an associate's degree from Lake Region (North Dakota) State College in Devils Lake.

In his retirement, Pulver looks forward to golfing, hunting, fishing, and watching his grandkids grow up.

Max Amsden retired as an instrument technician from Leland Olds Station on Feb. 12. He worked at the plant for nearly 21 years.

Donalda Voigt retired from the Great Plains Synfuels Plant as a process operations field technician on March 1. She started at the cooperative in 2006.

"Donalda had an excellent work ethic and was always trying to make improvements to the area," says Tim McEvers, Dakota Gas pipeline/utilities operations supervisor. "She loves to travel and I'm sure she will be visiting lots of interesting places during her retirement."

In her retirement, Voigt looks forward to traveling and spending time with her family.

Linda Klein, lead lab technician, retired from Leland Olds Station on March 3. She began working for the cooperative in 1986 as a surface water monitoring technician. "I drove a lot of miles to do the environmental monitoring for the Velva Coal Mine, William J. Neal Station, along with Antelope Valley Station, Glenharold Mine, and Leland Olds Station," says Klein. "In 1993, the last coal was mined at Glenharold Mine and the final reclamation brought unique situations with a limited amount of employees. We had to do a lot of jobs we had never done before. My 22 years at LOS (Leland Olds Station) we had a lot of changes with the addition of the v-slot, scrubber, ash dewatering, SNCR (selective non-catalytic reduction) unit, federal groundwater wells, and maintaining laboratory certification, which were unique challenges to keep us in environmental compliance. In my 35 years with Basin I am so very thankful to have worked with many talented and hardworking employees at Leland Olds Station and Glenharold Mine."

Before joining the co-op, Klein worked for Consolidation Coal Company as an environmental technician.

"Linda was a very caring, reliable, and dependable employee," says Ryan Goven, Leland Olds Station results engineer. "In all the years I supervised her, I don't think she ever refused overtime. I will miss our morning discussions and her laugh."

In her retirement, Klein looks forward to having more time to spend with her four children and 11 grandchildren, as well as gardening, camping, quilting, crafting, and traveling. "Living on a ranch we always have fence to fix or rocks to pick. My husband has also found me a part time job!" Klein says.

Ross Pfeifer retired from the Great Plains Synfuels Plant as a protection services supervisor on March 3 after over 34 years at the plant. "It's been a great experience doing all the different duties in Protection Services along with working with a lot of great people," says Pfeifer. "I've seen a lot of changes in the plant along with the people who have worked here and left." Before joining the co-op, he previously served in the U.S. Air Force Security Forces.

"Ross is a calm and collected individual. I never saw him get too excited or worked up about anything. This characteristic served him very well in the emergency response world," says Claude O'Berry, Dakota Gas pipeline superintendent. "I could always rely on Ross to have thoroughly evaluated the situation at hand and to respond correctly. And with his years of tenure he has been through his fair share of incidents. I will miss his upbeat attitude of life in general, and the knowledge of his long career at DGC."

"Ross was always ready to help wherever he could," says Patty Cogdill, Dakota Gas protection services supervisor. "He was very knowledgeable in all things Protection Services. He was a very dedicated employee to DGC and he knew and did his job well. That is one thing that will be missed about not having him around, is his knowledge of the Protection Services department."

In his retirement, Pfeifer plans to spend time with family and friends, as well as doing more fishing, hunting, riding motrocycle, and traveling.

Bruce Winkler, shift/shop maintenance field technician, retired from the Great Plains Synfuels plant on March 12 after working at the plant for 37 years.

In his retirement, Winkler says he plans to "be a full time dad and take one day at a time."

Jeff Hanson, maintenance planner/scheduler, retired from Leland Olds Station on April 2. He began his career at the plant in 1990. He spent 27 years in the instrumentation department and four years in the planning department. Before joining the co-op, he worked for Bobcat as a maintenance supervisor.

BASIN ELECTRIC CELEBRATES 60 YEARS

May 5 marked 60 years since Basin Electric's articles of incorporation were signed by 69 people from several states at the Patterson Hotel in Bismarck, North Dakota. In an interview in 2018, Leroy Schecher, the last living original incorporator, who died on March 27, said, "When you do something, you don't typically look ahead and think about what consequences that action is going to have in 50 or 60 years. What Basin Electric is today was beyond my wildest imagination." Look for more about Basin Electric's 60 years of service to its members at the Annual Meeting in November and on the upcoming new history timeline on Basin Electric's website.

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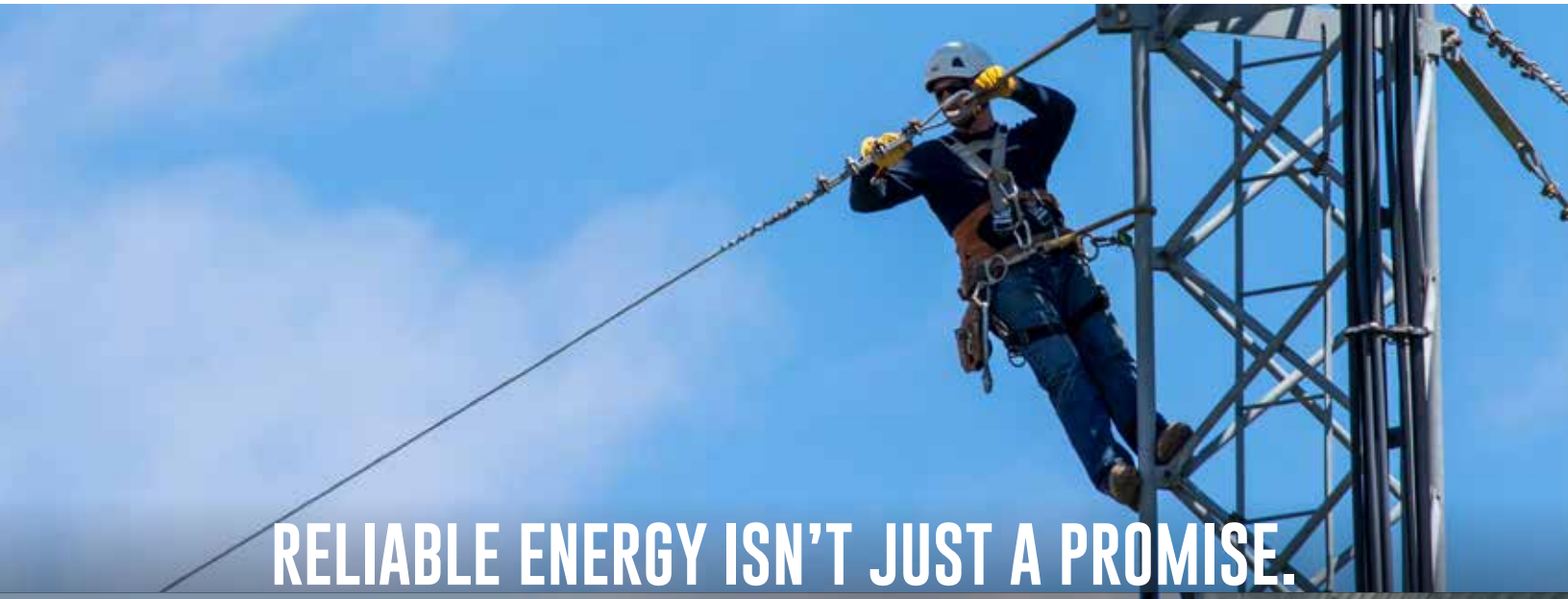

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