

COOPERATIVE CONNECTIONS

Mitchell Tech Expansion

**Co-ops Support
New Training Lab**

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*Photo submitted by
Mitchell Technical College*

SUSTAINING A RESILIENT ELECTRIC SYSTEM

The Mitchell and Plankinton crews work to replace aging poles.



Ken Schlimgen
General Manager

We've all heard the phrase, "Don't put all your eggs in one basket." This common adage usually serves as a warning — don't risk everything on a single plan or option. It's also a great way to describe your electric cooperative's approach to building and maintaining a reliable and resilient power delivery system.

Whether you're flipping on a light switch or running equipment in your shop,

Central Electric delivers the electricity you need more than 99.9% of the time each year. That level of reliability doesn't happen by chance — it comes from careful planning, proactive maintenance and strategic investment in multiple areas of the system.

You can read more about East River Electric's regional efforts to enhance reliability on page 6. At the heart Central Electric's reliability efforts is system maintenance, and that doesn't mean just fixing things when they break. We focus on several key areas.

Annually, your cooperative uses an outside contractor to test approximately 10% of our poles, with the goal of inspecting each pole once every 12 years. Poles that pass the inspection receive added ground line treatment to extend their life expectancy. Poles that fail the inspection are scheduled for replacement. Our contractor started this project in June, taking about 6 weeks to test 5,000 poles in Brule, Buffalo and Jerauld Counties.

Our crews regularly patrol lines to visually inspect for damage, wear and potential risks — including trees or brush that could cause outages or blinking lights. This proactive patrol helps prevent many common service interruptions.

Your cooperative uses devices known as oil circuit reclosures, which attempt to restore power when

temporary faults occur, such as a tree branch on a line. To ensure they continue to function properly, Central Electric rotates service on 25-30% of these devices annually.

Since 2019, we've committed to replacing 50 to 60 miles of older overhead power lines each year. This ongoing investment has reduced outages and employee overtime — clear indicators of improved system performance.

A resilient electric system isn't just about keeping the lights on during normal conditions — it's about making sure our infrastructure can withstand severe weather and unexpected events. That's why we continue to repair, upgrade and replace equipment before problems occur. By placing our "eggs in multiple baskets," we reduce risk and enhance reliability for all members.

I also want to share information regarding the dollars your cooperative collects and pays for taxes. In 2024, we collected \$2,748,645 from members for payment of taxes. Your cooperative pays a kilowatt-hour tax, which is applied to all energy sold. This tax is paid in lieu of a property tax on the infrastructure needed to deliver power to you. The amount of kilowatt-hour tax paid in 2024 was \$1,077,489. The largest tax paid was for state and city sales tax at \$1,535,324. In addition, property tax on buildings of \$79,478 and excise tax of \$53,005 was also paid.

These tax dollars are part of the broader picture. Powering our communities requires both financial responsibility and thoughtful planning. As our homes, businesses, and communities rely more on electricity, ensuring a strong, reliable grid becomes increasingly important. Central Electric is committed to meeting that challenge — through smart investments, preventive maintenance and a focus on delivering reliable service.

Until next month, stay safe!

CENTRAL ELECTRIC COOPERATIVE CONNECTIONS

(USPS 018-963)

Board of Directors

Aurora County - Duane Wolbrink, President
Brule County - Bradee Pazour
Buffalo County - Donita Loudner
Davison County - Jeff Gustafson, SDREA Director
Hanson County - Mark Hofer - Secretary & NRECA Director
Jerauld County - Mark Reindl, Treasurer
Miner County - Robert Banks
Sanborn County - Todd VanWalleghen, Vice President
Director-At-Large - Merl Bechen

CENTRAL ELECTRIC COOPERATIVE CONNECTIONS is the monthly publication for the members of Central Electric Cooperative, PO Box 850, Mitchell, SD 57301. Families subscribe to Cooperative Connections as part of their electric cooperative membership. Central Electric Cooperative Connections' purpose is to provide reliable, helpful information to cooperative members on matters pertaining to their cooperative and living better with electricity. Also available at www.centralecc.coop.

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Contact Us

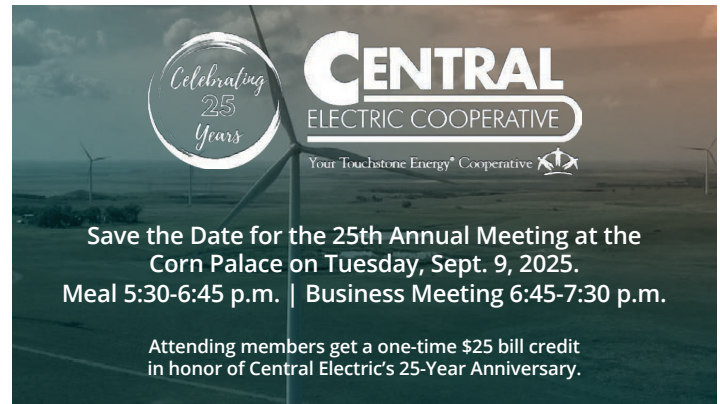
Office Hours: Monday - Friday 8 a.m. - 4:30 p.m.
Phone: 800-477-2892 or 605-996-7516
Website: www.centralecc.coop

Our Mission

Provide reliable energy and services with a commitment to safety and member satisfaction.

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Board Meeting Summary

The board of directors met on May 19, 2025, at Central Electric Cooperative's headquarters for the regular board meeting. They reviewed reports by management including details on operations, member services, communications, service department and financials.

Board Report

General Manager Schlimgen updated the board of directors on the East River Electric Managers' Advisory Committee, Basin Electric updates, Rural Electric Economic Development (REED) activities, Rural Utilities Service, FEMA mitigation assistance, upcoming district meetings, new service inquiries, and other management activities.

Attorney Petersen reviewed a Consent to Assignment agreement between High Plains Processing, Central Electric, and CoBank.

Director Hofer reported on the NRECA board meeting, proposed resolutions, and the legislative conference.

Director Van Walleghen reported on S.D. Association of Cooperatives board meeting.

Director Wolbrink updated the board on the East River Electric board meeting and activities.

The board reviewed monthly director expenses.

Board Action

The board considered or acted upon the following:

- A motion was made and seconded to authorize the General Manager to sign a Consent to Assignment agreement between High Plains Processing, Central Electric and CoBank. The motion carried.

The next regular board meeting was scheduled for June 16. There being no further business, the meeting was adjourned.

FINANCIAL REPORT	YEAR TO DATE MAY 2025	YEAR TO DATE MAY 2024
Kilowatt Hour (kWh) Sales	144,231,038 kWh	147,584,999 kWh
Electric Revenues	\$ 16,716,408	\$ 15,718,732
Total Cost of Service	\$ 16,278,129	\$ 15,668,657
Operating Margins	\$ 438,280	\$ 50,075

Staying Alert With Kids in Hot Cars

Source: National Safety Council

Since 1998, more than 1,010 children have died from vehicular heatstroke, an average of 37 per year. Parents and caregivers can act immediately to end these preventable deaths.

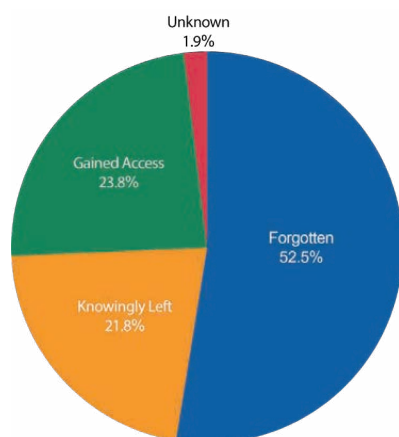
How Does It Happen?

Even on mild or cloudy days, temperatures inside vehicles can reach life-threatening levels. Leaving windows slightly open doesn't help. Children should never be left unattended or be able to get inside a vehicle. Three primary circumstances resulting in deaths of children in hot cars are:

- A caregiver forgets a child in a vehicle - 53%
- A child gains access to a vehicle - 24%
- Someone knowingly leaves a child in a vehicle - 22%

NSC advises parents and caregivers to stick to a routine and avoid distractions to reduce the risk of forgetting a child. Place a purse, briefcase or even a left shoe in the back seat to force you to take one last look before walking away. Keep car doors locked so children cannot gain access and teach them that cars are not play areas.

There is no safe amount of time to leave a child in a vehicle, even if you are just running a quick errand.



"Never fly a kite by a power line!"

Kasen Tikka, Age 9

Kasen warns readers about the dangers of flying a kite near power lines. Thank you for your picture, Kasen! Kasen's parents are Corey and Marcel Tikka from Lake Norden, S.D.

Kids, send your drawing with an electrical safety tip to your local electric cooperative (address found on Page 3). If your poster is published, you'll receive a prize. All entries must include your name, age, mailing address and the names of your parents. Colored drawings are encouraged.

Delicious DESSERTS

STRAWBERRY ANGEL FOOD DESSERT

Ingredients:

1 angel food cake
(baked and cut in pieces)
3.9 oz vanilla pudding
1 3/4 cups milk
3 cups sliced strawberries
1/4 cup sugar
8 oz. Cool Whip, thawed

Method

Put the angel food cake in a 9"x13" pan. In a separate bowl, combine vanilla pudding and milk; whisk together until thick; set aside. In another bowl, combine sliced strawberries and sugar; pour over the cake. Spread pudding over strawberries. Top with 8 oz. Cool Whip. Add more strawberries on top. Chill 1 hour before serving.

Gladys Bauer
Cam Wal Electric

MONSTER COOKIE BARS

Ingredients:

1 stick butter
1 1/2 cups peanut butter
1 cup sugar
1 cup brown sugar
1 tsp. vanilla
3 eggs
2 tsps. baking soda
4 1/2 cups oatmeal
12 oz. chocolate chips
12 oz. plain M&Ms

Method

Mix butter, peanut butter, sugar, brown sugar, vanilla and eggs. Add dry ingredients and mix in chocolate chips and M&Ms. Bake at 350°F for 15 minutes (no longer) in a large jelly roll pan. They may not look done but they are. Enjoy!

Rhonda Tuscherer
FEM Electric

BLUEBERRY TORTE

Ingredients:

1/2 cup butter
1 cup all-purpose flour
1 tbsp. sugar
8 oz. pkg. cream cheese
1 cup powdered sugar
8 oz. Cool Whip (reserve part for topping)
1qt. blueberries (fresh or frozen)
1 cup water
1 cup sugar
3 tbsps. cornstarch

Method

Cut butter into flour and sugar. Press into a 9"x13" pan and bake at 350°F for 20 minutes. Chill. Beat cream cheese and powdered sugar until light and fluffy. Fold in Cool Whip. Spread over crust. Simmer one cup blueberries and 2/3 cup water for five minutes. Blend sugar and cornstarch; add 1/3 cup water and mix until smooth. Combine with cooked berries and boil until thick and transparent. Cool and add remaining berries. Chill thoroughly and spoon over cream cheese mixture. Chill several hours or overnight. Top with Cool Whip.

Janet Lefers
Douglas Electric

Please send your favorite recipes to your local electric cooperative (address found on Page 3). Each recipe printed will be entered into a drawing for a prize in December 2025. All entries must include your name, mailing address, phone number and cooperative name.



Upgrading the Grid For Member-Owners

The Plano substation is being upgraded from 69 kilovolts to 115 kilovolts to support the growing demand for energy.



Mark Hoffman

Chief Operations Officer,
East River Electric

East River Electric, Central Electric's wholesale power provider, is making transmission improvements and additions across Central's service area to benefit member-owners. These projects span Davison, Hanson and Miner counties and continue to Lake and McCook counties, served by Sioux Valley Energy and Southeastern Electric. The planned improvements support the new High Plains Processing plant (a multi-seed crush facility under development south of

Mitchell), accommodate regional load growth and modernize a vintage transmission system dating back to the 1950s — all aimed at improving reliability.

The upgrades begin at the Western Area Power Administration (WAPA) Mount Vernon substation, where an additional circuit breaker was added. Before the project, East River served five substations across 56 miles of line exposure. A disturbance in any of the five substations or on the 56 miles of transmission line would result in a blink or outage for everyone served by the Mount Vernon, Mitchell, Plano, Farmer and Emery substations. This new breaker enables East River to sectionalize the system, dividing it into manageable sections during outages and maintenance, reducing the impact to members, and balancing the substation and line exposure out of the WAPA Mount Vernon Substation.

From the WAPA Mount Vernon substation, East River rebuilt 13 miles of line heading east to the Letcher tap, which feeds north to the Loomis, Letcher and Woonsocket areas. This line was rebuilt with a double circuit, one line serving the ethanol plant near Loomis and a second line continuing towards Mitchell. These two lines go around Central's headquarters building west of Mitchell. The section of line going east of this was rebuilt in 2014.

The line continues east to the Mitchell substation, built in 1952. This substation is being rebuilt adjacent to the High Plains Processing Plant. It will be expanded to serve both the

new plant and members currently served by the existing 1952 substation, which will then be retired. The section of line from the Mitchell substation east was also rebuilt in 2014.

Further east, East River plans to build the new Hanson County Substation, where 115 kilovolt (kV) transmission lines from the WAPA Letcher substation will step down to 69 kV. As part of this work, East River will rebuild 13.5 miles of line going west from the Hanson County substation, and three additional miles going east, replacing lines dating back to 1952.

Going north, 25 miles of new 115 kV transmission line will be built to connect to the WAPA Letcher substation, where East River will add an additional circuit breaker providing a 115 kV source to the Hanson County substation. From there, the system continues northeast to the new Miner County switching station. This station provides a location where the lines are sectionalized, providing greater reliability to members by reducing the impact of outages. From that station, East River rebuilt five miles west toward Fedora Substation, half a mile east for Roswell Substation and a third line that stretches 41 miles east to the edge of Madison in Lake County.

In addition to these efforts, East River will also modify and upgrade the Fedora, Howard, Howard City and Plano substations. A new substation addition in Lake County will help expand the 115 kV system in the area and tie into the VT Hanlon substation east of Montrose. Breaker work at the VT Hanlon substation will connect WAPA's 230 kV system between Letcher and VT Hanlon with East River's system between the two substations.

In total, the projects in Central Electric's area include 76 miles of rebuilt transmission line, 25 miles of new transmission line, two new transmission substations, three transmission substation circuit breaker additions, a distribution substation rebuild and modifications to four distribution substations. Work began in 2024 and is scheduled for completion by mid-2026. These improvements will enhance power quality and reliability for Central Electric members and the greater East River Electric system.



A new substation is being constructed south of Mitchell on the site of High Plains Processing.

Local Students Attend National Rural Electric Youth Tour

Thirty-six high school students representing 22 electric cooperatives traveled to Washington, D.C., from June 15 to 21 for the 2025 South Dakota Rural Electric Youth Tour. Central Electric Cooperative's Youth Tour representatives were Harbor Blindauer of Mitchell, daughter of Joe and Cathy Blindauer, Rosie Choc of Plankinton, daughter of Pablo and Rosa Choc, Raniyah Dakam of Pukwana, daughter of Dakam and Rabia Dakam, and Mercedes Jones of Alpena, daughter of Jon and Katie Jones.

The annual trip, coordinated by the South Dakota Rural Electric Association (SDREA) and the National Rural Electric Cooperative Association (NRECA), gives students an up-close look at the nation's capital and how government works. More than 1,300 South Dakota students have participated in the Youth Tour since the program began in the 1960s.

Throughout the week, students visited historical landmarks and museums, including the U.S. Capitol

Building, the U.S. Supreme Court, Arlington National Cemetery, the Washington Monument, the National Archives, Ford's Theater and the National Museum of American History.

While in Washington, students met with U.S. Senators John Thune and Mike Rounds. They also had the opportunity to connect with

Youth Tour delegates from 44 other states. The group attended Youth Day at the Gaylord National Resort and Convention Center, where keynote speaker Mike Schlappi, a four-time Paralympic medalist in wheelchair

basketball, spoke on the power of perseverance and leadership.

The South Dakota Rural Electric Youth Tour provides students with a deeper understanding of history, civic engagement and the role of electric cooperatives in their communities. High school juniors can apply for the 2026 Youth Tour trip starting in November. For more information, call 605-996-7516 or visit centralec.coop and click on Member Programs.



Thirty-six South Dakota students attended the National Rural Electric Youth Tour. They visited several historic sites and monuments, including the Iwo Jima Marine Corps War Memorial.



Rosie Choc, Harbor Blindauer, Mercedes Jones and Raniyah Dakam represented Central Electric at the National Rural Electric Youth Tour.

Employee Years of Service



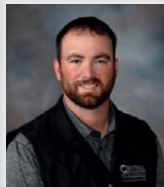
DuWayne
Kimball Area
Lineworker
18 years on July 5



Heather
Administrative
Assistant
6 years on July 16



Evan
Materials
Coordinator
6 years on July 23



Tim
Mitchell Area
Lineworker
7 years on Aug. 6



Patrick
Manager of
Member Services
& Marketing
10 years on Aug. 17



Rylee
HVAC Fabricator
and Installer
1 year on Aug. 20



Craig
Wessington Springs
Area Lineworker
7 years on Aug. 27



FUNDING FUTURES

Rural Electric Cooperatives Support New Training Facility

Jacob Boyko

jacob.boyko@sdrea.coop

Mitchell Technical College is well known among the region's rural electric cooperatives for its industry-leading lineworker training programs.

Now, that program is about to get even better, as MTC begins construction on a new, state-of-the-art underground cable equipment training facility.

The Power Line Underground Lab will allow students to learn how to trench, bore, and connect cables in an environment away from other labs and courses.

Additionally, being indoors and having a dirt floor, instructors have the added benefit of being able to plan courses without worry regarding outside weather and frozen ground during winter.

"The new facility allows us to be able to use our underground curriculum and teach it all throughout the school year, instead of just the beginning and the end when the ground is thawed out," MTC's president, Theresa Kriese said about the space.

"They get more equipment time because we're not trying to

A render showing Mitchell Technical College's new Power Line Underground Lab. MTC says students will practice underground utility work in this new facility, away from other courses' labs to reduce crowding. Submitted Photo



Construction of MTC's Power Line Underground Lab began this spring. MTC expects students beginning in the fall semester of 2026. Submitted Photo

share a lab where we're also planting poles."

Kriese hopes spreading out the curriculum over the semester will allow MTC's instructors to dive deeper into certain course topics with their students, making them overall better candidates for employment when they enter the workforce.

"We're seeing the energy industry making another transformation where underground is really gaining a larger presence than it had in the past", Kriese added, noting the Federal Emergency Management Agency's push to replace downed overhead lines with resilient underground cables after storms.

"We're finding that if we can have our students trained in both (overhead and underground), it opens some opportunities for them, because they may not be able to climb that pole their entire life," she continued. "It gives some flexibility to the employer, because I can hire somebody that can climb but they can also do that underground connection. So wherever I need them, I can have them work in my employment area."

Central Electric Cooperative General Manager Ken Schlimgen agrees, adding that with more and more electric co-ops working to replace their aging overhead infrastructure with underground line, MTC's new underground focus will help alleviate future workforce challenges.

"When we support Mitchell Tech programs, it's an investment into our most important asset: our workforce," Schlimgen said. "Workforce challenges will continue for decades, and having a competent, qualified team of lineworkers to serve our members and keep the lights on is vital to our success."

Central Electric is just one electric co-op providing financial support for the expansion.

At the time of writing, more than 20 electric co-ops in South Dakota have pledged over \$460,000 to MTC in support of the facility.

"Power line personnel are the backbone of our cooperative family, keeping the lights on for our members and being leaders in our communities," said Steve Barnett, general manager for the South Dakota Rural Electric Association.

"Mitchell Technical College is a workforce pipeline for this profession and is vital to cooperatives across our region."

Kriesie said staff and student excitement is growing ahead of the facility's expected 2026 completion and expressed appreciation to electric

co-ops for their support.

"Mitchell Tech is making a statement and a commitment to the energy industry that we are your partner in developing and training employees for you," Kriesie said.

"Without the partnership of the electric cooperatives, we really

wouldn't be able to make this expansion."

The project is slated to celebrate its grand opening in the Fall of 2026, when students and Mitchell Tech faculty will begin using the facility to train tomorrow's electric cooperative workforce.



MTC's current plan for the Power Line Underground Lab shows a 34,000 square foot facility, made up of a 23,500 square foot underground lab, a 7,755 square foot vehicle and equipment storage area and a 1,000 square foot classroom.

Submitted Photo



Theresa Kriesie
President
MTC



Steve Barnett
General Manager
SDREA



Ken Schlimgen
General Manager
Central Electric

THE POWER OF POCKET CHANGE

Small change continues to make a big difference in our local communities. Through Operation Round-Up, participating cooperative members round up their monthly electric bill to the next whole dollar. Those contributions are pooled together to support local causes through grants.

These are pictures from recent projects that received support from Operation Round-Up. Since the fund was established in 2015, more than \$230,000 has been awarded to various organizations across the service area.

To learn more about grant qualifications and the application process, please visit www.centralec.coop and click on member programs, or call 605-996-7516.



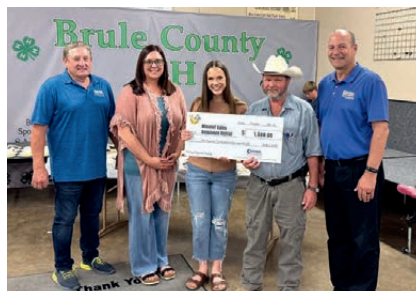
Plankinton Ambulance Association received a \$1,000 grant for medical supply bags.



Abernathy Post 16 of Gann Valley received a \$1,000 grant for Legion grave markers to honor those who have served.



Kimball Mayor Donnie Hamiel accepted two \$1,000 grants for the concession stand and ballpark improvements in Kimball.



Missouri Valley Ambulance District member Jerry Wingert accepted a \$1,500 grant for the group's regional training efforts.



James Valley Drug and DUI Court received a \$1,000 grant to assist treatment program participants with housing and utility deposits.



Deb Wollman and Lisa McManus accepted a \$500 grant for the Hanson County Child Protection Team's Open Closet program.



Plankinton Service Club member Brian Reis accepted a \$500 grant to support a local disc golf course project.



Dale Steffen accepted a \$1,000 grant for the White Lake Ambulance to help pay for kitchen appliances.



Plugged In With Patrick



Patrick Soukup

Manager of Member
Services and Marketing

EV Pickup Cost Comparison on the Open Road

The Ford F-150 Lightning marked a significant shift in the world of electric vehicles (EVs), particularly in the pickup truck segment. The Ford Lightning with an extended-range battery can travel approximately 300 miles on a full charge, depending on speed and other factors.

I recently took Central Electric's Ford Lightning on a trip to Deadwood for meetings. The wind and price to charge influenced my thoughts and concerns about how I felt during the trip.

I received free charging at the hotel in Deadwood and paid upwards of \$0.58 per kilowatt-hour (kWh) to charge at the highest point on the trip.

For much of the trip, my thoughts were focused on whether I could get there and back. Traveling across the state is quite common for people in South Dakota. The numbers and stats provided later in this article may be relevant in perfect conditions. I did not have perfect conditions during this trip.

The wind was my friend and my enemy. I felt defeated driving into a head wind on the way to Deadwood. On my way back, I felt I could make it all the way back to our Mitchell office with the wind at my back. It was the best feeling in the world, like I could go anywhere.

As I ran the numbers in my head and saw what I had left for battery life, I really thought I could make it back to Mitchell without stopping to charge. However, I needed to stop and stretch anyway, so I pulled into a charger at Wall and charged the pickup for 15 minutes. This was the best decision I made all week. On the way home, the wind switched directions, and I was never able to achieve the mileage I was previously getting.

Moral of the story: plan your trip, prepare for conditions that you could face and enjoy the ride.

Cost to Operate

One of the main concerns for potential EV buyers is the cost of driving and charging. The Ford Lightning offers significant savings when compared to traditional gas-powered trucks.

To compare costs effectively, we need to look at the energy consumption of the Lightning. The F-150 Lightning has an EPA-estimated efficiency of approximately 2.0 miles per kWh. That means that for every kilowatt-hour of electricity, the truck can travel about 2 miles.

Assuming an average electricity cost of \$0.13 per kWh, the cost per mile to drive the Lightning would be calculated as follows: $\$0.13 / 2 \text{ miles} = 6.5 \text{ cents}$.

For comparison, the average fuel economy of a gas-powered F-150 is around 20 miles per gallon. At an average gas price of \$3.50 per gallon, the cost per mile to operate a traditional F-150 would be calculated as follows: $\$3.50 / 20 \text{ miles} = 17.5 \text{ cents}$.

In ideal conditions, the cost of a 630-mile round trip from Mitchell to Deadwood would be \$40.95 driving an electric Ford Lightning versus \$110.25 driving a gas-powered Ford F-150.

Home Charging Versus Public Charging

When it comes to charging, the cost varies based on whether you charge at home or use public charging stations. If you have a Level 2 home charger, the cost to charge a Ford Lightning extended-range battery from empty to full would be calculated as follows: $98 \text{ kWh} \times \$0.13 = \12.74 .

Public charging stations have different rates, usually charging more per kWh than charging at home. Some fast-chargers have at rates of \$0.35 to \$0.58 per kWh. Charging at these rates will increase the overall cost of a long road trip. However, many charging networks offer subscription plans that can help lower costs.

The Choice is Yours

You may or may not be interested in EVs — the choice is yours. It's my hope that sharing this information will help our members understand the opportunities and challenges of operating an electric vehicle. Please reach out with any questions if you are considering purchasing an EV or installing an EV charger at your home or farm.

Ford F-150 Lightning Charging Expense

MONTH	MILES DRIVEN	KWH USED	COST TO CHARGE	COST PER MILE
March	596	383	\$ 49.79	\$ 0.084
April	1379	679	* \$ 176.88	* \$ 0.128
May	757	626	\$ 81.38	\$ 0.108
June	456	236	\$ 30.68	\$ 0.067

*April included public charging costs. Most charging is done in-house and calculated at 13 cents per kilowatt hour (kWh).

WEATHER WARNINGS

Getting Ready for Severe Summer Storms

Jacob Boyko

jacob.boyko@sdrea.coop

Midwest summers have a certain notoriety for their extreme summer weather events.

South Dakota is no exception. Between May 2015 and June 2025, the National Oceanic and Atmospheric Administration (NOAA) reported more than 200 tornadic events in South Dakota.

The Recipe for Severe Weather

According to Peter Rogers, warning coordination meteorologist for the National Weather Service (NWS) Office in Sioux Falls, there are four foundational components for the specific type of thunderstorms that produce tornadoes called supercells.

The first component is moisture – it's needed to form clouds. The second component, lift, refers to an upward motion of the air. In places without mountains like eastern South Dakota and western Minnesota, that occurs when a cold or warm front moves into the area and the laws of physics force warm air upward.

The third component, instability, is the

difference between the two air masses.

"If you have pockets of air that are hotter than the air around them, they'll continue to rise," Rogers explained. "And the instability is the extent to how far those parcels will rise."

The final component, wind shear, is how the wind speed and direction changes with altitude.

"Here, at the surface, we're normally only concerned about what the wind speed is doing at the surface," Rogers explained.

"But as meteorologists, we want to know what's happening at 5, 10, 15 ... feet and so on. The more changes you have with wind speed and direction ... with height increases your chances of going from just your garden-variety thunderstorm to a severe thunderstorm that's more capable of producing strong winds and tornadoes."

Over the last 10 years, South Dakota has seen tornadoes mostly ranking EF-0, EF-1 and EF-2 on the Enhanced Fujita scale.

The scale, named for its developer, meteorologist Ted Fujita, ranks tornadoes on a scale from 0 to 5 based on recorded wind speed and the damage observed that can be attributed to the tornado, with an

Storm clouds gather near Nunda, S.D.

Photo by Jacob Boyko

EF-5 being the most severe.

An EF-0 tornado will leave behind damage indicators showing wind speeds between 65 and 85 mph, while an EF-1 tornado will show damage indicating wind speeds between 86 and 110 mph, an EF-2 111-135 mph, an EF-3 136-165 mph, an EF-4 166-200 mph and an EF-5 being anything over 200 mph.

But weak and strong tornadoes alike can be deadly without proper action.

Working at the National Weather Service, it's part of Roger's job to get severe weather alerts out to the public.

Weather radios are particularly helpful in severe weather scenarios, he explained, because you can set them to alert you any time the NWS sends out an alert for your area.

"Severe weather is not just an afternoon or evening phenomenon," Rogers said.

"We often have some pretty big events in the middle of the night, so you want to have something that's going to wake you up in the middle of the night so you can get to shelter."

NOAA Weather
Radios can tune
to your local
forecast 24
hours per day.



As any Midwest resident knows, there's far more summertime severe weather than just tornadoes.

Derechoes, which decimated much of eastern South Dakota and Western Minnesota in 2022, produces a wall of strong, fast gusts of wind that can be just as dangerous as a tornado.

According to the NWS, for a storm to be classified as a derecho, it must extend 250 miles with gusts of at least 58 mph and produce several gusts of at least 75 mph.

In western South Dakota, the Black Hills help create the optimal conditions needed for severe hail.

"What you need is a really strong thunderstorm that has a really strong updraft," explained Kelly Serr, warning coordination meteorologist for the National Weather Service Office in Aberdeen.

"When that updraft is really strong, it reaches the very coldest levels of the atmosphere where tiny droplets of rain start to freeze."

The stronger the draft, the longer the frozen rain drop will remain in the atmosphere. And the longer it's stuck in the updraft, the more water it collects, growing in size until finally the hail stone is too heavy to be suspended by the updraft anymore, and it plummets to the ground.

In western and central South Dakota, that process is exacerbated by the Black Hills, which help force the air up even higher and create fast-developing thunderstorms.

During severe weather events like thunderstorms, tornadoes and hail, the NWS encourages those in the pathway of the storm to seek shelter in a basement or a room without windows away from outside walls, as hail and other debris can shatter windows.

"Something we always tell people is to pay attention to the forecast," Serr said. "Know before you go: 'Are we expecting severe storms?' And then have a safety plan in place for wherever you are."

Looking Back at Summer Storms

Delmont Tornado – May 5, 2015

At about 10:45 a.m. on Mother's Day, an EF-2 tornado struck Delmont. The tornado's path began in Charles Mix County, making its way north into Douglas County where it reached Delmont and damaged numerous homes, including Delmont's famous Onion House, and destroyed the Zion Lutheran Church and fire station. The NWS reported a peak wind speed of 130 mph, with the tornado covering 17.3 miles and reaching a width of 400 yards.

Derechos – May 12, July 5, 2022

In the afternoon, a wall of straight line wind known as a derecho moved northeastward through eastern S.D. and Western M.N., with wind speeds reaching over 100 mph. The storm brought with it numerous tornadoes, including an EF-2 tornado with wind speeds up to 120 mph in Castlewood. According to the NWS, the derecho was the "most extreme example on record in terms of the measured significant wind gusts." The National Centers for Environmental Information categorized the storm a billion-dollar disaster event. Less than two months after the May event, a derecho moving southeastward produced wind gusts reaching 99 mph in Howard and 96 mph in Huron. In Sioux Falls, the sky turned green – a rare phenomenon caused by refraction, or the bending of light when passing through and being warped by the water and ice contained within the storm system.

Black Hills Hail – June, 2, 2019

In the morning, a supercell thunderstorm moved through Rapid City, Hermosa and Fairburn, producing golf ball-sized hail that damaged vehicles, homes and crops.

Tripp Tornado – May 8, 1965

The strongest tornado ever recorded in S.D. was in Tripp County. The storm produced snow over the Black Hills, with Lead reporting 36 inches of snow. The Tornado touched down east of Wewela, with a maximum observed width of 1,760 yards, and moved northwest 30 miles. The tornado was classified an F-5.

Source: Event Summaries, Weather.gov

Pierre Hail – July 18, 2023

An afternoon warm front heading east across central S.D. developed into a supercell. Around 6:20 p.m. in Pierre, there were reports of softball-sized and larger hail, with one setting a Hughes County record at 5 inches in diameter.

Dupree Tornado – June 16, 2010

In the afternoon and evening hours, a thunderstorm over Dupree produced damaging winds, torrential rainfall and flooding, and at least 16 tornadoes, with multiple tornadoes being simultaneous. The storm damaged roofs, mobile homes and grain bins. The damage observed indicated an EF-2 tornado.

Vivian Hail – July 23, 2010

A S.D. and U.S. hailstone record was set in Vivian after an evening thunderstorm formed a supercell moving southeastward. The NWS reported numerous hailstones exceeding 6 inch diameters as well as a record-setting 8 inch diameter, 18.625 circumference and 1 pound, 15 ounce hailstone. NWS estimates the hail stone fell at about 100 mph.

Sioux Falls Tornado – Sept. 11, 2019

In the late evening hours of Sept. 10 into the early morning hours of Sept. 11, severe thunderstorms moved across southeast S.D. into M.N. and I.A., bringing 80 to 100 mph straight line winds and three brief EF-2 tornadoes in Sioux Falls. The Avera Health Complex, several commercial spaces, and a neighborhood were damaged.

Jerauld Tornadoes – June 18, 2014

In the evening, a thunderstorm over Jerauld County produced an EF-4 tornado that traveled over 11 miles from Lane to Alpena. The tornado measured 880 yards at its widest. The same storm produced several more tornadoes, including an EF-2 that ravaged Wessington Springs.

Bowdle Tornado – May 22, 2010

A supercell in north central S.D. produced multiple tornadoes, including an EF-4 and golf ball-sized hail near Bowdle. NWS reported nearly 100 downed utility poles.



A West Central Electric Cooperative drone flies over distribution lines so employees can inspect.
Photo by Jessie Tucker

TAKING FLIGHT

Electric Co-ops Utilize Drones

Jacob Boyko

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Across South Dakota, electric cooperatives are turning to unmanned aerial vehicles to improve safety, speed up outage responses and enhance day-to-day operations.

Better known as drones, these high-tech, lunchbox-sized robots offer co-ops a birds-eye view of infrastructure – no risky climb or airplane flight necessary.

“Our main goal is to use them (drones) during storm situations,” explained Jessie Tucker, manager of member services at West Central Electric Cooperative and an advocate for electric co-ops’ drone integrations.

“Typically, we have to charter a plane from Pierre, and they will pick up an employee from West Central and we have to fly the lines when we have severe damage. What we’re hoping to be able to do is get

the drone in the air and patrol the line to see what we have for damages and how extensive everything is.”

Tucker is a certified remote pilot, having passed the Federal Aviation Administration’s Part 107 exam on the rules and regulations for operating unmanned aircraft vehicles. While hobby drone operators don’t need a license for recreational use, federal law requires commercial operators be licensed, meaning all electric co-op drone operators have studied for and passed the rigorous exam.

“It was surprisingly tough,” said Moreau-Grand Electric’s JJ Martin, who is also a licensed remote pilot. “There’s a lot of stuff in there and understandably so. Flying a drone is like playing a video game – it’s pretty easy. But when it comes to all of the safety, like knowing how to read a map, knowing what airspace you’re in, what all of the codes mean, there’s a lot to it.” Martin, who is the member services

director, champions drones for the convenience they bring to the co-op’s communication efforts. He says using the drone for aerial photography and videography helps him get “out of the way” of busy lineworkers and gives him a vantage point that highlights the beauty of the landscape.

There are also benefits for the co-op’s substation workers, Martin continued. Hovering the drone over the equipment allows some inspections to be made more quickly and without cutting power.

“We’re able to just fly the drone over the top, zoom in and take pictures,” Martin explained. “The resolution is so high you can zoom in quite a ways and inspect a little bit without putting anybody in harm’s way or shutting power off for anybody.”

Back at West Central Electric, lineworkers use a thermal energy camera on a drone to fly over towns and other infrastructure to find “hot spots,” or bad

connections on power lines where a component is beginning to fail.

“We check out substations at least once a year, usually on the coldest days or one of the heaviest loaded days,” Tucker explained, noting each year they typically find at least several hot spots.

Basin Electric Power Cooperative, the member-owned generation and transmission utility powering South Dakota’s electric co-ops, uses its fleet of drones to build fully three-dimensional renders of land sites and infrastructure.

According to Robert Kohler, a certified federal surveyor, licensed remote pilot, and geomatics supervisor at Basin Electric, the utility accomplishes this using drones equipped with cameras and LiDAR scanners.

LiDAR, which stands for light detection and ranging, is a focused array of laser pulses. The mounted sensor emits the lasers and the light travels until it meets a solid object. The lasers are then reflected by the object back into the LiDAR sensor, with the system measuring the length of time it took for the laser to return and using that to calculate the distance between the sensor and the object.

Kohler says the sensor he uses collects 400 data points per square meter at 190 feet of elevation while traveling 11 feet per second. Each of those points – billions of them, Kohler pointed out – are recorded and precisely mapped to a location on an XYZ coordinate plane.

“Imagine you have a flash light and you’re walking along the ground. Anything the light touches, it illuminates,” Kohler explained. “You can create a three-



Moreau-Grand Electric Cooperative linemen in north central South Dakota.
Photo by JJ Martin

dimensional map and some of the features of those maps would be the conductors of the transmission line, the structure itself, the vegetation and plants growing along the sideline of the transmission corridor, or even a vehicle or person.”

Back at the office, Kohler’s computer processes the data – file sizes often reaching into the hundreds of gigabytes – into a fully three-dimensional model.

Basin Electric’s fleet doesn’t stop at aerial drones. When working beneath the surface of a body of water, hydro drones like the utility’s TriDrone pontoon craft measure the surface at the bottom of a water body using sonar to capture points beneath the surface that LiDAR can’t see.

Despite the noted conveniences, Kohler cautioned that using drones for high-intensity data-driven tasks isn’t as hands-off as it seems. Sometimes it’s a more practical option – sometimes it’s not.

“I’ve got four to six hours of pre-flight

planning to just program the software and drone for the specific area that I want it to map out,” he explained. “Then I have potentially eight to 40 hours of processing time to reduce the data into what I need. In that regard, there’s a lot of extra time involved.”

Kohler also said important small measurements need to be double-checked by workers since the drone sensor’s measurements are sometimes affected by a margin of error that varies with the craft’s proximity to the site.

Even so, many electric cooperatives agree the advancements in unmanned aircrafts vehicles and sensing technologies offer an exciting path forward for utilities.

“Everytime I use it (the drone), I’m getting such a cool angle and I can travel such distances,” Moreau-Grand Electric’s Martin said. “I’m able to stay out of the guys’ way. I’m safe, they’re safe.”



A TriDrone uses sonar to map terrain beneath the water’s surface.
Photo by Robert Kohler

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Photo courtesy of Travel South Dakota

AUG. 27-SEPT. 1
South Dakota State Fair
Huron, SD

To have your event listed on this page, send complete information, including date, event, place and contact to your local electric cooperative. Include your name, address and daytime telephone number. Information must be submitted at least eight weeks prior to your event. Please call ahead to confirm date, time and location of event.

JULY 26
South Dakota Chislic Festival
Freeman, SD

JULY 30-31
Brule Cty Achievement Days
Pukwana, SD

AUG. 1-2
Aurora Cty Achievement Days
Plankinton, SD

AUG. 1-3
Straw Bale Days
Sports, Plays & Parade
Carthage, SD

AUG. 2
Rockin' Ribfest
4-10 p.m.
Wessington Springs, SD

AUG. 3-4
Hanson Cty Achievement Days
Alexandria, SD

AUG. 3-5
Davison Cty Achievement Days
Mitchell, SD

AUG. 4-6
Jerauld-Buffalo Cty Achievement Days
Wessington Springs, SD

AUG. 4-6
Miner Cty Achievement Days
Howard, SD

AUG. 6
Ag Appreciation Day
Sioux Empire Fair
Sioux Falls, SD

AUG. 7-9
Sanborn Cty Achievement Days
Forestburg, SD

AUG. 7-10
Painting on the Prairie
De Smet, SD
605-203-0216

AUG. 16
Sunflower Festival
Highmore, SD

AUG. 17
3rd Annual Walk to Remember
Granite Springs Lodge
Alexandria, SD

AUG. 19-21
Dakotafest
Mitchell, SD
www.idealgroup.com/dakotafest

AUG. 20-24
Corn Palace Festival
Carnival, Food & Concerts
Mitchell, SD
www.cornpalace.com

SEPT. 6
Annual Pink Ladies Ribfest Cancer Fundraiser
4-7 p.m.
Vendors & Youth Activities
Main Street
Emery, SD
605-449-4290

SEPT. 7
Farmer Tractor Parade
1 p.m.
Tractors, Cars & Food
Farmer, SD

SEPT. 9
Central Electric Annual Meeting
Meal: 5:30-6:45 p.m.
Meeting: 6:45-7:30 p.m.
World's Only Corn Palace
Mitchell, SD

SEPT. 13-14
Harvest & Kuchen Festival
Delmont, SD
www.twinriversoldiron.org

SEPT. 19-20
Holiday Arts Fall Craft Show
Davison Cty Fairgrounds
Mitchell, SD
605-770-8136

Note: We publish contact information as provided. If no phone number is given, none will be listed. Please call ahead to verify the event is still being held.