



# Cooperative Connections



**Up, Up & Away:  
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to Skies in  
August**

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Research  
Underway**

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# How Can We Better Serve You?



**Steve Reed, CEO**

steve.reed@wce.coop

**Our goal is to find ways to help you control energy costs.**

It's amazing what we learn through listening and observation.

New products and services are more likely to gain the satisfaction of consumers when their introduction follows market research.

Here at West Central Electric, we've provided members with SmartHub, enabling you to check the status of your electric service and receive real-time updates on energy use.

Our members are using the app to conduct routine business with us, like online bill payments, arranging service transfers and viewing real-time outage updates. Since we launched it in 2013, 720 of our members have downloaded our SmartHub app and use it to monitor more than 900 accounts.

These mobile services are just new ways of connecting with people, like the member services representatives you reach when you call us or greet you from behind the counters at our office. They help us offer quality services you expect us to provide.

Our goal is to find ways to help you control energy costs. That's why we communicate with you about energy prices and ways we can work together to help ease the burdens on your wallet.

West Central also offers a load management program designed to help avoid high-cost energy by reducing overall demand during peak use periods. We lower the demand by actively load controlling water heaters and electric storage heat. Approximately 1,150 of you participate in our program and we hope to expand more going forward. If you haven't signed up, ask us about it – we're ready to listen.

Listening improves understanding, builds trust, strengthens relationships and fosters cooperation. It's also crucial to collaboration and success.

That's why West Central still loves face time with our members. Our annual meeting is a social event for our whole co-op family. We hope you'll make plans now to join us on Oct. 3 at the Fine Arts building in Philip for an evening of co-op business, fun and prizes.

So, how do we serve you better going forward? The same way many of us try to serve community, society and family better each day – by listening. In our offices, on telephones, through social media exchanges and in our face-to-face meetings, we're ready to listen.

Whether you have questions about energy efficiency, electrical service or any of our products or services, just ask us. When we know just what you want, we're in a better position to deliver successful results.

Drop in and see us, we're always glad to hear from you.

**Join us Oct. 3 at the Fine Arts Building in Philip for West Central Electric's annual meeting.**



# West Central Electric

## Cooperative Connections

(USPS No. 018-988)

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**Our Mission is to Provide  
Safe, Reliable Service  
to our Member Owners.**

West Central Electric Cooperative,  
Inc., is an equal opportunity  
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**Call 605-669-8100**  
**24-hour Dispatching**

WEST CENTRAL ELECTRIC COOPERATIVE CONNECTIONS is published monthly by West Central Electric Cooperative, Inc., PO Box 17, Murdo, SD 57559. Periodicals Postage Paid at Murdo, SD 57559 and at additional mailing offices. Electric cooperative members devote \$1 from their monthly electric payments for a subscription. Nonmember subscriptions are available for \$18 annually.

POSTMASTER: Send address changes to:  
West Central Electric Cooperative Connections, PO Box 17,  
Murdo, SD 57559; telephone 605-669-8100; fax 605-669-2358;  
e-mail [wcec@wce.coop](mailto:wcec@wce.coop); Web site: [www.wce.coop](http://www.wce.coop);

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Design assistance by SDREA

# Demand vs. Energy

## What's the Difference?

**Demand** can be explained as the capacity that is required to serve a load. As an example, think about the loads that can be on at the same time in your home. The water heater is 4.5 kW, the oven is about 4 kW, the clothes dryer is 5 kW, so you would need a generator with a capacity to handle a demand of  $4.5 + 4 + 5 = 13.5$  kW. Likewise,



**Jessie Tucker**

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we would need to have a transformer at your home sized to meet this combined load also. Overall, higher demand loads require more service from the utility including: generating plant capacity and more expense in lines, transformers and substation equipment.

**Energy** can be explained as the power delivered to your loads over a period of time. Using the above example, if all the loads were on continuously for three (3) hours,  $13.5 \text{ kW} \times 3 \text{ hours} = 40.5 \text{ kWh}$ . If you checked your electric meter before and after, you would see an increase in the reading of 40.5 kWh.

One of the best analogies to help understand the difference between demand and energy is by "filling a bucket." Suppose you want to fill a five-gallon bucket

with water. You can use a smaller, inexpensive hose hooked to a little faucet that would supply the water at one gallon per minute and it would take five minutes to fill the bucket. Rather than using the smaller hose, you can get a larger more expensive hose and faucet that would fill your bucket at a rate of five gallons per minute. This would only take one minute to fill. In this example, the consumption (**energy**) of filling the bucket with five gallons of water is the same but the flow rate (**demand**) would be much different.

Your home energy bill is typically based on the number of kWh that you consume. West Central Electric, on the other hand, must pay a cost for the maximum kW (demand) that we supply during the month, as well as the energy delivered in kWh. A larger kW figure means our power supplier had to have enough generation capacity running to meet our peak load. More kW at the peak means more generators running. The more generators running means more expense and cost to supply the short-term peak load.

Base load or load that is basically continuous, is met with constant running coal plants. Load that rises above that level for shorter periods is met with short-term peaking plants that utilize natural gas or fuel oil. These plants are higher maintenance and greater expense. Therefore, we pay for the maximum monthly peak load. A lower peak means a lower use of more expensive generation sources and a lower cost to meet the load. That means a lower wholesale power cost and the savings pass on to our members!

**More kW at the  
peak means more  
generators running.  
The more generators  
running means more  
expense and cost  
to supply the short-  
term peak load.**



## Home Project Safety

More people are doing their own remodeling, repairs, maintenance, landscaping, and construction projects inside and outside the home. Safe Electricity urges all do-it-yourselfers to take precautions, especially when working around electrical equipment and overhead power lines.



Make sure outdoor outlets have a ground fault circuit interrupter (GFCI). Use a portable GFCI if your outdoor outlets don't have them. It's also a good idea to have GFCIs professionally installed in wet areas of the home, such as the kitchen, bath and laundry.

### Safety tips to remember include:

- Look up and around you. Always know of the location of power lines, particularly when using long metal tools, like ladders, pool skimmers, and pruning poles, or when installing rooftop antennas and satellite dishes or doing roof repair work.
- Be especially careful when working near power lines attached to your house. Keep equipment and yourself at least 10 feet from lines. Never trim trees near power lines — leave that to the professionals. Never use water or blower extensions to clean gutters near electric lines. Contact a professional maintenance contractor.
- If your projects include digging, like building a deck or planting a tree, call the national underground utility locator at 8-1-1 before you begin. Never assume the location or depth of underground utility lines. This service is free, prevents the inconvenience of having utilities interrupted, and can help you avoid serious injury.
- Always check the condition of cords and power tools before using them. Repair or replace worn or damaged cords and tools.
- Electricity + water = danger. If it's raining or the ground is wet, don't use electric power or yard tools. Never use electrical appliances or touch circuit breakers or fuses when you're wet or standing in water. Keep electric equipment at least 10 feet from wet areas.

Make certain home electrical systems and wiring are adequate to support increased electric demands of new electric appliances, home additions, or remodeling projects. An older home may be inadequately wired for today's electricity consumption, putting your family at risk for fire and electrical shock. Have a professional replace worn and outdated circuitry and add outlets for appliances and electronics – this is not a job for casual do-it-yourselfers!



**It took years to make it a farm...  
It takes one call to keep it safe.**

The soil on your farm or ranch is rich with nutrients and minerals... AND underground gas, oil and water pipelines.

Excavations, terracing projects, fence post installation, tiling or subsoiling can create safety hazards due to the depth of the excavations.

CALL BEFORE YOU DIG in order to notify utility companies who will be affected by the excavation. This service is FREE.

No one digs more dirt than America's farmers and ranchers. Understanding what is below ground will help you DIG SAFELY above ground. Call before you dig!

## KIDS CORNER SAFETY POSTER



**"Never remove a plug when your hands are wet."**

**Aida Mikkonen, 10 years old**

Aida is the daughter of Patrick and Carrie Mikkonen, Mt. Vernon, S.D. They are members of Central Electric Cooperative, Mitchell, 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.

# Sensational Salads

## Tzatziki Potato Salad

- |   |  |
|---|--|
| 2 lbs. unpeeled Yukon Gold potatoes, cut into 1-inch cubes (about 6 cups) | 2 tsp. McCormick® Garlic Powder                    |
| 3/4 cup (6 oz.) plain Greek-style yogurt                                  | 1-1/2 tsp. McCormick® Oregano Leaves               |
| 1/4 cup reduced fat sour cream  | 1/2 tsp. McCormick® Black Pepper, Coarse Ground    |
| 2 T. milk   | 1/2 tsp. Sea Salt from McCormick® Sea Salt Grinder |
| 1 T. lemon juice  | 1 cup diced unpeeled, seeded cucumber              |
| 2 tsp. honey  | 1/4 cup chopped red onion                          |

Place potatoes in water to cover in large saucepan. Bring to boil on high heat. Reduce heat to low; simmer 10 to 12 minutes or until potatoes are fork-tender. Drain well. Cool completely. Mix yogurt, sour cream and milk in small bowl with wire whisk until well blended. Add lemon juice, honey and seasonings; mix until well blended. Place potatoes, cucumber and onion in large bowl. Add yogurt dressing; toss gently to coat well. Garnish with crumbled feta cheese, if desired. Cover. Refrigerate until ready to serve. Makes 10 (2/3 cup) servings.

*Nutritional Information Per Serving: Calories 97, Total Fat 1g, Sodium 109mg, Cholesterol 3mg, Carbohydrates 18g, Protein 4g, Dietary Fiber 2g*

**Pictured, Cooperative Connections**

## Pineapple Pretzel Salad

- |                             |   |
|-----------------------------|---|
| 1 stick butter              | 1 (12 oz.) container whipped topping      |
| 1 cup crushed pretzels      | 1 (20 oz.) can crushed pineapple, drained |
| 1 cup sugar, divided        |   |
| 1 (8 oz.) pkg. cream cheese |   |

Melt butter. Stir in pretzels and 1/2 cup sugar. Spread on 9x13-inch baking sheet. Bake at 350°F. for 7 minutes. Cool. Break into pieces and set aside. Beat together softened cream cheese and remaining 1/2 cup sugar. Stir in whipped topping and pineapple. Add pretzel mixture just before serving.

**Beth Eickman, Salem, S.D.**

## Chicken Salad

- |                                       |   |
|---------------------------------------|---|
| 1 chicken, roasted, deboned and diced | 2 cups diced celery                       |
| 2 lbs. red grapes, washed and halved  | 1 to 1-1/2 cups real mayonnaise           |
| 2 cups diced carrots                  | 1 (9 oz.) can Pik-Nik Shoestring Potatoes |

Mix together first 5 ingredients. Add shoestring potatoes just before serving. This looks lovely on a large leaf of lettuce.

**Judy Mendel, Doland, S.D.**

## Make Ahead Rhubarb Salad

- |                                   |                                     |
|-----------------------------------|-------------------------------------|
| 2 cups diced rhubarb              | 1 cup chopped celery                |
| 1/2 cup sugar                     | 3/4 cup chopped nuts                |
| 1 (3 oz.) pkg. strawberry gelatin | 1 (8 oz.) container whipped topping |
| 1 (3 oz.) pkg. cream cheese       |                                     |

In a saucepan, cook rhubarb and sugar for 10 minutes; remove from heat. Stir in gelatin and cream cheese; cool. Add celery and nuts. Fold in whipped topping. Refrigerate overnight.

**Elaine Rowett, Sturgis, S.D.**

## Fruit Salad

- |                                      |  |
|--------------------------------------|--|
| 1 can peach pie mix                  | 1 pint fresh strawberries, sliced or diced |
| 1 small can chunk pineapple, drained | 1 (16 oz.) container whipped topping       |
| 2 bananas, sliced or diced           |  |

In a large bowl, fold together all ingredients.

**Shirley Thedorff, Centerville, S.D.**

Please send your favorite salad, garden produce and pasta 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 2018. All entries must include your name, mailing address, telephone number and cooperative name.

# Understanding Appliance Energy Use



**Pat Keegan**

Collaborative Efficiency

This column was co-written by Pat Keegan and Brad Thiessen of Collaborative Efficiency. For more information, please visit: [www.collaborativeefficiency.com/energytips](http://www.collaborativeefficiency.com/energytips).

## Footnotes

<sup>a</sup>Source: <https://www.consumerreports.org/refrigerators/best-energy-efficient-refrigerators/>

<sup>b</sup>Source: [https://www.energystar.gov/index.cfm?c=products.pr\\_save\\_energy\\_at\\_home](https://www.energystar.gov/index.cfm?c=products.pr_save_energy_at_home)

<sup>c</sup>Source: <http://www.energy.gov/eere/buildings/appliance-and-equipment-standards-program>

<sup>d</sup>Source: <http://www.siliconvalleypower.com/for-residents/save-energy/appliance-energy-use-chart>

<sup>e</sup>Source: <https://www.energystar.gov/index.cfm?fuseaction=refrig.calculator>

<sup>f</sup>Source: [https://www.energystar.gov/productfinder/most-efficient/me-certified-refrigerators?me\\_type\\_filter=Bottom%20Freezer](https://www.energystar.gov/productfinder/most-efficient/me-certified-refrigerators?me_type_filter=Bottom%20Freezer)

<sup>g</sup>Source: <https://www.energystar.gov/most-efficient/me-certified-clothes-washers/>

<sup>h</sup>Source: <https://www.energy.gov/energysaver/appliances-and-electronics/kitchen-appliances>

<sup>i</sup>Source: <https://www.c2es.org/content/home-energy-use/>

**Dear Pat:** Several of my appliances are getting old and will need to be replaced soon. Will the appliance choices I make have much impact on my energy bill? – Chelsea

**Dear Chelsea:** Your energy use varies month to month, so it can be difficult to see how much difference an appliance purchase makes. It's best to view the purchase over the lifetime of the equipment. Think about the up-front cost and the lifetime energy cost. In a *Consumer Reports* test, the most efficient refrigerator used \$68 per year less electricity than the least efficient model.<sup>a</sup> Multiply that difference over a decade or two, and the lifetime energy savings could be greater than the up-front cost. All it takes to get the best appliance for your needs is some initial research.

Appliance energy use is usually less, on average, than home heating and cooling bills, but can be several hundred dollars each year<sup>b</sup>. Your appliance use depends on factors like the model, how often you use it, the settings you use for its particular function and even the time of day it is most used.

Over the last few decades, new appliances became more energy efficient, driven partly by minimum government standards. These standards, created by the U.S. Department of Energy, save consumers over \$60 billion each year.<sup>c</sup> Appliances are required to include an Energy Guide label that shows estimated energy use and operating cost per year. These labels help you compare different models and calculate the initial cost against the long-term savings.

Some appliances will also have an ENERGY STAR® label. This indicates the appliance is substantially more efficient than the minimum standard. Your greatest energy savings opportunities can come from replacing an old appliance with an ENERGY STAR-rated appliance. Removing a refrigerator that's 20 years old and replacing it with a new ENERGY STAR model can lower the monthly electricity cost by 75 percent, from \$16.50 to less than \$4.<sup>d</sup>

In some cases, the configuration of the appliance can also make a substantial difference. For example, a side-by-side refrigerator/freezer uses about 70 percent more energy than other configurations,<sup>e</sup> with all the most efficient models having the refrigerator stacked on top of the freezer.<sup>f</sup> All 36 of the most efficient clothes washers of 2018 were front-loading models.<sup>g</sup>

Consider how much you use the appliance. The more you use the appliance the greater your savings will be from choosing a more efficient model. If you use the appliance less or have a small household, you may get by with a smaller refrigerator or freezer, which will save you money.

How you operate appliances can also make a difference. Here are some easy ways to save<sup>h,i</sup>:

## Refrigerator/Freezer:

- Set your refrigerator at 35 to 38 degrees and your freezer at 0 degrees.
- Make sure there is adequate air flow between the wall and the back of the unit.
- Keep the refrigerator relatively full when possible.
- Replace the seals around the doors if they appear to be leaking air.
- Defrost the refrigerator and freezer regularly.

## Stove/Oven

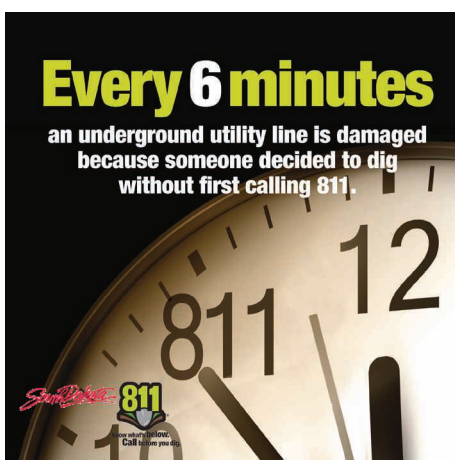
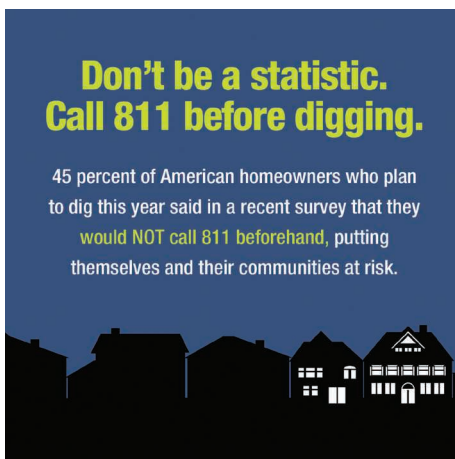
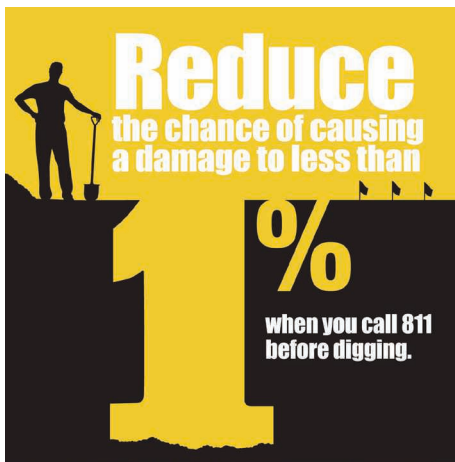
- Use the correct size of burner to fit the pan.
- Use smaller appliances like a microwave or slow cooker instead of the oven when possible.

## Dishwasher

- Use the most energy-efficient and shortest setting that gets your dishes clean.
- Air dry rather than using the heated dry function.
- Wait to run a load until the dishwasher is full.

Make the most out of your appliance energy use with a little research before buying a new model and a few easy adjustments to the way you use them.





South Dakota teachers sponsored by Basin Electric Power Cooperative this year included, from left, Maureen Beer who lives in Timber Lake, and teaches in Little Eagle; Shannon Bergan who lives and teaches in Aberdeen; Ja Lynn and Jason Burma who both teach and live in Miller; Robert Dunwoody who lives and teaches in Corsica; and Mike Sees who lives and teaches in Irene.

## Teachers Head to N.D. For Lignite Energy Seminar

More than 100 elementary and secondary teachers switched roles in mid-June, as they became the students at an educational seminar conducted by the Lignite Energy Council. The seminar, held June 11–14 at the National Energy Center of Excellence on the Bismarck (N.D.) State College campus, included educators from Minnesota, Montana, South Dakota and North Dakota.

The seminar, titled “2018 Lignite Education Seminar: Energy, Economics and Environment,” provided teachers with the information and educational materials they need to teach their students how lignite is mined and used to produce energy for homes, farms and businesses in the Upper Midwest. The seminar covered lignite’s economic impact on the region, as well as important environmental issues affecting the lignite industry.

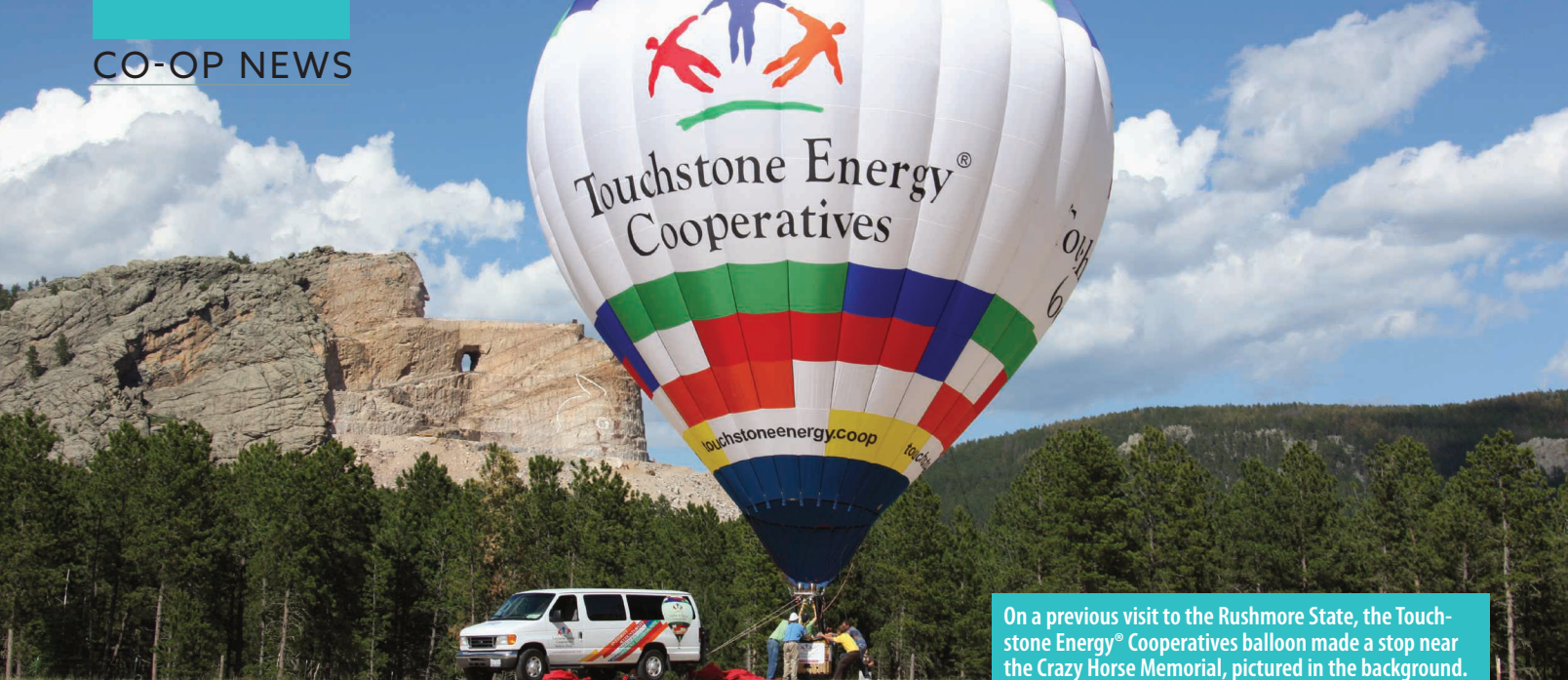
As part of the seminar, the teachers toured the Center Mine, Milton R. Young Station, Falkirk Mine, Coal Creek Station, the Freedom Mine, Antelope Valley Station, and the Great Plains Synfuels Plant.

Teachers who attend the seminar and complete a lesson plan can choose from three North Dakota universities from which to receive two graduate professional development credits: University of North Dakota, North Dakota State University and Minot State University.

Over the years, the Lignite Energy Council’s Teacher Seminar has received two prestigious awards. It was the 2012 winner of the Interstate Mining Compact Commission’s mineral education award in the public outreach category. In 2007, the Lignite Energy Council’s Teacher Seminar was also recognized by the American Coal Council for “excellence in the advancement of energy education.”

Since 1986, more than 3,600 teachers have attended the Lignite Energy Council’s Teacher Education Seminar.





On a previous visit to the Rushmore State, the Touchstone Energy® Cooperatives balloon made a stop near the Crazy Horse Memorial, pictured in the background.

# UP, UP AND AWAY

## Cooperative Brand takes to Southern Hills Skies

**Brenda Kleinjan**

[editor@sdrea.coop](mailto:editor@sdrea.coop)

Look to the skies above Hot Springs in late August and you'll likely see a familiar sight, albeit in a slightly unfamiliar location.

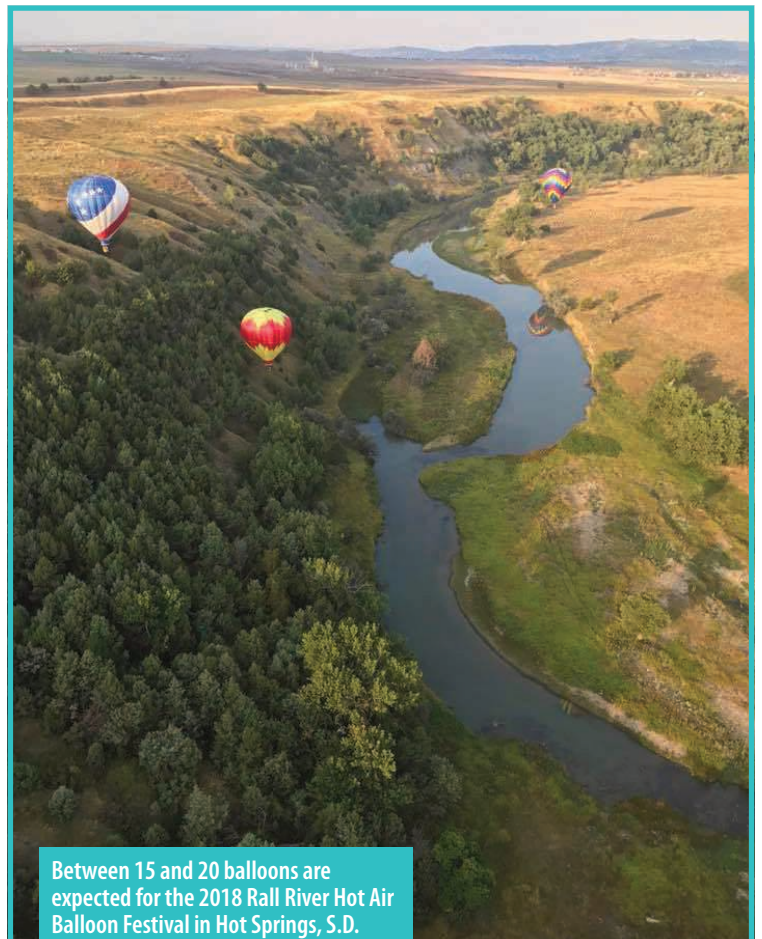
The Touchstone Energy® Cooperatives brand will be wafting above the Southern Hills when it takes part in the Fall River Hot Air Balloon Festival Aug. 25 and 26 in Hot Springs.

The Touchstone Energy® Cooperatives balloon is one of five operated by the Illinois-based Cooperative Balloon Associates. CBA was organized in 1999 to help promote the newly launched brand of America's electric cooperatives. Two decades later, the brand ambassador continues its journey.

The Touchstone Energy Cooperative balloon is just one of about 20 hot air balloons scheduled to appear at the third annual Fall River Balloon Festival.

Weather-permitting, balloons will launch at 6 a.m. both Saturday and Sunday mornings at the Hot Springs Municipal Airport. A night glow – where the balloons inflate their envelopes and illuminate their craft with their burners – is set for 8:30 p.m. Saturday at the airport.

Throughout the day, visitors to Hot Springs can



Between 15 and 20 balloons are expected for the 2018 Fall River Hot Air Balloon Festival in Hot Springs, S.D.



take part in ballooning inspired activities.

A Plein Air arts event is scheduled for downtown and organizers are seeking 15 artists to participate. Those registering prior to Aug. 15 have a chance to win a hot air balloon ride.

On Saturday morning, visitors can walk on the inside of a balloon envelope from 9 a.m. to 11 a.m. at the Mammoth site.

A vintage car show and an art walk and chalk are also planned.

For more information about the festival, visit their Facebook page at [facebook.com/FallRiverHotAirBalloonFestival](https://www.facebook.com/FallRiverHotAirBalloonFestival) or go to the Hot Springs Chamber of Commerce site at [HotSprings-SD.com](http://HotSprings-SD.com).

### About the Touchstone Energy Balloon

The Touchstone Energy® Hot Air Balloon serves as a goodwill ambassador for Touchstone Energy® Cooperatives and its member cooperatives. The fleet's two newest balloons are 77,000 cubic foot hot air balloons that stand over 77 feet tall and are 60 feet wide when fully inflated. Each are built of hyperlife fabric panels and boast a 14 cubic foot ascot basket. They carry a pilot and two average size passengers. The balloons are fired by dual propane burners and fueled by two 15-gallon propane tanks. The balloons

were built by Lindstrand Balloons of Hanover, Ill., in 1999, 2002, 2005, 2007, 2009 and 2014. The first two balloons have been retired.

The balloons have the Touchstone Energy® Cooperatives logo in bold letters on three sides. Everywhere the balloons go,

**Everywhere the balloons go, they promote the brand and the values of Touchstone Energy Cooperatives.**

they promote the brand and the values of Touchstone Energy Cooperatives... providing service with integrity, accountability, innovation, and commitment to community. These values are demonstrated through the presence of the balloons at national competitions and special events, and the team's interactions with spectators. These values are also conveyed in local philanthropic fundraising activities which the Touchstone Energy Hot Air Balloon program supports whenever and wherever the balloons are flying.



Mount Rushmore was another stop on a previous visit of the Touchstone Energy® Cooperatives Balloon. The 2018 Fall River Balloon Festival will make the balloon visible in the southern foot hills.



## Great Plains Balloon Race

Look to the skies over Sioux Falls Aug. 10-12 and you will likely see a colorful display.

The Great Plains Balloon Race is set to launch from Kenny Anderson Park near Sioux Falls Washington High School in the city's northeast corner. About 10 or 11 balloons are expected for this year's race.

Among the balloons scheduled for the race is the Call811.com balloon which will be promoting the importance of calling before you dig. The balloon's appearance coincides with national 8-1-1 Day on Aug. 11.

### Schedule

All launches at Kenny Anderson Park

**Aug. 10** – Founders Cup Challenge  
Balloon Launches at 7 p.m.

**Aug. 11** –  
Launches at 6:30 a.m. and 7 p.m.  
Balloon Glow at 8:30 p.m.

**Aug. 12**  
Balloon Launches at 6:30 a.m.  
All activities are weather-permitting.

### Also on the Calendar

Balloons over DTSF on Aug. 3. and Sept. 7 at 7 p.m. – Downtown Sioux Falls

Sept. 1 – Balloons and Beer at A Homestead Brew at Valley Springs.

For more information, contact the Sioux Falls Ballooning Association.

## Thank you

Thank you for your continued support of the NAJA Shrine circus. Your donation is greatly appreciated.

### **Joel Stephens - NAJA Circus Chairman**

Thank you so much for the wonderful prizes you came up with for our Scotty Philip 5K! The race participants really enjoyed receiving them! We appreciate your support. Thanks again.

### **Mike, Tricia and Doreen - Philip 5K**

Thank you so much for choosing me as the recipient of the employee fund scholarship. The money will be used to purchase books and help with the payment of college. Thanks again.

### **Emily Trapp - Midland**

Thank you for the chairs. We mowed the cemetery and afterwards we all had a place to sit and have lunch.

### **Kennebec Cemetery Board**

Thank you for choosing me as a recipient of your scholarship. The money will be greatly appreciated in my future at BHSU.

### **Jada Jones - Midland**

Thank you for choosing me as a recipient of your scholarship. It's very appreciated. I am attending Mitchell Tech in the fall to earn a degree in agronomy.

### **Tate Wagner - Presho**

Thank you for providing this scholarship, as it goes a long way in helping me pay for my education. In college, I plan on studying English education, with a goal of returning to rural South Dakota and being a high school teacher. Thanks again.

### **Anna Piroutek - Milesville**

I would like to say thank you for choosing me as a recipient of this scholarship. It will help me pay for my tuition and fees.

### **Connor Krull - Ft. Pierre**

Thank you for selecting me as a recipient of your West Central Electric scholarship! Your generosity and support are both greatly appreciated. I will be attending Northern State University in the fall.

### **Katie McManus - Reliance**

## Don't be a statistic. Call 811 before digging.

45 percent of American homeowners who plan to dig this year said in a recent survey that they **would NOT call 811 beforehand**, putting themselves and their communities at risk.



Kadi Terca, right, poses for a photo with fellow WCEC representatives Marcella Baldwin and J.D. Carter.

Thank you for the trip to D.C. I had loads of fun! I got to see many sights in and out of the city. However, I think meeting all the other kids in South Dakota and across the USA was my favorite part of the trip. If I had to choose though I would definitely pick Mount Vernon! Thanks again!

**Kadi Terca - Presho**



# What is Grid Resiliency?



**Kit Talich**

Staff Engineer  
kit.talich@wce.coop

Resiliency of the grid is one of the most popular concepts being talked about in the electric industry today. This concept recently made headlines in the wake of Hurricanes Irma and Maria, which caused extraordinary damage to Puerto Rico's electric grid which resulted in the longest sustained outage in U.S. history. Lack of resilience became the go-to phrase to describe Puerto Rico's grid. Here in South Dakota, what does grid resiliency mean for you?

Resiliency is many things – it's reliability in your electric service, it's our ability to efficiently restore your power, it's being able to meet the demands of new technology and it's how we serve you with various generation sources without skipping a beat. Ultimately, resilience is how we deliver on our promise to improve the quality of life for our member-owners.

When it comes to having a resilient electric grid, it begins with a system that is designed and built to withstand high winds, powerful storms, cybersecurity threats and other disruptions that could result in outages. A resilient grid is also flexible and adaptable by allowing different types of generation – such as wind, solar, coal and hydro – to seamlessly work together to provide you with safe and reliable power. The way our systems react to advancements in technology – from demand response investments to serving the needs of electric vehicles – all factor into the resilience of our grid.

Resiliency is a 24/7, 365-days-a-year task. Whether it's the power lines, substations or generation facilities on our grid, it takes proactive maintenance and investment to keep them running smoothly. With thousands of consumers without power for months, the lack of resiliency in Puerto Rico's power grid wasn't solely caused by hurricane damage; it was the result of years of neglect in taking care of their system and preparing for a worst-case scenario.



WCE linemen learn how to use new pole testing equipment during implementation in 2013.

In a similar way to how we maintain our vehicles with regular oil changes, inspections and tire rotations, a grid must also be properly maintained. Throughout the year, we regularly conduct pole and line inspections. Our goal is to find a problem before it becomes one. For example, if we find a weak pole that has damage from rot, we replace that pole. Doing so ensures that pole is as strong – or as resilient – as it can be.

Living in South Dakota, we know that significant power outages can occur, especially as we enter spring and summer storm season. Whether we're at the mercy of blizzard or a thunderstorm, we have confidence in the resiliency of our system to recover from the situation with as little disruption as possible.

In the dictionary, resilience is defined as "the ability to bounce back, recover quickly and go back into shape or position after being stretched." When it comes to providing our member-owners with resilient service, this is what we work toward – day in and day out!



The WCE crew repair storm damages after severe thunderstorm.



Basin Electric Cooperative's Dry Fork Station is home to the Wyoming Integrated Test Center, where conversion methods turning carbon dioxide waste into useful materials are tested. (Photo By: Ryan Hall/Rural Montana)

# INNOVATIVE

## Carbon Test Center Opens at Basin Electric's Dry Fork Station

**Derrill Holly**

NRECA

Research getting under way at an electric co-op power plant in Wyoming could lead to game-changing breakthroughs diverting carbon dioxide from the power generation waste stream to manufacturing processes for use in new products.

"This is not a lab; it's a facility where testing will take place in 'real world' conditions," Gov. Matt Mead told an audience of about 150 attendees during a dedication ceremony for the Wyoming Integrated Test Center on May 16.

Mead's comments topped a nearly decade-long quest for creation and development of a facility designed to advance technologies that expand the use of CO<sub>2</sub> as a marketable byproduct with commercial value.

### Bulk Waste to Useful Products

The facility, which takes on its first tenants this summer, is located at Basin Electric Power Cooperative's Dry Fork Station. The 385-megawatt power plant commissioned in 2011 is one of the most modern coal-based generation faci-

ties in the electric cooperative fleet.

Bismarck, North Dakota-based Basin Electric is majority owner and operator of the plant, which is co-owned by the Wyoming Municipal Power Agency.

With the encouragement of electric cooperative officials, including representatives of Basin Electric, Tri-State Generation and Transmission Association and NRECA, Wyoming legislators approved \$15 million for the project. The investment is seen as a way to preserve and support coal production as the state's top industry by reducing or eliminating concerns about CO<sub>2</sub> emitted through fossil fuel use.

"This is about saving coal and making coal viable for America," says Paul Sukut, CEO of Basin Electric, adding that even as renewable energy and natural gas use expands, coal remains an abundant and reliable resource. "We need in America an 'all of the above' energy solution."

Emissions from up to 20 MW of energy production will be diverted to a ported vent system feeding five small test bays and one larger working facility at the ITC. Researchers will be able to draw CO<sub>2</sub> from that waste stream for industri-



al-scale production use.

The nonprofit XPRIZE Foundation, headquartered in Culver City, California, is using the Dry Fork Generation Station as one of two test sites for the NRG COSIA Carbon XPRIZE. Participants have been competing for a total of \$20 million in prize money since 2015.

Westminster, Colorado-based Tri-State G&T began developing the concept for a carbon inducement prize and test center eight years ago and has contributed \$5 million to the ITC project.

“Early on, we identified promising activity in the nascent field of carbon utilization and the need to provide venues for innovators to bring new technology forward,” said Ellen Connor, Tri-State senior vice president and chief technology officer.

“The technology acceleration from the XPRIZE and creation of a test center at an operating coal plant will make an impact on both the speed and scale of development and demonstration of these important technologies,” Connor said.

NRECA has also contributed \$1 million to development of the ITC in support of the association’s commitment to a national energy policy recognizing electric generation diversity that includes fossil fuels and renewables.

“If there is a carbon constraint in the future, it’s going to hit natural gas as well,” says Jim Spiers, senior vice president of NRECA’s Business and Technology Services department.

Spiers, formerly Tri-State’s senior vice president of business strategies and chief technology officer, worked to identify institutions, companies and individuals committed to the carbon waste issue and found 135 entities worldwide are studying the issue.

According to the Energy Information Administration, coal-based electricity generation produced more than 1.2 million metric tons of CO<sub>2</sub> in 2016. That number accounts for 68 percent of the total CO<sub>2</sub> emissions from the energy sector.

Forty-one percent of the power used by electric cooperative members is produced through coal-based generation. Co-ops also rely heavily upon natural gas to operate peaking plants, run primarily

## This project is poised to crack the carbon code and create a new future for managing carbon dioxide emissions.

during periods of high demand.

“As co-ops across the nation work to meet tomorrow’s energy needs, this project is poised to crack the carbon code and create a new future for managing carbon dioxide emissions,” Spiers added. “The Wyoming ITC is proof that public-private partnerships spur innovation.”

Facilities related to the ITC project now occupy 226,000 square feet of space at the Dry Fork site. While the five test bays used by the Carbon XPRIZE finalists will share access to flue gas produced by 1.5 MW of generation capacity, a separate large test center can use up to 18.5 MW of flue gas flow.

### Promising Paths

The 10 teams in the juried research competition designed to advance clean energy technologies are divided equally between the coal-based ITC test site and Canada’s Shepard Energy Centre in Calgary, Alberta, where the Alberta Carbon Conversion Technology Centre is fueled by natural gas.

The five teams conducting research at ITC include:

- **Breathe:** Based in Bangalore, India, they will combine hydrogen compounds, extracted from water, with CO<sub>2</sub> to produce methanol. Researchers will use a variety of catalysts, including copper, nitrogen and iron to gauge the economic viability of commercial scale production.
- **C4X:** The Suzhou, China-based team will use CO<sub>2</sub> extracted from flue gas to develop new foam-based bio composite plastics for potential use as insulating and building materials.
- **Carbon Capture Machine:** The team, headquartered in Aberdeen, Scotland, will dissolve CO<sub>2</sub> in a mixture of brine, calcium and magnesium to produce

carbonate solids as an additive for building materials, replacing other carbon-based feedstocks in the manufacture of concrete.

- **CarbonCure:** The team, led by researchers from Dartmouth, Canada, will use CO<sub>2</sub> to produce materials described as “greener concrete” using current manufacturing processes and modified chemistry to reduce water and CO<sub>2</sub> use in concrete fabrication.
- **Carbon Upcycling UCLA:** The Los Angeles-based team will attempt to scale up production of a concrete material that absorbs CO<sub>2</sub> during the production process, bonding with limestone for use in construction.

Researchers working the natural gas track in Alberta will conduct production scale testing on plastics, concrete alternatives, new building compounds and nanoparticles for use in bioplastics and other products. The 10 semifinalists shared \$5 million awarded in April.

### Beyond Research

After 10 months of production, XPRIZE judges will consider factors including operational costs, total production and net reduction of CO<sub>2</sub> waste as factors in awarding \$20 million in prize money. Winners from the two test sites will split the proceeds.

Kawasaki Heavy Industries, working with the Japan Coal Energy Center on a solid sorbent-based carbon capture technology, is the first tenant for the larger space at the ITC. Up to \$9 million will be spent on the project, which will use sorbent as a low-cost carrier to absorb CO<sub>2</sub> for later use as manufacturing feedstocks.

“The work of JCOAL and Kawasaki, along with the other Carbon XPRIZE teams, positions the Wyoming ITC as a world-class facility for testing carbon management technologies,” said Mead.

“We continue to move the needle forward on advanced carbon technologies and find real-world solutions to capturing carbon emissions,” said Jason Begger, executive director of the Wyoming Infrastructure Authority. While Basin continues to operate Dry Fork Station, the authority is serving as the managing entity for the ITC.

*Derrill Holly is a staff writer for NRECA.*

SEE YOU THERE!

# Heading to the Fair or Fest?

Stop by and see  
your co-op!

**Brenda Kleinjan**

editor@sdrea.coop

**Those attending  
county and state fairs  
in the region will  
likely find their local  
electric cooperative  
there as well!**

Whether your August plans take you to Minnesota's FarmFest, South Dakota's DakotaFest, the Sioux Empire Fair, Brown County Fair, South Dakota State Fair or any of several other gatherings this month, be sure to check in with your local electric cooperative.

Those heading to FarmFest Aug. 7-9 near Morgan, Minn., will find Touchstone Energy® Cooperatives in the large ag tent. At DakotaFest, visitors can stop in for the air-conditioned comfort of the Touchstone Energy® Cooperatives building on festival's second street. DakotaFest is held near Mitchell, S.D., each August. This year, the event is set for Aug. 21-23.

If you're in western South Dakota on Aug. 2, you will find Butte Electric Cooperative in Newell partnering with West River Cooperative Telephone of Bison to serve barbecued beef during the Butte County Fair in Nisland.

And, Black Hills Electric is making the rounds at area fairs when it serves dinner at the Fall River County Fair on Aug. 2 and then the Custer County Fair on Aug. 9.

Those heading to the Sioux Empire Fair in Sioux Falls in August will want to be sure to check out Ag Appreciation Day Aug. 8. Several cooperatives in the southeastern part of the state have tickets available for free admission and a free meal that day.

And, if experiencing the magic of the South Dakota State Fair is on your agenda for Aug. 30 to Sept. 3, be sure to visit the Touchstone Energy Cooperatives of South Dakota booth in the Expo Building throughout the week. Sign up for a drawing and visit co-op employees from across the state to learn about electrical safety, energy efficiency and more!



Visitors to DakotaFest in 2017 were reminded to look out for overhead power lines when moving equipment.



**Find your local electric  
cooperative in the  
Expo Building on the  
fairgrounds all week!**

We'll see you there!

**Location:**  
1060 3rd St. SW,  
Huron, SD 57350



# WHAT TO DO: IF YOUR CAR CRASHES INTO A UTILITY POLE

**Accidents happen.** Would you know what to do if your car crashed into an electric utility pole? Knowing what to do could be the difference between life and death.

**Always consider power lines and other electrical equipment to be live and dangerous!**

## IF A POWER LINE FALLS ON YOUR VEHICLE AND THERE IS **NO** FIRE:

Your safest option is to stay inside your vehicle until help arrives. The vehicle acts as a path for the electrical current to travel to reach the ground. You are safe inside the vehicle, but if you get out, you could be electrocuted.

**Call 911 or your local electric utility for help.**

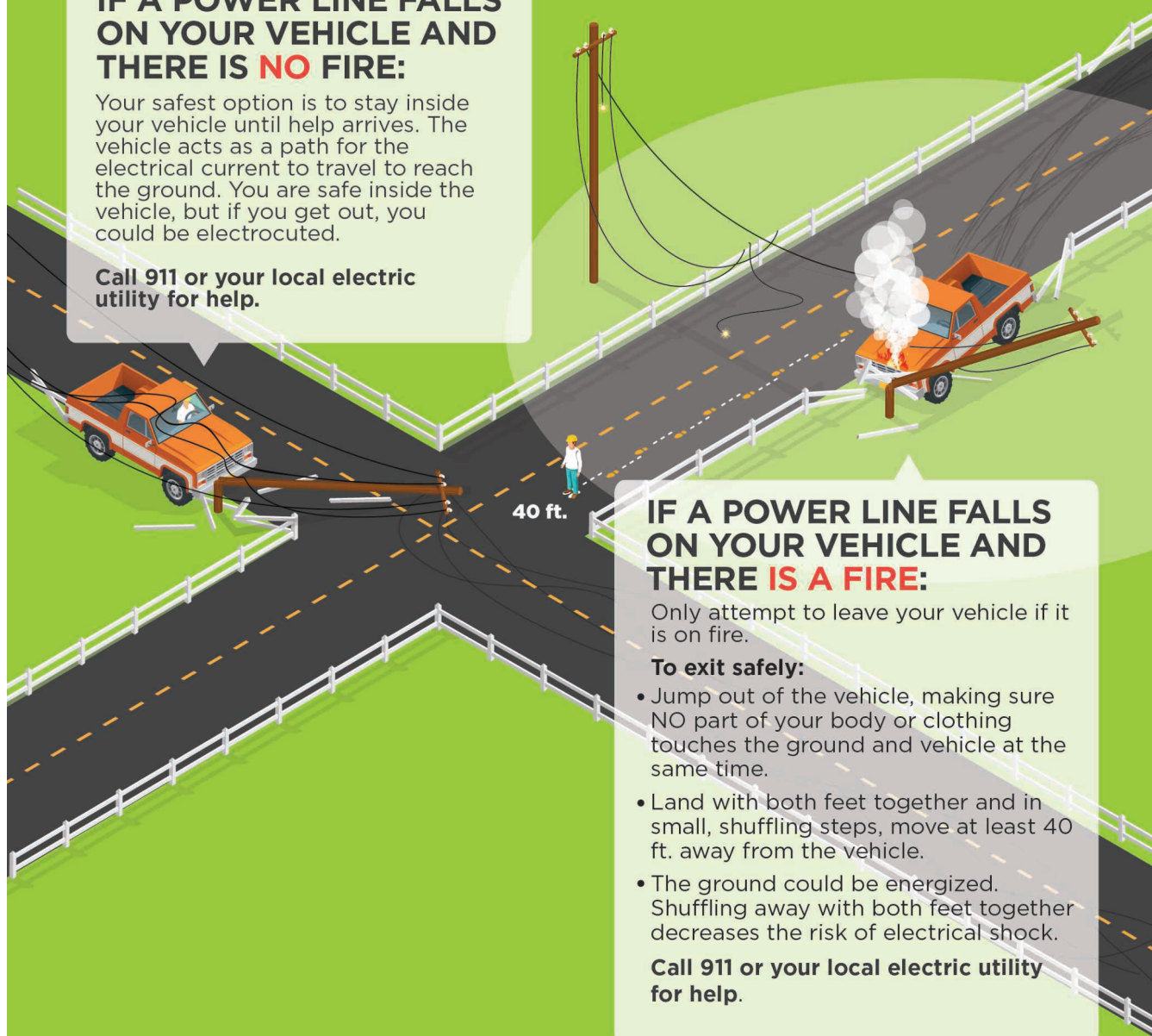
## IF A POWER LINE FALLS ON YOUR VEHICLE AND THERE IS **A FIRE**:

Only attempt to leave your vehicle if it is on fire.

### To exit safely:

- Jump out of the vehicle, making sure NO part of your body or clothing touches the ground and vehicle at the same time.
- Land with both feet together and in small, shuffling steps, move at least 40 ft. away from the vehicle.
- The ground could be energized. Shuffling away with both feet together decreases the risk of electrical shock.

**Call 911 or your local electric utility for help.**



## July 20-21

Senior Games, Brookings, SD, Contact Traci Saugstad at 605-692-4492

## July 20-21

Gumbo Ridge Bronc Ride and Ranch Rodeo, Murdo, SD, 605-669-3031

## July 20-21

JazzFest, Sioux Falls, SD, 605-335-6101

## July 20-21

Storybook Land Festival, Aberdeen, SD, 605-626-7015

## July 20-22

Laura Ingalls Wilder Pageant, 8 p.m., Pageant Site, De Smet, SD, 800-880-3383

## July 20-22

Annual Gem & Mineral Show, Rushmore Plaza Civic Center, Rapid City, SD, 605-269-2015

## July 20-22

Stampede Rodeo, Burke, SD, 605-830-0304

## July 21

Annual Heritage Music Fest, Elk Point, SD, 605-366-9466

## July 21, Aug. 25, Sept. 8, 22

Lawn Mower Races, Pukwana, SD, 605-680-1718 or 605-682-9781

## July 21-22

41st Annual Festival in the Park, Spearfish, SD, 605-642-7973

## July 25

Stockyard Ag Experience - Local Foods Fair, 3 to 8 p.m., Free, Sioux Falls, SD, Contact 701-883-4304



**August 2-5:** 33rd Annual Oglala Lakota Nation Wacipi Rodeo Fair, Pow Wow Grounds, Pine Ridge, SD, 605-867-8420

Photo courtesy: travelid.com

## July 28

Growing Ancient Grains and Greenhouse Tomato Tours, Local Foods Potluck, 1 to 5 p.m., Free, Bring a dish to share, Newell, SD, 605-681-6793

## August 3-4

Senior Games, Yankton, SD, Contact Kristi Hauer at 605-665-4685 or Brittany Orr 605-668-5238

## August 4

Growing Nuts and Hops Tours, 9 a.m. to 5 p.m., Free, Food truck offering meals for sale, Yankton, SD, 605-681-6793 or SDSPAinfo@gmail.com

## August 10-11

Senior Games, Huron, SD, Contact Laron Clock at 605-353-8533

## August 18

Senior Softball Tournament, Huron, SD, Contact Scott Mckaskell at 605-354-2237

## August 18

American Island Days, American Creek Campground, 9 a.m. to 11 p.m., Inflatables for kids, car show, ag olympics, ALL FREE, food and retail vendors, bean bag toss, music, beer garden, Chamberlain, SD, Donna Buche at 605-680-1202

## August 23-25

Senior Games, Watertown, SD, Contact Jeremy Herrboldt or Josh Maag at 605-882-6260

## August 23-26

56th Annual Steam Threshing Jamboree featuring the Minneapolis Moline National Show, Prairie Village, Madison, SD, 800-693-3644

## August 25

McCrossan Boys Ranch Xtreme Event Rodeo, 4:30 p.m. - Pre-show entertainment, 5:30 p.m. - Rodeo Show, McCrossan Boys Ranch Campus, 605-339-1203 [www.mccrossan.org](http://www.mccrossan.org)

## August 30

Value Added Ag Day and Specialty Crop Workshops at the State Fair, SD Value Added Ag Development Center and SD Specialty Producers, Huron, SD, 605-681-6793 or SDSPAinfo@gmail.com

## September 6-9

Senior State Games, Sioux Falls, SD, Howard Bich at 605-491-0635 or visit [southdakotaseniorgames.org](http://southdakotaseniorgames.org)

**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.**