

K.C. ELECTRIC ASSOCIATION

AUGUST 2021

K.C. ELECTRIC STAFF

David Churchwell

General Manager

dchurchwell@kcelectric.coop

Bo Randolph

Office Manager and CFO

brandolph@kcelectric.coop

Paul Norris

Operations Manager

pnorris@kcelectric.coop

George Ehlers

Member Services Specialist and

IT Manager

gehlers@kcelectric.coop



ph 719-743-2431

tf 800-700-3123

fax 719-743-2396

web www.kcelectric.coop

Our mission is to provide our members with safe, reliable service at the lowest cost, while maintaining an environmentally responsible, accountable and sustainable operation now and in the future.



A Touchstone Energy® Cooperative

POWER SUPPLY FUTURE

BY DAVID CHURCHWELL

GENERAL MANAGER

For decades, electric utilities have operated in much the same manner: Our grid consisted of regional generating stations that delivered power across expansive transmission systems to our local substations, and then the local electric cooperative distributed the power to your homes and businesses.

Although clean energy generation has been around since the late 1800s (with the advent of hydroelectric power plants), in the past 10 years we have seen a rapid transition to renewable generation, such as utility scale solar and wind farms. We no longer have a grid where power flows from a large regional generating station to the end user. We now have numerous generators located all over the region and throughout our distribution system with power flowing in multiple directions.

K.C. Electric Association currently has seven utility scale wind projects in its service territory that can produce over 1,300 megawatts of electricity. Some of this power is purchased by Tri-State Generation and Transmission, and some of it is purchased by Public Service Company of Colorado. One MW of electricity can power approximately 650 homes. These wind farms have made an impact on our communities and on our electrical system and, depending on who you ask, this impact can be considered positive or negative.

Tri-State power

As you may know, Tri-State is our wholesale power supplier. K.C. is a member-owner of Tri-State and we have a power supply contract with Tri-State until 2050. Tri-State has provided safe, reliable and reasonably priced power to K.C. for decades, and we



DAVID CHURCHWELL

hope this will be the case for many years.

In 2004, Colorado was the first state to pass a Renewable Energy Standard and set a 10% renewable requirement by 2015. Since then, the standard has been significantly amended and Tri-State has worked hard to help us meet these standards.

K.C. currently has seven utility scale wind projects in its service territory that can produce over 1,300 megawatts of electricity.

In 2019, a bill was passed through the Colorado legislature (HB19-1261) which requires the Colorado Air Quality Control Commission to adopt rules that will result in statewide greenhouse gas reductions of 26% by 2025, 50% by 2030 and 90% by 2050, compared to 2005 emission levels. Tri-State and other Colorado utilities are essentially being required to prematurely retire coal-fired power stations and replace that baseload generation with renewable generation.

To meet these requirements, Tri-State made the difficult decision to shut down all its coal-fired generation plants in Colorado by 2030. Tri-State owns a portion of two coal-fired units and wholly owns one unit at the Craig generating station in Craig, Colorado. Unit 1 will be shut down by the end of 2025, Unit 2 will be shut down by the end of September 2028 and Unit 3 will be shut down by the end of 2030.

Tri-State will replace its baseload coal generation with utility scale wind, solar and

battery storage projects. In January 2020, Tri-State announced its Responsible Energy Plan, which will be the road map for Tri-State and K.C. to meet these carbon reduction goals.

Today, a little over 30% of the energy Tri-State provides to its members comes from renewable generation. By 2024, 50% of the electricity Tri-State member systems use will come from clean energy produced by 1,000 MW of utility scale wind and solar projects, and by 2030 an additional 1,850 MW of renewables and 200 MW of battery storage will increase Tri-State's clean energy portfolio to 4,000 MW.

The first project completed as part of Tri-State's responsible energy plan was the 104-MW Crossing Trails wind farm, which is located south of Seibert. Crossing Trails began commercial operation in April of this year.

Beneficial electrification

In addition to carbon reduction requirements for the utility industry, further carbon reductions will need to come from the oil and gas industry, the transportation sector and even homes, businesses and agriculture facilities.

Have you heard of beneficial electrification? Beneficial electrification is a term for replacing direct fossil fuels such as propane, natural gas and gasoline with electricity. The goal of beneficial electrification is to replace fossil fuels in a way that reduces overall emissions and energy costs.

The governor's carbon reduction road map not only requires a swift transition from coal to renewable generation, but also requires changes to building codes and a transition to electric vehicles. This plan sets a goal to have 940,000 electric vehicles on the road in Colorado by 2030, more use of ethanol and biodiesel blends, significant reductions in oil and gas emissions, and emission reductions from landfills, sewer lagoons and feedlots.

One of the greatest challenges of eliminating baseload generation and replacing it with intermittent generation will be to do it in a way that enables us to continue to provide you with safe and reliable service at the lowest cost.

We definitely do not want to get into a situation like what occurred in California last summer or what happened in Texas this past February when utilities were forced to initiate rolling blackouts throughout their service territories due to shortages of power in the grid.

During the power crisis in February, Tri-State was one of the few regional power suppliers that didn't pass on power cost adjustments to make up for the extremely high cost of generating power during the cold spell.

Tri-State's coal fleet performed well during this crisis. In addition, some of Tri-State's combustion turbines have dual fuel capabilities, which means they can operate on either natural gas or fuel oil. When the price of natural gas skyrocketed in February, Tri-State was able to burn fuel oil to generate electricity at a much lower price than it would have cost to generate with natural gas.

Quality service

There is no doubt that moving to carbon free generation will be driven by new technologies (many that are not yet ready for the market) that will help replace fossil fueled baseload generation.

As you can see, our business is constantly changing, and we must adapt to meet the needs of our consumer-members. I can assure you we will continue working hard to deliver the high-quality service you expect and deserve from your cooperative.



August 2021

Energy Efficiency

Tip of the Month

When shopping for new lightbulbs, know the difference between lumens and watts. Lumens measure the amount of light produced by the bulb. Watts measure energy consumption. Energy-saving LEDs come in a variety of colors and brightness levels and last 15-25 times longer than incandescent bulbs.

Source: energy.gov

Claim Your Savings

Each month, members have a chance to claim a \$20 credit on their next electric bill. All you must do is find your account number, call the Hugo office at 719-743-2431 and ask for your credit. The account numbers are listed below. How simple is that?

You must claim your credit during the month in which your name appears in the magazine (check the date on the front cover).

- **Jaimie Gerstner,**
Cheyenne Wells — 403595005
- **Kim Schallenberger,**
Kit Carson — 1126050001
- **Andrew Mitchek,**
Kit Carson — 1110420002
- **Vicky Dahlberg,**
Seibert — 1108570001

In June, four consumer-members called to claim their savings: Clement Mitchell, Arapahoe; Mark Ackerman, Johnstown; Mary Weber, Kit Carson; Michael Luft, Stratton.



Farmers: Rest Up for Harvest Safety

Feeling stressed this harvest season?

WHAT'S YOUR PLAN?

Breakdowns. Long hours. Setbacks. There is no way to predict what harvest will bring.

Have your PLAN in place to manage your stress for a safe and healthy harvest.

For many farmers, fall requires long days in the field and little rest.

The pressure to harvest as much as possible, combined with fatigue and looming deadlines, increases the risk of injury. In fact, most injuries occur during the spring and fall when stress and fatigue are common among farmers.

The safety and health of workers, including making time for sleep, should be a priority when considering a farm's productivity, according to Josie Rudolphi, University of Illinois Extension associate research scientist. "Rushing and cutting corners can lead to injury, which no one has time for, especially during the harvest," Rudolphi says.

Rudolphi grew up on a farm and understands the pressures of harvest season. She says that getting proper rest can make a huge difference in staying safe, but during the time crunch of harvest season, farmers sacrifice sleep to work late into the night.

"Sleep deficiency has been associated with increased injury, reduced reaction time and reduced concentration," Rudolphi says, "all of which could impact health and safety, as well as productivity."

The demands of harvest are stressful, and a lack of sleep can intensify that and lead to errors in the fields or even on the roads.

To improve sleep, Rudolphi advises farmers to go to bed and wake up at regular times when possible. They can use rainy days to catch up on sleep.

In addition to improving sleep, managing stress is an important component to injury prevention, health and safety, according to



P

Prepare for the season

With preparation, some stress can be avoided. Anticipate the demands of harvest and plan ahead. For example, prep healthy meals, fuel equipment and perform routine maintenance ahead of schedule. **What can you do to prepare?**



L

Lean on loved ones

Seeking support from others rather than taking on everything yourself can help reduce stress. Text or call a friend or family member when you need support. **Whom can you lean on?**



A

Activate coping mechanisms

Coping mechanisms can help manage stress. They include engaging in physical activity, finding ways to make yourself laugh and carving out time for hobbies. **Which coping mechanisms will you use?**



N

Nip negative self-talk

Negative self-talk leads to decreased morale and feelings of hopelessness. When your inner critic nags, be kind to yourself and remember thoughts are not reality. **How will you tell your inner critic to take a hike?**

Content developed by Josie M. Rudolphi and Courtney Cuthbertson, University of Illinois Extension

Rudolphi. "By using the 'Four A' Method of avoid (planning ahead), adapt (changing expectations), alter (changing the situation when you can) and accept (acknowledging that a situation is what it is), farmers can successfully manage the stress of long hours and unpredictability," she adds.

Other sleep health tips include:

- Create a bedroom environment that encourages sleep; keep it quiet, dark and cool.
- Limit electronic device use.
- Avoid large meals, caffeine and alcohol before bedtime.

For information about safety around electricity, including farm and ranch safety, visit SafeElectricity.org.

ENERGY-EFFICIENT IRRIGATION STRATEGIES

BY MARIA KANEVSKY

Agriculture is the backbone of our country, and keeping farmland well-irrigated is crucial for almost any agricultural producer. Farm irrigation methods or technologies can make a huge difference when it comes to maximizing productivity while minimizing costs.

Energy-efficient irrigation methods help farmers curtail unnecessary water use while growing the same produce, reducing their operating costs and increasing overall productivity. Above all, when choosing between different irrigation methods and technologies, the most important aspects to consider are the overall cost, return on investment, convenience and minimization of risks.

One of the easiest ways to maximize energy efficiency, as many farmers already do, is to use electric motors in place of any old, inefficient diesel irrigation motors. Typically, electric motors are about 90% efficient, while diesel motors have much lower efficiencies of between 30% and 40%. This means cost savings in the long run for farmers. Electric motors also have lower maintenance needs and can make use of a variable frequency drive irrigation system, which helps to further reduce costs.

VFD systems allow farmers to pump water at different rates, which maximizes irrigation throughout the day. A VFD system can control the speed of the electric motor because it controls the electric power frequency supplied to the motor. Since there are many benefits from using electric irrigation motors, the majority of U.S. farmers have switched their diesel motors to electric ones, although pairing the motor with a VFD system is still a relatively new agricultural trend.

Irrigation efficiency is not a one-time deal. After several years, the efficiency of irrigation pumps tends to decline. After five years, irrigation pumps are typically evaluated for performance efficiency. The evaluation can help inform decisions on the most cost-effective solution, whether making improvements to the existing pump or a replacing it entirely. Irrigation pump tests usually assess the pump's discharge pressure, lift, water flow and power input. Regular testing of irrigation pumps can help to ensure the pumps are working as efficiently as possible.

Upgrading irrigation hardware can also lead to more efficient irrigation system performance. Replacing leaky sprinklers, for example, can help save a significant amount of water. Maintaining the overall efficiency of irrigation systems over time helps to reduce water use and save energy.

There are many new agricultural technologies that are part of the "precision agriculture" industry, including autonomous tractors,



▲ Agriculture is the backbone of our country, and keeping farmland well-irrigated is crucial for almost any agricultural producer.
Photo Source: Lance Cheung, USDA

crop-monitoring drones and robotic milking or weeding machines. Beyond existing irrigation technologies, WiFi connected crops is one type of precision agriculture irrigation technology. After placing WiFi-connected sensors throughout a crop field, farmers can monitor the conditions by simply using their smartphones or computers. Data on light, humidity, temperature and moisture are captured by the sensors. That data is automatically sent to a server to be analyzed, which is then sent to a farmer's smartphone app. Using WiFi connected crops also allows farmers to remotely set automatic timers for their watering systems.

With WiFi connected crops, there are several factors to consider, such as cost, range, bandwidth and power. One constraint of using WiFi connected crops is that the sensor range can be limited, which makes the technology only feasible for smaller farms. There are other network connectivity platforms that could be applied to irrigation management, such as cellular connection, satellites, LoRa and Sigfox; but WiFi is by far the most commonly used.

As technology continues to improve, there will be new opportunities to support the agricultural sector. Replacing technology that uses on-site fossil fuels, such as propane and gasoline, with technology powered by electricity will help improve energy efficiency and reduce local pollution.

Colorado's electric cooperatives are proud to support their agricultural consumer-members and will continue to help them determine opportunities to improve and meet their energy efficiency goals.

Maria Kanevsky writes on consumer and cooperative affairs for the National Rural Electric Cooperative Association.