

## Transmission & SPP



Basin Electric Power Cooperative's (Basin Electric's) 11 Transmission System Maintenance outposts are located across the cooperative's service area. These outposts are home to the different trades associated with Transmission System Maintenance such as line workers, substation electricians, substation system protection technicians, and telecommunication technicians. These outpost locations also house support roles, including mechanic operators and warehouse staff.

Line crews maintain more than 2,500 miles of transmission lines and infrastructure. The line crews are responsible for maintaining wood H-structures of 115-kilovolt (kV) and 230-kV lines and steel structures of 115, 230, and 345-kV lines. Basin Electric owns substation assets in 109 locations and maintains substation assets in 92 locations. Substation crews are responsible for maintaining breakers, transformers, disconnect switches, and protective relays just to name a few. Basin Electric owns telecommunication assets in over 200 locations. Telecommunication crews are responsible for maintaining fiber optics, microwave radios, mobile radios, and multiplexors.

Basin Electric is one of the few utilities that supplies electricity to both the Eastern and Western Interconnections. This separation of the national electric system is a result of historical transmission developments, geographic constraints, operational differences, as well as reliability considerations.

### Direct-Current Ties

Direct-current (DC) ties bridge the national electric system separation by taking alternating current electricity on one side of the separation, converting it to direct current, and then back to alternating current in sync with the other side. This arrangement prevents disturbances on either side of the interconnection from affecting the other side. These DC facilities allow Basin Electric to exchange capacity and energy between the Eastern and Western Interconnections. There are currently seven back-to-back DC ties in the U.S. with a total capability of about 1300 MWs that connect the eastern and western interconnection. Basin Electric has capacity or rights on four of them, including Miles City, Rapid City, Stegall, and Sidney.

### NERC Compliance

The focus of the North American Electric Reliability Corporation's (NERC) compliance program is to improve the reliability of the bulk power system in North America by fairly and consistently enforcing compliance with NERC reliability standards. Specifically, the program is designed to ensure that the right practices are in place so that the likelihood and severity of future system disturbances are substantially

reduced, while recognizing that no standards or enforcement process can fully prevent all such disturbances from occurring.

In the United States, NERC and the six regional entities charged with compliance enforcement monitor compliance via a number of methods, including regular and scheduled compliance audits, random spot checks, and specific investigations as warranted by indications that a standard may have been violated.

In a time of increased cyber and physical infrastructure security awareness, Basin Electric has implemented additional cyber and physical security measures to protect its electric infrastructure.

## RTO Membership

Regional transmission organizations (RTO), envisioned by the Federal Energy Regulatory Commission (FERC), are organizations responsible for coordinating, controlling, and monitoring electricity transmission over large interstate areas.

As of October 1, 2015, Basin Electric's eastern grid is operating in the Southwest Power Pool (SPP). In joining SPP, Basin Electric retains ownership of its transmission and generating assets.

### What is Southwest Power Pool?

Founded in 1941, SPP is a group of members that serves more than 15 million customers. Membership is composed of investor-owned utilities, municipal systems, generation and transmission cooperatives, state authorities, wholesale generators, power marketers, and transmission companies.

Basin Electric's integration into SPP is the culmination of years of discussions and public involvement between the former Integrated System (IS) partners, Western Area Power Administration (WAPA), Heartland Consumers Power District (HCPD), our members, SPP, and FERC. Following the transition, the IS became the 19<sup>th</sup> transmission rate zone within SPP, and is referred to as the Upper Missouri Zone (UMZ).

The integration has created a more robust transmission network to meet the electrical demand across the region and efficiently operate a wholesale energy market. For the first time in more than five decades, Basin Electric is in full management of its resources and load on both the eastern and western interconnections. The ultimate goal with SPP membership was to ensure the cooperative can continue to reliably service

member load at the lowest prudent rate.

SPP's footprint spans nearly 575,000 square miles in all or parts of 14 states in the central United States and includes more than 800 generating plants, nearly 5,000 substations, and about 56,000 miles of high-voltage transmission lines. The UMZ adds about 5,000 MW of peak demand and 7,600 MW of generating capacity, including a threefold increase in SPP's current hydroelectric capacity.

In 2019, Basin Electric announced its decision to join SPP's Western Energy Imbalance Service (WEIS) market. When SPP launched the WEIS on Feb. 1, 2021, it became the market administrator for several utilities in the West. The market now centrally dispatches energy from these participants throughout the region every five minutes, enhancing both the reliability and affordability of electricity delivery from utilities to their customers.

## Basin Electric Transmission in SPP's current marketplace and the WEIS footprint

