



BASIN ELECTRIC POWER COOPERATIVE

A Touchstone Energy® Cooperative 

Environmental Commitment



Basin Electric and its membership support a clean environment and recognize the need to use energy more efficiently to keep costs down and conserve the planet's natural resources.

Since the Beginning

Basin Electric advocated responsible reclamation practices at the Glenharold Mine – which fed the Leland Olds Station, starting in the 1960s – long before it was required by law. That commitment continues through the Freedom Mine and its award-winning reclamation practices to this day. The mine, operated by The Coteau Properties Company, supplies lignite coal to Basin Electric's North Dakota facilities.

Power Plants

All Basin Electric and subsidiary facilities strive to be 100 percent environmentally compliant. Through 2019, Basin Electric and its subsidiaries have invested more than \$1.9 billion in emissions control technology, and more than \$178 million was spent in 2019 alone to operate and maintain those controls. Recent pollution control projects are highlighted below:

Emission control projects for sulfur dioxide and nitrogen oxides are managed by the North Dakota Department of Environmental Quality's Regional Haze Implementation Program. In 2013, a \$410 million wet scrubber project at Leland Olds Station, located near Stanton, North Dakota, was placed into service. The scrubbers use limestone

to remove sulfur dioxide emissions from the flue gas produced by the coal-based power plant's two units. In 2017, a \$29 million, selective non-catalytic reduction (SNCR) process was also placed into service on both units. SNCR technology helps the plant meet the nitrogen oxides reduction standards.

At Laramie River Station near Wheatland, Wyoming, SNCR and SCR (selective catalytic reduction) emission-control units were placed into service – the SNCR in 2018 and SCR in 2019. SCR technology uses anhydrous ammonia to convert nitrogen oxides into nitrogen and water, which then pass through through the air heaters and scrubber before being exhausted through the emissions stack. The project was set in motion by the first round of the Environmental Protection Agency's Regional Haze Rule. The cost for the two SNCR units was \$33.3 million and the SCR unit was \$200 million.

The 300-megawatt (MW) Deer Creek Station in Elkton, South Dakota was completed in 2012 and employs efficient combined-cycle technology. The power plant features two turbines: a natural gas-fired turbine and a steam turbine that uses steam created by the waste heat from the gas turbine. This configuration is very efficient because it uses exhaust heat that would otherwise be released into the air.

More efficient steam turbines have been installed in the Laramie River Station's three units and Leland Olds Station Unit 2.

Laramie River Station; Antelope Valley Station near Beulah, North Dakota; and the Dry Fork Station near Gillette, Wyoming are zero process water discharge facilities.

Some of the coal ash from the Leland Olds, Antelope Valley, and Laramie River stations is recycled and sold for beneficial uses.

At Leland Olds Station, variable speed drives have been installed on large motors. Their increased efficiency means less electricity will be used by plant systems.

Three Basin Electric generating units employ General Electric's highly efficient LMS100® simple-cycle turbine technology: the technology exists in two units at the Groton Generation Station in Groton, South Dakota,

and one unit at the Culbertson Generation Station in Culbertson, Montana.

Basin Electric purchases the output of eight power plants that generate electricity using waste heat produced by compressor stations along a natural gas pipeline.

By year-end 2017, Basin Electric had more than 1,361 MW of wind generation in its portfolio. (For more information on Basin Electric's renewable energy, refer to the Renewable Energy fact sheet.)

Maintenance Facilities

Several Basin Electric facilities have geothermal heat pumps, including the Gillette, Wyoming, transmission maintenance shop and the maintenance shops for the PrairieWinds 1 and Minot Wind projects near Minot, North Dakota, and the Crow Lake Wind Project near White Lake, South Dakota.

Headquarters

Building efficiency is being improved through the installation of better window caulking, variable frequency drives, more efficient HVAC controls, more efficient facility lighting, and more.

- About 1,000 light fixtures have been replaced with more efficient ones, saving about \$900 a month.
- Warm water created from the air conditioning process is used to heat the building during the spring/fall timeframe versus using the hot water boiler.
- Humidifiers are programmed to operate eight hours per day only during winter months.
- Bathroom lights, faucets, and flushing devices are now operated by auto sensors.

Subsidiaries

Through Basin Electric's subsidiary, Dakota Gasification Company, carbon dioxide (CO₂) from the Great Plains Synfuels Plant near Beulah, North Dakota has been captured since 2000. In 2015, the plant hit a milestone of 30 million metric tons of CO₂ successfully captured and delivered to customers.

The Synfuels Plant is using synthetic oils in motors, which reduces operating temperatures and results in energy savings.

Member Cooperatives

Basin Electric offers programs and services to assist member cooperatives in their conservation and efficiency efforts, including:

- Certified Energy Manager-certified staff assist member cooperatives with commercial, industrial, and residential energy audits.
- Member cooperatives can borrow specialized equipment for conducting energy audits from Basin Electric.
- Basin Electric schedules training for member cooperatives to assist in their efforts to promote energy efficiency.
- Since 1994, Basin Electric has been promoting innovative, efficient electric technologies. The Electric Technologies Program lets participants see and feel firsthand how innovative electrical products work.
- Basin Electric offers funds to member cooperatives for their advertising efforts promoting energy efficiency.

What the Membership is Doing

Members are engaged in a variety of conservation and energy efficiency programs that promote, support, and market load management, dual heat, water heaters, heat pumps, air conditioning, storage heating, grain drying, irrigation, photovoltaics, and numerous other programs.

Member-owners can receive rebates on the purchase of energy-efficient appliances through their member cooperatives.

Residential, commercial, and industrial members can request energy audits from their cooperatives to learn about their energy usage and identify ways they can save energy and money.

Many member cooperatives have had load management programs in place for decades. Under these programs, member-owners volunteer to have water heaters, pumps, or other major energy-using devices cycled off during periods of peak energy demand.

Some member cooperatives are installing "smart meters" and offering online software programs that give member-owners tools to monitor their home energy usage.