BASIN ELECTRIC POWER COOPERATIVE

A Touchstone Energy® Cooperative

Energy Security

America's energy security depends on a carefully designed strategy to boost domestic energy production, reduce dependence on foreign oil, and protect the environment.

Basin Electric advocates a defined energy policy that gives industry certainty when planning for generation and transmission infrastructure, research and development of low-carbon emission technology, and energy efficiency and conservation efforts. Such certainty would also provide for long-term tax incentive structures and postpone the onslaught of burdensome regulations by the Environmental Protection Agency (EPA).

Throughout its history, Basin Electric has forged ahead with building a secure power supply system, focusing on diversity, stability, and innovation. The result: low-cost, environmentally responsible electricity for its membership.

Security

Through its subsidiary Dakota Gasification Company, Basin Electric operates a facility that's a model for energy security: the Great Plains Synfuels Plant near Beulah, North Dakota.

The Synfuels Plant demonstrates what is possible and necessary to secure America's energy future. The facility produces energy from an affordable resource – coal – that's available abundantly within America's own borders. And it has been capturing and shipping a product – carbon dioxide (CO_2) – boosting oil production closer to home since 2000.

The Synfuels Plant is a leader in CO_2 sequestration, participating in the largest carbon capture and storage project in the world. The CO_2 is compressed and sent via a 205-mile pipeline to Weyburn, Saskatchewan, where it's used for enhanced oil recovery in the Weyburn and Midale oil fields. Since the plant begin capturing CO_2 in 2000, more than 35 million metric tons of CO_2 have been successfully captured and delivered to customers.

Dakota Gasification Company participated in an international research project coordinated by the Petroleum Technology Research Center in Regina, Saskatchewan. A goal was to develop an understanding of CO_2 geological storage and develop a Best Practices Manual that can be used to guide future CO_2 sequestration projects. The study was based on the Weyburn and Midale CO_2 storage sites. Sponsors from government, academia, and industry contributed to the study. The final phase of the study was completed in 2011.

Electrical transmission plays an important role in energy security, as well. Besides the existing 2,400 miles, Basin Electric built a 190-mile 345-kV transmission line from its Antelope Valley Station north of Beulah, North Dakota, around the western edge of Lake Sakakawea into the Tioga, North Dakota, area. The entire 190-mile line was placed in service in 2017, and includes construction of three new substations and modifications to four existing substations.

Basin Electric has completed the North Killdeer Loop Phase I, a 30-mile, 345-kV line and two new substations. Phase II of this 60-mile project is currently under consideration.

Innovation

Basin Electric studied the feasibility of capturing CO_2 from its Antelope Valley Station, and completed a front-end engineering and design study. The study determined that it was not economical to move the Antelope Valley Station project forward.

Basin Electric is currently engaged with regional partners for the Department of Energy's CarbonSAFE program. The goal of the program is to develop a long-term CO_2 sequestration solution.

Diversity

Basin Electric is diversifying its power supply. As of 2017, the cooperative has more than 1,400 megawatts (MW)* of renewable generating capability in its portfolio, including wind and recovered energy generation. It has built the nation's largest wind projects solely owned and operated by a cooperative:

- Basin Electric owns two wind generation projects in North Dakota: the 77 turbines of PrairieWinds 1, commissioned in 2009, and the five turbines of Minot Wind. Both projects are located south of Minot, North Dakota.
- In 2011, Basin Electric commissioned the largest wind project in the nation operated by a cooperative, the 162-MW Crow Lake Wind Project, in central South Dakota. The project consists of 108 GE 1.5-MW turbines: one of which is owned by Mitchell Technical Institute (MTI), Mitchell, South Dakota, for training wind technology students.
- PrairieWinds ND 1 and PrairieWinds SD 1, the entities that owned these wind projects, were Basin Electric subsidiaries, and were merged into the cooperative in late 2017.
- Basin Electric also owns and operates a small wind project at Chamberlain, South Dakota.
- Basin Electric purchased the Great Plains Synfuels Plant in 1988 when 2 percent of Dakota Gas' revenue came from additional products other than natural gas. By 2018, 75 percent of Dakota Gas' revenue is projected to be derived from additional products. Through diversification, Dakota Gas produces 10 products today and will add urea, diesel exhaust fluid, and liquified CO_2 by January 2018.

Recent Projects

- In 2016 and 2018, Basin Electric committed to purchasing the output from two additional projects for a total of 400 MW. These projects are anticipated to come online in late 2019 and will bring Basin Electric to a forecasted 1,761 MW of wind, more than doubling Basin Electric's wind generation portfolio in just five years.
- Basin Electric installed a series of 45-MW simple-cycle natural gas-fired combustion turbines in western North Dakota, three at Pioneer Generation Station near Williston and five at Lonesome Creek Station near Watford City, the first of which went into commercial operation in 2013, and the last of which went into commercial operation in 2017. In addition, 12 natural gas-fired reciprocating internal-combustion engines were installed at Pioneer Generation Station. In total, the two western North Dakota sites, with their two different types of technology, bring a combined capacity of 472 MW.
- Basin Electric's Deer Creek Station began commercial operation in 2012. The 300-MW natural gas-fired combined cycle power plant is located near Elkton, South Dakota.

Conservation and Efficiency

Basin Electric is increasing conservation and efficiency at its facilities:

- Several facilities have geothermal heat pumps.
- Headquarters building efficiency is being improved through replacing window caulking, installing frequency drives, efficient HVAC controls, more efficient lighting, and more.
- Basin Electric is one of the first utilities in the world to proactively implement Ormat Technologies' recovered energy generation. the technology uses exhaust heat from natural gas pipeline compression stations to generate electricity.

* The actual renewable energy attributes (aka green tags or RECs) of much of that generation was allocated to members or sold to others. No claims of environmental attributes may be claimed for any part of Basin Electric's power supply, unless those attributes are assigned to the power claimed as green or renewable.