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NEWS

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2018 Annual Meeting Highlights

Approximately 150 members, guests and employees attended this year's annual meeting on May 9 at Western Cooperative Electric's WaKeeney facility. Bigge's Country Kitchen of Stockton served lunch prior to the meeting.

Following lunch, **KAYLA GARVERT** and **EMILY ROY**, two of Western's youth contest winners, gave presentations about their trips to the membership.

After calling the meeting to order and introductions, it was determined a quorum was present. The 2017 annual meeting minutes were approved along with the presentation of the treasurer's report.

Dennis Deines, one of Western's co-interim general managers, reviewed financial facts and highlights of activities at Western in the past year. Stuart Lowry, president and CEO of Sunflower Electric Power Corporation, was guest speaker and updated attendees on current events in the electric industry.

Results of the mail-in ballots for trustees were announced as follows: **MARVIN KELLER,** District 1 (Graham, Osborne, Rooks and Sheridan counties); **CRAIG CROSSLAND,** District 2 (Ellis, Lincoln, Russell and Trego counties); and **LANDON HEIER,** District 3 (Barton, Ellsworth, Gove, Ness and Rush counties).

With a combined _#_ years of service to the co-op **LARRY EVANS** and **MELVIN KELLER** chose not to run for re-election on Western's Board. Evans and Keller were recognized for their many years of dedicated service.

Drawings for prizes were held at the conclusion of the meeting. We would like to thank our vendors for their prize donations. Each household also received a registration gift.

Members and guests enjoy a lunch served by Bigge's Country Kitchen at this year's annual meeting.

Kayla Garvert speaks about her Youth Tour experiences in Washington, D.C.

Dennis Deines presents appreciation plaques to retiring board members

Understanding Operational Chan

They seem to be popping up everywhere across the nation—giant "pinwheels" used to generate electricity from the kinetic nature of wind. Electric cooperatives are playing their part with more than 550 co-ops in 37 states incorporating wind into their energy resource mix.

Most co-ops acquire their wind through Power Purchase Agreements (PPAs) with independent power producers who have capitalized on the production tax credit available to wind developers. Government subsidies pay wind producers $23 per megawatt-hour, and typical PPAs include a "must take" clause that requires the buyer to purchase all energy produced regardless of demand.

Western Cooperative Electric is a member of and buys power from three generation and transmission cooperatives (G&T) who have PPAs with multiple wind farms. Two of them, Sunflower Electric Power Corporation and Mid-Kansas Electric Company, Inc. have invested in wind energy since 2007. Currently, the two companies have PPAs totaling 178 megawatt (MW). Investing in wind energy helps achieve fuel diversity, creates a fixed-priced hedge against volatile energy prices, and meets the renewable energy requirements mandated by the State of Kansas.

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During the last decade, the region has experienced a surge of wind development, primarily due to the tax credits that are slated to begin phasing out in 2020. This escalation has resulted in the rise in wind energy from 556 MW interconnected to the Sunflower/Mid-Kansas system in 2008 to approximately 3,491 MW by the end of 2018. This equates to 297 percent more wind energy than the peak energy demand on the Sunflower/Mid-Kansas system. This overabundance of wind energy has caused Sunflower and Mid-Kansas to adapt to new ways of doing business.

Changes in Operations

Just a few years ago, Sunflower and Mid-Kansas supplied wholesale energy to their members, like Western Cooperative Electric, from their own fleet of generating resources powered by natural gas, coal and wind. Operations changed when the regional transmission organization, Southwest Power Pool (SPP), launched the Integrated Marketplace in 2014. With the integrated market, generation companies no longer generate energy just for their members. Instead, they sell generation from their resource fleet into an energy market that serves a 14-state region and takes advantage of the market's competitive pricing to purchase energy.

The abundance of wind energy often creates market conditions in which demand for fossil-fuel generation is sporadic. Not only do the generating plants ramp up and down to follow the fluctuation of wind, but they are also often operated at reduced levels of production or even stand idle to make way for wind energy.

"Sunflower's 360-MW coal-fired unit is now often cycled from minimum to maximum load, creating maintenance issues that weren't as prevalent when the unit was operated more consistently," said Corey Linville, vice president, power supply and delivery for Sunflower and Mid-Kansas. "Our gas-fired internal combustion engines and combustion turbines also get cycled when they run. They are started more frequently, typically with short run times, partly to follow wind and provide ramping support to the Southwest Power Pool."

The availability of traditional dispatchable generation, such as coal and natural gas, remains necessary to ensure reliable electricity is always available to our members. However, units operating in a manner in which they were not intended causes costly mechanical issues. In addition, no matter the level of operation, staff must remain on hand to maintain each generation unit or operate it when it receives SPP's notification to run.

Focus on Transmission

The energy produced by each wind farm requires adequate transmission infrastructure to carry it from its point of origin to where it is needed. When sufficient transmission capacity is not available to support the flow of power, the result is transmission congestion, which can cause energy price volatility in the integrated market, impair grid reliability, and make an area more vulnerable to outages.

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ges Brought About by Wind Build-Out

Some solutions to congestion include transmission construction and upgrades, which come at a significant cost to energy ratepayers. To keep electric rates as reliable and affordable as possible, we consider all options to mitigate transmission problems, such as working with other utilities to share costs on transmission projects, analyzing the need for additional transmission, and studying alternative solutions such as generator modifications and batteries that are less expensive than new transmission.

Rate Pressures Caused by Wind

"With wind energy, it is challenging to balance energy supply and demand," said Linville. "There is substantially more wind generation connected to our system than demand for energy, also known as 'load.' Because wind typically blows the most when we have the lowest energy demand, it's not uncommon to have wind generation injected into our system almost triple the amount of load we are serving from the system."

Like every other energy resource, wind energy has its pros and cons. Western Cooperative Electric and our power providers are not fuel biased; we are member biased.

When this happens, the principles of supply and demand kick in. When there is more energy being supplied to the Sunflower/Mid-Kansas transmission system than there is demand to consume it, the excess energy has to be exported. This export energy flows on transmission lines that were designed to serve rural western Kansas load, not to export substantial amounts of wind energy to other parts of the country. When flows begin to approach the design limitations of the transmission facilities, the lines are said to be "congested."

The integrated market uses a pricing method in an attempt to relieve congestion. Energy prices on the upstream side of the congestion are lowered to encourage generators to produce less, while energy prices on the downstream side of the congestion are raised to encourage generators to produce more. Because wind producers receive a production tax credit on all energy produced, energy prices often have to drop to negative values before wind generators respond and reduce output. For buyers, the drop in the price of energy is good. For those who have energy to sell, the depressed pricing hurts the bottom line.

Like every other energy resource, wind energy has its pros and cons. Western Cooperative Electric and our power providers are not fuel biased; we are member biased. Each and every day, we strategize the best way to use our assets to provide our members with the best service possible.

Coal Still Plays an Important Role in Power Production

Because each fuel type for generating electricity has advantages and disadvantages, Sunflower and Mid-Kansas Board members continue to support diverse generation portfolios. This article provides an overview of how coal fits into the Sunflower Electric Power Corporation and Mid-Kansas Electric Company systems, which are owned by the companies' member distribution utilities, including Western Cooperative Electric.

For many decades, coal was the No. 1 fuel source for electricity generation. This changed when natural gas prices decreased, proposed environmental regulations and the explosion of renewable technologies relegated coal to the No. 2 spot in 2015.

Despite factors that have caused a drop in coal use, coal's stability and affordability still make it a valuable resource. Currently, Sunflower has 349 MW of coal capacity from Holcomb Station, while Mid-Kansas has 173 MW from Jeffrey Energy Center through a power purchase agreement that will expire in early 2019.

The significant influx of wind generation in the region and the implementation of the SPP Integrated Marketplace have reduced the amount of energy generated by Holcomb Station and Jeffrey Energy Center. However, these resources continue to contribute to reliability and price stability. An example of the important role played by Holcomb Station took place in June 2017 when the Energy Cost Adjustment (ECA) portion of Sunflower's wholesale power supply rate jumped by more than 80 percent compared to previous months. The ECA, which covers variable costs for fuel and market energy, was significantly impacted because Holcomb Station was offline due to a maintenance outage.

Maintaining a diverse generation resource portfolio, including fuel diversity, continues to be a fundamental strategy in how we manage our power supply costs and risks. Our generating resources fueled by coal remain a key part of this strategy

Having Holcomb Station offline during a summer month when electric demand is typically at its highest and wind generation is at its lowest resulted in significant shifts in transmission congestion patterns, which increased market energy prices. Without having Holcomb available to generate energy and sell it into the market, Sunflower did not have a hedge against the shifting market energy prices. As a result, Sunflower was fully exposed to the market volatility and experienced the significant ECA increase. When Holcomb came back online in late June, the ECA in July dropped back down to near normal levels.

Diversity in electricity generation helps produce reliable energy at the lowest possible cost for the members of Sunflower and Mid-Kansas, including Western Cooperative Electric and the thousands of Kansans they serve.

"Maintaining a diverse generation resource portfolio, including fuel diversity, continues to be a fundamental strategy in how we manage our power supply costs and risks. Our generating resources fueled by coal remain a key part of this strategy," said Corey Linville, Sunflower's vice-president power supply and delivery.

Ways Coal Helps Us Provide Affordable and Reliable Electricity

- **One of the greatest advantages of coal generation is its availability.** When intermittent energy sources, namely wind and solar, are offline due to a lack of wind or sunlight, coal units can be dispatched to meet energy demands economically.
- **The price of coal is very stable compared to the volatility of natural gas pricing.** Price stability allows for coal generation to provide an effective hedge against the price of market energy, which is usually correlated to the price of natural gas.
- **Capacity from coal assets helps Sunflower and Mid-Kansas meet the minimum required capacity margin established by the Southwest Power Pool (SPP).** The capacity margin requirement helps maintain reliability by always having more generating supply available than is required at any given time.
- **Coal is widely available and abundant.** Based on U.S. coal production in 2015, recoverable coal reserves will last about 283 years, according to the U.S. Energy Information Administration.
- **The use of domestic coal as an energy resource allows the United States to achieve and maintain energy independence.**
- **The ability to store coal on-site at coal generation facilities contributes to the sustainability and continuity of operations** during emergency conditions. Most coal facilities maintain at least a 30-day supply of coal in on-site storage.
- **Sunflower's and Mid-Kansas' coal units are equipped with environmental controls** that meet state and federal requirements.