

COOPERATIVE CONNECTIONS

Invasive Species

**Zebra Mussels
on the Missouri**
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Impacts of Carbon Free by 2040



Tim O'Leary
General Manager

Keeping a focus on affordability & reliability for our members

This year's legislative session in St. Paul was eventful when it came to energy policy that was passed. The main bill that was passed and will have the most impact on utilities in the state and its consumers was the 100% Carbon-Free by 2040 bill. The bill mandates that all electricity sold in the state come from carbon free sources by 2040.

As I mentioned in last month's article, this was a very partisan issue and the bill was passed by the majority party with all amendments from the minority party being defeated. I am sure that this isn't a surprise to anyone, since it seems like anything coming out of St. Paul has the ability to split everyone along different lines and I understand that this article will be taken differently by each person that reads it. Let me assure you that this article was written based on the impacts that may happen due to the way the bill was written and how "ideas" or amendments were dismissed. With that being written, let me start with some thoughts on the bill and how it may impact the reliability and affordability of your electric bill in the future.

The bill defines "carbon free" as a technology that generates electricity without emitting carbon dioxide and it defines an "eligible energy technology" includes solar, wind, hydroelectric, hydrogen and biomass. You will notice that there is one carbon free technology not listed and that is nuclear energy. There were attempts to remove the current nuclear energy moratorium in the state, but they were ultimately defeated and therefore, it is not listed as a carbon free source of energy that could be used to meet the mandate. We understand that nuclear power continues to be controversial and there are concerns about safety and waste disposal, but we also understand that it has the potential to generate large amounts of electricity with little to no carbon dioxide emissions. It is hard to understand how the legislature could limit options as they set this mandate.

Another issue with the bill is the amount of time provided to meet the mandate as 2040 is only 17 years away. Seventeen years seems like a long time, but in a utility world that is seeing increased costs in all areas of its business, long lead times on materials, and protest/lawsuits when a new transmission line project is proposed, it will be nearly impossible to meet the mandates set out in the bill. In addition to the carbon free mandate, the bill includes an increase in the current renewable energy standard mandate, which they renamed to "eligible energy technology standard", a solar energy standard and an environmental justice requirement.

Cooperatives, working through our statewide trade association the MN Rural Electric Association (MREA), were able to get a change to the carbon free standard. The change lowered the percentage mandate in 2030 from 80% down to 60% for cooperatives. Cooperatives will still need to meet the 90% threshold by 2035 and the 100% threshold by 2040.

We will have to see how this plays out and how it is implemented over the next several years and as new legislators go through St. Paul. I am reminded of a recent opinion piece that was written by Jason Hayes, Director of Energy and Environmental Policy at the Mackinac Center for Public Policy. Jason wrote the following regarding political mandates, "Mandates from on high should always concern customers and voters because they are inefficient and take away consumer choice" and "mandates, in particular, use a top-down method that satisfies only the desires of government bureaucrats and the C-suite executives, not consumers or the public".

We will work on meeting the mandates laid out in the bill and we will continue to look at ways to improve the bill in future legislative sessions. We will do this with a focus on affordability and our mission to provide reliable electricity and services to enhance the quality of life in our rural communities.

COOPERATIVE CONNECTIONS

LYON-LINCOLN ELECTRIC

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Jessica Gums, Editor



YEAR-TO-DATE COMPARISON		
	May- 2022	May- 2023
Total Revenue	\$4,671,18	\$4,661,82
Cost of Power	\$2,387,67	\$2,446,49
Operating Expenses	\$1,990,23	\$1,882,29
Operating Margins	\$293,268	\$333,037
KWH's Purchased	45,372,51	45,203,19
Services in Place	4,133	4,120
Miles of Line	1,670	1,670
Revenue per Mile	\$2,797	\$2,792

June Outage Report

(10 or more consumers)

6/10- 25 consumers were off 1 hour and 50 minutes in Fortier and Florida Townships. The cause was an underground fault.

6/25- 224 consumers were off 1 hour and 10 minutes in Coon Creek and Island Lake Townships. The cause was an underground fault.

No One Can Take Your Place

National Farm Safety and Health Week Sept. 17-23, 2023

The 2019 data for the U.S. Bureau of Labor Statistics indicates that the agricultural sector is still the most dangerous in America with 573 fatalities, or an equivalent of 23.1 deaths per 100,000 workers.

Fall harvest time can be one of the busiest and most dangerous seasons of the year for the agriculture industry. For this reason, the third week of September has been recognized as National Farm Safety and Health Week.

This annual promotion initiated by the National Safety Council has been proclaimed as such by each sitting U.S. President since Franklin D. Roosevelt in 1944. National Farm Safety and Health Week is led by the National Education Center for Agricultural Safety (NECAS), the agricultural partner of the National Safety Council.

Did you know?

- Rural roads pose special dangers especially during harvest season. Watch out for slow-moving farm vehicles and be informed, aware, and patient while sharing rural roadways.
- Farm stress is real, and many things like weather events, tragedies, market uncertainty, or diseases can tip us out of our comfort zone.
- Every day, about 33 children are seriously injured in agricultural-related incidents.
- Hazardous gasses on farms can be found in silos, manure storages, grain bins, and other confined spaces. Be in the know about hazardous gasses and where they can be found on farms.

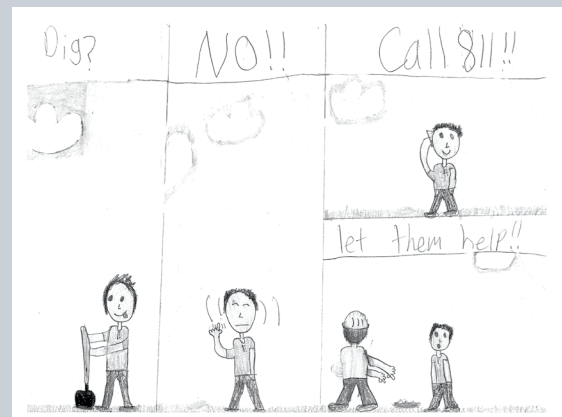
Farm and ranch life can be demanding and stressful. Over the past several years, it has reached a critical stage for the folks who grow America's food with COVID-19 pandemic impacts on top of natural disasters, extreme weather events, financial pressures due to fluctuating commodity prices, labor shortages, trade disruptions and a

long list of other factors. Given these ongoing challenges, it's no surprise that more farmers and farm families are experiencing stress and mental health concerns.

Today, safety professionals still use this promotional week to remind those working in our nation's most dangerous industry to be careful. Agriculture's death rate is why farmers and ranchers must use safe farming practices during harvest and throughout the year.

South Dakota's electric cooperatives urge our agricultural producers to make better safety and health decisions this harvest season and during the next year. Join us in promoting safety during the 80th annual **National Farm Safety and Health Week Sept. 17-23, 2023**.

During this time, please encourage others to adopt safe practices and behaviors as we prepare to prevent injuries during this harvest season.



Call 811!

Evey Hinrichs, Age 9 3/4

Evey Hinrichs advises people it's not safe to dig before calling 811. Evey is the daughter of Kelby and Carrie Fey from Aberdeen, S.D., members of Northern Electric Cooperative.

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.

DIPS AND SPREADS

SPINACH DIP

Ingredients:

- 16 oz. sour cream
- 1 cup mayonnaise (must be mayo)
- 1 pkg. frozen chopped spinach, thawed and drained
- 1 can water chestnuts, chopped
- 1 tbsp. minced onion
- 1 tsp. season salt
- 1/2 tsp. Accent
- Dash of Worcestershire sauce
- 2 dashes of hot sauce

METHOD

Serve with Club or Ritz crackers.

Linda Hubbard
Rapid City, S.D.

CREAMY CINNAMON DIP

Ingredients:

- 1 pkg. (8 oz.) cream cheese, softened
- 1 container (8 oz.) sour cream
- 1/4 cup packed brown sugar
- 2 tbsps. milk
- 2 tps. ground cinnamon
- 1 tsp. all natural pure vanilla extract

METHOD

Beat all ingredients in medium bowl with electric mixer on medium speed until well blended. Spoon into serving bowl. Cover.

Refrigerate until ready to serve. Serve with fresh fruit slices, cookies or pound cake or angel food cubes.

mccormick.com

CARAWAY CHEESE SPREAD

Ingredients:

- 1 container (12 oz.) Cheddar cheese spread, at room temperature
- 2 tps. minced onions
- 1 1/2 tps. whole caraway seed
- 1/2 tsp. Lawry's® Seasoned Salt

METHOD

Mix cheese spread and seasonings in medium bowl. Cover. Refrigerate at least 2 hours to blend flavors.

Serving Suggestion: Serve with assorted vegetables such as celery sticks, cherry tomatoes, jicama sticks, carrot sticks, endive leaves, and/or assorted crackers.

mccormick.com

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 2023. All entries must include your name, mailing address, phone number and cooperative name.

June Board Meeting Minutes

The regular monthly meeting of the Board of Directors of Lyon-Lincoln Electric Cooperative was held on Monday, June 26, 2023. Directors present were James Rokeh, Kathy Schreurs, Jared Dritz, Galen Grant, Mary Gunnink, Scott Johnson, Dale Fier, Mike Longtin and Joel Buyck. Also present at the meeting were General Manager, Timothy O'Leary, Finance Manager, Kristi Jensen, and Attorney, Michael W. Cable.

The Board and others in attendance stood and gave the Pledge of Allegiance. Vice-President, Dale Fier, indicated the first order of business would be the election of officers and turned the meeting over to Attorney, Michael W. Cable, to conduct the election of officers. The Board conducted a ballot vote for the election of officers. After the ballot voting had been taken for the offices of President, Vice-President, and Secretary/Treasurer a motion was made by Mr. Grant, seconded by Ms. Gunnink, and carried to cast unanimous ballots in favor of the following directors being elected to the following offices until their respective successors shall have been elected and shall have qualified:

President- Dale Fier
Vice-President- Mike Longtin
Secretary/Treasurer- Kathy Schreurs

President, Dale Fier, then called the meeting to order and routine business was conducted including approval of the May 22, 2023 meeting minutes, a

review of the check schedule, applications for memberships, and shares to be cancelled.

Kristi Jensen, Finance Manager, gave the Financial and Statistical Report for the period ending April 30, 2023.

Lyle Lamote, Line Superintendent, gave the Outage Report to the Board for the month of May, 2023. He indicated to the Board that there was a Safety Meeting held on May 1, 2023 concerning the topic of Annual Switchman Training presented by Colton Sanderson from East River Electric Power Cooperative, Inc. He also indicated that there was a Safety Meeting held on May 9, 2023 concerning the topic of Pole Top/Bucket Rescue/May Day and Emergency Action presented by Curt Freudenberg, MREA Safety Instructor. Mr. Lamote then indicated that the linemen were presently performing the following tasks and jobs: continuing to work on 4 miles of underground 3-phase line at the Marble Substation, 2 miles of a 3-phase line at the Lake Benton Substation, and boring underground cable on North Shore Drive.

Brian Jeremiason, Manager of Marketing and External Relations, reviewed his report with the board which included the following: Marshall Radio Station was on site to complete radio ads for the cooperative that focus on the value of membership, efficiency, technology and safety.

The Cooperative is preparing to go live with one of the solar interconnections on its system and have 5 more with signed agreements at various stages of the process. East River Electric Power Cooperative, Inc. is planning a book to celebrate its 75th anniversary. With this book, East River wants to focus on the people served and the people who have provided that service over the last 25 years. Mary Askren, the writer hired for this project, will visit Lyon-Lincoln.

General Manager Timothy O'Leary then gave his manager's report; some of the items reviewed were as follows: the Board reviewed the May power bill and sales to members and compared those figures to budgeted amounts, looked at line loss for the system, and reported on East River's MAC and REED meetings that he attended.

The Board reviewed the May Cyber Security Program Report, recessed for lunch at 12:00 P.M. and reconvened at 12:30 P.M. During the lunch recess the Board viewed the East River Electric Power Cooperative, Inc. video report which included the Basin Summary. After reconvening there was general discussion concerning the District and Annual Meetings with no action.

There being no further business to come before the Board, President, Dale Fier, adjourned the meeting at 12:57 P.M.



National Farm Safety & Health Week

September 17-23, 2023

Harvest season is the most satisfying time of the year on the farm, as it's the culmination of many long hours of effort in raising a crop. However, the long grueling hours in the field can make workers weary and prone to forget the safety precautions that can prevent serious or fatal electrical injuries. Every year, an average 62 farm workers are electrocuted in the United States and many more are injured, according to Labor Department statistics.

During National Farm Safety and Health Week, Lyon-Lincoln Electric and our friends at Safe Electricity urge farm operators, family members, and employees to beware of overhead power lines, to keep farm equipment safely away, and to know what to do if accidental contact is made with power lines.

The simple movement of a portable grain auger from one bin to another can have tragic results if the individuals involved are not extremely careful. The use of tractors with large cabs and antennas and oversized grain wagons can also result in preventable electrocution incidents.

Electrical equipment around fields, such as power lines in the end rows, may get overlooked during such a hectic time of year as harvest. However, failure to notice overhead power lines can be a deadly oversight.

Most farmsteads could use a very careful overhead visual inspection

of electric lines. The service may no longer meet the proper height codes because of age and/or damage to poles and pole guy wires. The sag may have increased over the years, while the height of the machinery being used today may be much higher.

However, today's farm equipment has a long reach when extended; and even when collapsed for roadway transport, many pieces of equipment may exceed the height of power lines. A daily check should be made of where equipment will be moving to ensure that it will clear power lines. Don't take matters into your own hands. They may not be as high as they look. Always use a spotter, someone with a broad vantage point, when working in the vicinity of power lines.

In addition to conducting a field survey of power lines to locate potential hazards, employers should obtain safety information from utility companies for the benefit of their workers.

Where possible, install electrical safety warning signage to prevent equipment and human contact with power lines. This will also be beneficial to your suppliers who may be making deliveries to your farm.

National Farm Safety and Health Week is the perfect time for farm families and workers to discuss electrical dangers and to know how to avoid them. Learn more at www.SafeElectricity.org.

Win Money

Find Your Name & Member Number and Win \$

The tradition of listing member names and numbers in the newsletter continues in the Cooperative Connections. If you find your name and member number, call the office and let us know and you will receive a \$20 energy credit.

In last month's Cooperative Connections, Michael Jorgensen & Chris Schreiber spotted their names and will receive an energy credit. Once again, there are two new names and numbers hidden in this issue. Good Luck!

Energy Saving Tip

Did you know fall is the perfect time to schedule a tune-up for your heating system? Home heating accounts for a large portion of winter energy bills, and no matter what kind of system you have, you can save energy and money by regularly maintaining your equipment. Combining proper equipment maintenance and upgrades with recommended insulation, air sealing and thermostat settings can save about 30% on your energy bills. *Source: energy.gov*



State run boat checks and washing stations aim to reduce the spread of aquatic invasive species, such as zebra mussels, in South Dakota.

Zebra Mussels and Their Impact on the Missouri River

Frank Turner

frank.turner@sdra.coop

The Missouri River in South Dakota, renowned for its outstanding recreational areas, fishing holes and scenic campgrounds, draws a wide swath of tourists from around the world. However, these welcoming public waters have become the home of one unwelcome intruder—the infamous zebra mussel.

Endemic to southeastern Europe, the zebra mussel made its journey to the United States Great Lakes in the '80s as an unlikely stowaway, clinging to the hulls of large ships and barges. Since their arrival, the mussels have proliferated across the Midwest, spreading from one river system to the next.

So how can a mollusk, merely the size of a fingernail, inflict millions of

dollars in economic damage to local recreation, agriculture and hydroelectric power generation? Martin Goding, Gavins Point Dam maintenance and operations manager with the U.S. Army Corps of Engineers, explains that one zebra mussel can spawn more than a million eggs in a season, overrunning the local ecosystem. Once established, the mussels latch onto every viable surface in the water—they envelop pipes, ruin beaches and disrupt hydroelectric dams.

In 2015, local governments detected South Dakota's first infestation of zebra mussels in Lewis and Clark Lake. Goding says this discovery ignited a fierce battle against the invasive species.

“We are in the war to eradicate the zebra mussel, but I don't think we're ever going to completely eliminate them,” said Goding. “They are multiplying faster than we can get rid of them.”



Zebra Mussels completely envelop Gavins Point Dam's water gates, adding up to an additional 30 tons of weight.



With few effective treatments at their disposal, the U.S. Army Corps of Engineers has been forced to adjust to operating within a river infested with mussels. The change has significantly

increased the maintenance costs associated with running Gavins Point Dam. Pipes, essential for cooling the dam as it produces electricity, now require routine disassembly and cleaning. Over the course of six months of warm weather, the dam's lakeside gates collect an additional 30 tons of weight from the relentless accumulation of zebra mussel shells and the debris they carry.

"We have spent a million and a half dollars over the last five years just in maintenance to deal with this invasive species—and that's not even counting the cost of materials," said Goding. "Zebra mussels have really impacted the operation and turned maintenance into a nightmare."

Beyond maintenance, zebra mussels have also disrupted power generation. Outbreaks of zebra mussels within

the dam's infrastructure have resulted in unscheduled and forced outages, interrupting an energy source that has been historically reliable.

"One could safely say that Gavin Point Dam has lost a million dollars in power generation over the last five years," said Goding.

Since the initial invasion in 2015, some strategies have emerged to mitigate damage from the invasive species. The introduction of UV lights and the addition of strainers have curbed the presence of zebra mussels within the dam. Even still, the mussels have continued their spread northward through the Missouri River to Lake Sharpe near Pierre, S.D.

According to Goding, the experiences at Gavins Point Dam serve as a stark warning for dams and water systems yet to face infestation.

"Lewis and Clark Lake is beyond prevention," said Goding. "We have crossed that bridge and they are not going away."



Electrical safety starts at home

Do the lights in your home dim when you turn on other devices? Do you hear a buzzing sound from your light switches or outlets? These are some of the signs of an overloaded electrical system, which can lead to a fire. Here, Lyon-Lincoln Electric along with the Electrical Safety Foundation answers questions about electrical safety at home.

1. What are some common home electrical hazards?

Common hazards include overloading your electrical system. Be sure to label your circuit breakers to understand the different circuits in your home. You can reduce your electrical load by using energy efficient appliances and LED bulbs, and you can have a qualified electrician install new circuits for high-energy-use devices.

2. What are some not-so-obvious hazards?

One is improperly using extension cords. Roughly 3,300 home fires each year originate from extension cords, killing 50 people and injuring 270 more. Don't plug extension cords together or overload cords with too many devices. Be sure to inspect cords for damage before use. Check for cracked or frayed sockets, loose or bare wires, and loose connections. Also, never run extension cords under carpets, rugs or doors.

3. Are there signs that a home may have an electrical problem?

If you notice any of the following signs, contact a qualified electrician to inspect your home, as these are warning signs of an overloaded electrical system:

- Frequent tripping of circuit breakers or blowing of fuses
- Dimming of lights when other devices are turned on
- Buzzing sound from switches or outlets
- Discolored outlets
- Appliances that seem underpowered

4. What do people with older homes need to know about electrical safety? What's considered an "older home"?

An older home is one that was built at least 40 years ago. The average American home was built in 1977 and can't handle the demands of today's electrical appliances and devices. It's recommended that you have your home inspected if it's older than 40 years old, has had a major appliance installed or if you're interested in installing new technology - such as a charger for your electric vehicle.

5. What do you wish everyone knew about electrical safety at home?

Each year, electrical malfunctions account for 35,000 home fires, causing over 1,130 injuries, 500 deaths and \$1.4 billion in property damage. Many electrocutions and home fires can be prevented simply by understanding basic electrical safety principles and adhering to safe practices.

Know the signs of electrical stress and safety hazards. No matter the season or age of a home, residents should be vigilant and continually check for electrical hazards such as cracked or fraying electrical cords, overloaded outlets and circuits, and improper wattage light bulbs in lamps and light fixtures. Also, make sure smoke alarms are placed and functioning properly.

ELECTRICAL SAFETY

DO: Ensure AFCIs are installed where needed

DO: Install carbon monoxide and smoke alarms

DO: Plug appliances directly into the wall

NEVER USE DAMAGED CORDS

Extension cords are temporary solutions and shouldn't be used on large appliances

BE AWARE OF WARNING SIGNS OF AN OVERLOAD OR WIRING PROBLEM:

If you see lights that flicker or dim, notice discoloration, hear buzzing, feel warm switches/outlets, or smell burning, you should hire a qualified electrician to inspect your system

electrical safety
FOUNDATION



According to the Consumer Product Safety Commission (CPSC), one fuel-powered portable generator produces as much carbon monoxide (CO) as hundreds of combustion-engine cars.

Using a portable generator in your home, garage or too close to your home is like starting a parking lot full of cars and letting the CO poison seep into your home. And the devastating result is almost immediate: The CO from one generator can kill in minutes.

USING A PORTABLE GENERATOR SAFELY

1. Always use a generator at least 20 feet away from your home.
2. Never operate one inside a home, on a porch or near windows and doors.
3. The 20-foot rule also applies to other locations, such as a shed, cabin, camper or trailer.
4. When shopping for a generator, look for one that produces reduced emissions.
5. Also look for one that shuts off automatically when high levels of CO are present.
6. Keep your generator well-maintained and follow all manufacturer's instructions.
7. Ensure CO detectors are installed on every level of your home and near or in bedrooms.
8. Test CO alarms monthly; also track their age. They need to be replaced every seven years.

Source: CPSC

Learn more at: [SafeElectricity.org](https://www.SafeElectricity.org)

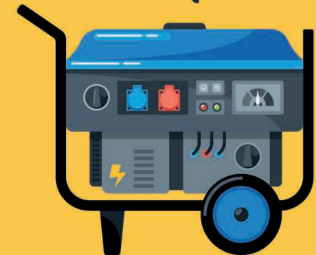
TOP 3 REASONS
for using a generator

1. Weather-related power outages.
2. Power shutoffs.
3. Temporary locations.

CO deaths associated with PORTABLE GENERATORS

Approximately **85** individuals die in the U.S. each year.

81% of deaths occur in residential locations.



Don't let your generator generate trouble

Having a generator on hand, whether portable or permanent, may sound like a great idea for times when the power goes out, but misusing one is dangerous. Although they can help light your home or cool your perishable food when the neighborhood is dark, if used incorrectly you could have a much bigger problem on your hands.

When using a portable version, there are two ways to connect it to a home. The first way is with a powered circuit panel that has a power transfer switch, which monitors incoming voltage from the utility line. The circuit panel and transfer switch should always be installed by a qualified electrician. The second option is to plug in a limited number of home appliances directly into a fuel-powered portable generator with heavy-duty extension cords.

Never try to power your home by plugging a generator into a wall outlet. This is known as back feeding, and it could electrocute a neighbor or an electric lineman working to restore power. A permanent generator must also have a transfer switch installed by a qualified electrician to avoid back feeding. Because of the harm an incorrectly powered generator can cause, the transfer switch is required by the National Electrical Code.

The primary hazards of using a portable generator are not pretty. They include carbon monoxide (CO) poisoning from the toxic engine exhaust, electric shock or electrocution, and fire, according to the Federal Emergency Management Agency (FEMA). Lars & Lena Johansson - 364102. According to the agency, most of the deaths and injuries associated with portable generators are from CO poisoning when generators are used indoors or in partially enclosed spaces. A permanent or standby generator also has significant risks if not installed by a qualified electrician. Installing one is extremely dangerous and definitely not a DIY project.

Using a generator is serious business and shouldn't be done in haste. Learn more about using electricity safely and efficiently at [SafeElectricity.org](https://www.SafeElectricity.org).



Drone Spraying

A Modern Tool in Today's Agriculture

Scott Waltman

As modern agriculture continues to evolve, drones are one of the newer tools farmers can use to help their land and crops.

The hovering, unmanned aircraft can be handy for small areas and places it's difficult for traditional spraying options to get to, according to those who offer the service to those in the ag sector.

Drones aren't the weapon of choice to spray chemicals on 1,500 acres of corn or soybeans, but that day is likely coming, said Derek Ver Helst, who operates Dakota Unmanned Aerial in Brandt.

Closer to the coasts, drones are already used for a multitude of purposes that aren't just fun and shooting videos. They are only going to become more prominent in ag-heavy states like the Dakotas, he said.

"The possibilities are pretty much

just limited by your imagination," Ver Helst said.

He said his background as an agronomist piqued his interest in spraying with drones. Dakota Unmanned Aerial is a side hustle he started about two years ago. He works as a senior conservation agronomist for AgSpire.

Nick Williams had a background in agriculture working for CHS Cooperative and selling farm equipment before starting Williams Drones southeast of Parkston in August 2020. Business has been good, he said, estimating that it has doubled each year.

"It's really taken off, it continues to grow," Williams said.

He and Ver Helst agree that farmers have been receptive to the relatively new option, willing to give it a try when the project isn't too big.

Williams said he does mostly ag-related work. In late July, he was staying busy with fungicide applications.

Drones are great near shelter belts and around wet areas. Those are places



that are hard for a land rig or spray plane to get to. Drones work better because they are smaller and more agile, he said.

A route is mapped out and the drone reads that information and flies mostly autonomously, Williams said.

He sets the height, speed, gallons of application per acre and swath width. Once a drone is in the air, it does almost all of the work, though Williams said he can control the height a little, if needed.

Drones have sensors and other features so they don't run into trees, equipment, wind turbines or structures, he said.

Depending on the amount of land to be sprayed, it can take longer to map a field than to spray it, Ver Helst said.

His drones carry 10 liters, but others have a capacity of 40 liters, he said. When a drone runs out of chemical, it returns back to the operator, who puts on a new tank, changes the battery and sends it back out, Ver Helst said. The drone will pick up spraying right where it left off, he said.

In 2016, land-grant university researchers and educators started work to increase the use of drones in agriculture, according to information from the U.S. Department of Agriculture.

That work continues today. It includes identifying and evaluating the most user-friendly and cost-effective drone platforms and sensors, according to the USDA.

Some drone operators offer swarm spraying, Van Helst and Williams said.

For instance, there could be five drones programmed to follow the same grid over a field, pasture or slough working in unison, Van Helst said. As one runs out of spray, it returns for a new tank of chemical and battery until the job is finished.

Van Helst said he doesn't do a lot of spraying. Most of it is on pastures.

But, he said, he has done some work in orchards and vineyards where grapes are grown.

Williams has branched out a little more. Last year, he said, he was hired to do a dust-control project at the Sanford Underground Research Facility in the Black Hills. That is the former Homestake gold mine near Lead.

And both men say drones can be used to combat one of South Dakota's least-popular commodities – mosquitos.

Drones can be used to spray for skeeters on fairgrounds, when there's a big city gathering and even in a residential area.

During the COVID-19 pandemic, they were even used to shower stadiums with antibacterial spray, Van Helst said.

One drone operator in Texas was contacted to see if drones could be used to drop fish food into a pond, Williams said.

He said his drones can cover about 20 acres an hour, though some can do 30 hours an acre. And he expects the new drones released next year will be able to spray 40 hours in an acre.

For large fields, a land rig or a spray plane is still a better bet, Williams said. A traditional ground sprayer can probably cover 70 acres an hour, he said.

Van Helt said his T-40 drone can handle about 100 acres a day.

One challenge in getting started is getting all of the licensing needed from the Federal Aviation Administration.

He spent about two years testing and writing exemptions and working through the legalities.

Commercial drone operators need a remote pilot certificate from the FAA. Another license is needed to dispense chemicals from a flying aircraft, Van Helst said.

He said he has procured 14 FAA exemptions and will need two more next year.

That's why some drone operators hire a business to navigate that process. That's the route Williams took.

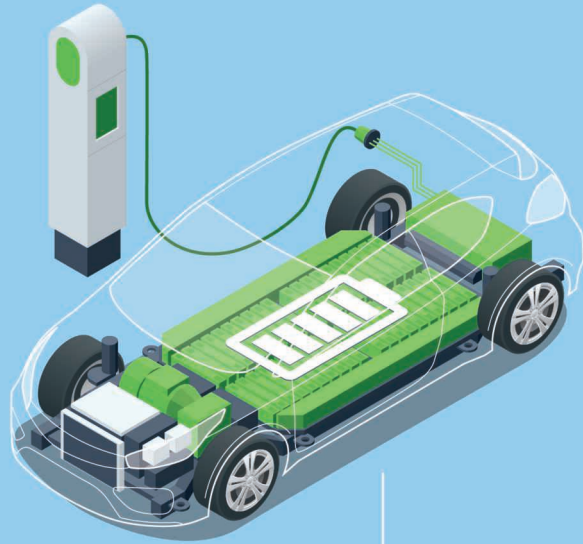
Being a drone operator can be fun or frustrating, just like any other job, he said. He just checks the forecast and hopes it holds. Trying to spray when the wind is 20 mph or more just isn't going to work, he said.

Even so, Van Helst said, drones are a fantastic tool. Ground rigs and spray planes will always be needed, and drones are just one more option for farmers to tap.

"There's a right time and a right place for everything," he said.



The Name of the (BATTERY) Game



Making the Most of EV Range

Electric vehicle (EV) drivers are usually well-versed on how to make the most of their car's battery charge.

For the rest of us, what factors impact how long a charge lasts?



Driving Patterns

Higher speeds require more battery power than lower speeds.



Acceleration Rate

Taking the lead out of your foot helps improve your car's battery range.



In-Town vs. Highway

In-town driving has its benefits. Braking charges the battery and coasting conserves energy.



Weather

While all types of conditions affect battery range, frigid temperatures drain it the quickest.



Heat/AC

Controlling the comfort inside your EV is the biggest power drain second only to driving it.



Weight

The size of your EV, number of passengers and any added cargo impacts efficiency.

Source: Kelley Blue Book

Make the most of your electric vehicle battery's charge



Electric mobility and the popularity of electric vehicles (EVs) has been growing rapidly over the last decade and this trend doesn't show any signs of slowing down. With so many more EVs on the road and National Drive Electric Week, Sep 22-Oct 1, 2023, zooming in, it is important to understand how to make the most of the EV's battery charge no matter if you are an EV enthusiast, an automotive fan, interested in technology, or just a commuter looking for additional options.

In town versus highway

Do you use your vehicle to run nearby errands or for a long commute to work? When driving an EV, in-town driving usually benefits battery range, since EVs use the braking system to put energy back into the battery, called regenerative braking. Dennis Jerzak - 1159300. Coasting toward that stoplight also helps because you can move forward without using power.

Driving, period

Although painstakingly obvious, driving will always drain the battery. Higher speeds require more battery power than lower speeds.

Rate of acceleration

While driving EVs is fun because they get up and go, high (and rapid) acceleration requires more energy than taking off more slowly. Taking the lead out of your foot helps improve your car's battery range.

Weather

While all types of conditions affect battery range, frigid temperatures cause the biggest drain. It requires more energy to keep the battery running when it is cold outside.

Heat/air-conditioning

Controlling the comfort inside an EV is the biggest power drain, second to driving it. Warming the EV's cabin takes more energy when it is cold outside. The inverse is also true when you use energy to blast the air conditioner when it is hot outside.

Weight

The size of an EV, how many passengers are on board, and how much extra stuff you have in the trunk impact battery range. The lighter the car is, the less energy the battery expends.

How full is too full?

Most EV owners avoid charging a battery to 100%, since fully charging affects battery life. While some EV owners charge to a maximum of 80% capacity, many EV enthusiasts now recommend charging to 50% full.

Taking a long road trip? Some experts believe charging to full capacity now and then is not a major concern.

EV charging safety

- Read and be familiar with your EV owner's manual and follow all manufacturer's guidelines when charging your vehicle.
- Plug the charger directly into an outlet designed to handle the amperage of the charging device. Never use a multiplug adapter or extension cord.
- Inspect all public charger cables prior to use. Never use an EV charger with obvious signs of damage, such as broken or fraying cords.
- When charging during rainy conditions, cover the EV charging station's outlet to stop water from entering. Check the manufacturer's guidelines to make sure it is safe to charge your EV in wet conditions.
- Be aware of any recalls on your EV and follow all safety guidelines listed in the recall until the needed repair is completed by the dealership.

For those who are considering buying their first electric vehicle, or those who own one, driving an EV—or more specifically charging one—is a completely new experience. We at Lyon-Lincoln Electric hope we have cleared up some of the most common EV charging and battery life questions so that you can feel more confident about electric mobility.

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Your E-mail Address: _____



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.

SEPT 2
Hidewood Valley Barn Dance
7 p.m.
47236 183rd St
Clear Lake, SD

SEPT 4
Hidewood Valley Steam Threshing Show
Steam Whistle Blows
1 p.m.
47236 183rd St
Clear Lake, SD

SEPT 8-10
James Valley Threshing & Tractor Show
World's Largest Steam Traction Engine
Andover, SD
605-868-3242

SEPT 9-10
Old Iron - Fall Harvest Festival
Delmont, SD

SEPT 10
10th Annual Black Hill Beer Run
Spearfish Campground Pavilion
Spearfish, SD
605-642-7730

SEPT 10
100th Anniversary of Little Brown Church
11 a.m.
Service, Potluck & Auction
West of Hayes
Hayes, SD

SEPT 11-17
Traditions & Olivia American Legion
Olivia, MN
320-523-1000

SEPT 11-17
HOBO Days
Live Music-Fun
Olivia, MN
320-523-1000

SEPT 16
Midland Appreciation Day
Theme: Automobiles
1:30 p.m.
Midland, SD

SEPT 17
St. Anthony of Padua Catholic Church Church Bazaar
12 p.m.
Hoven, SD

SEPT 22-24
Coal Springs Threshing Bee
Meadow, SD
605-788-2229

SEPT 23
Springfield Dakota Senior Meals Fall Festival
9 a.m.
Springfield Community Building
Springfield, SD

SEPT 30
Day of Wellness
10 a.m.
Sturgis Armory
Sturgis, SD

SEPT 29-30
Junkin' Market Days
Ramkota Exhibit Hall
Sioux Falls, SD
605-941-4958

OCT 6-7
Holman Acres Pumpkin Fest & Vendor Show
Philip, SD
605-441-1060

OCT 7
Spirit of Dakota Award
Huron Event Center
Huron, SD
605-352-6073

Note: Please make sure to call ahead to verify the event is still being held.