

Lignite Energy

A Valuable Regional Resource!

Energy is the common denominator that sustains economic growth, improves standards of living and supports an expanding population.

We depend on energy to make our lives safer and more comfortable, our work easier and more efficient.

America relies on adequate supplies of reasonably priced energy to support its economy and help it remain competitive in the global marketplace.

Lignite coal reserves provide the Upper Midwest region with an abundant energy resource.

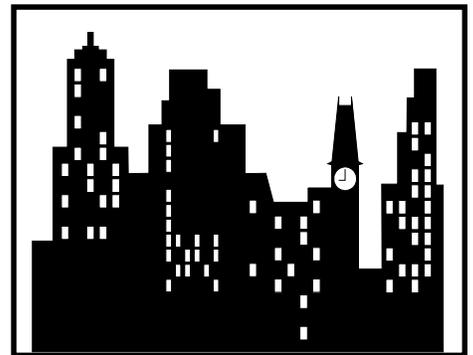
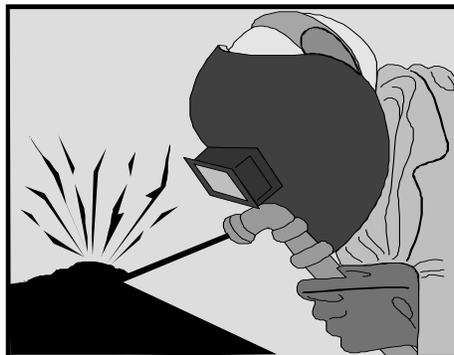
Currently, lignite supplies more than 2 million people in the region with a reliable source of low-cost electric energy.

“Lignite-produced electricity supplies our customers with some of the lowest-cost power in the nation, which assists us in our regional economic development efforts.”

**- Bob Edwards
President
MP Electric**

In addition, another 225,000 homes and businesses in the eastern United States are heated with synthetic natural gas produced from lignite.

Lignite coal is used by five investor-owned utilities and four generation and transmission cooperatives to meet the energy needs of their customers.



Consumers in the Upper Midwest depend on electricity produced by lignite to help them, whether at work or at home.

Seven power plants in western North Dakota and one in eastern Montana use about 24 million tons of lignite annually to generate electricity.

The Great Plains Synfuels Plant, located near Beulah, ND, uses about 6 million tons of lignite each year to produce synthetic natural gas, anhydrous ammonia and ammonium sulfate fertilizers, and other lignite-derived products.

As an energy resource, lignite offers many important advantages and benefits to the Upper Midwest:

- North Dakota and Montana have enough lignite to last more than 1,000 years at today's rate of production;
- Lignite provides jobs, tax revenue and other economic benefits;

- The lignite industry has demonstrated its ability to mine and use lignite while protecting the environment; and
- Our region's Lignite Research, Development and Marketing Program offers the promise of even cleaner, more efficient and more economical uses for lignite in the future.

“Lignite is a secure source of domestic energy, providing a stable, reliable supply for states with limited energy resources.”

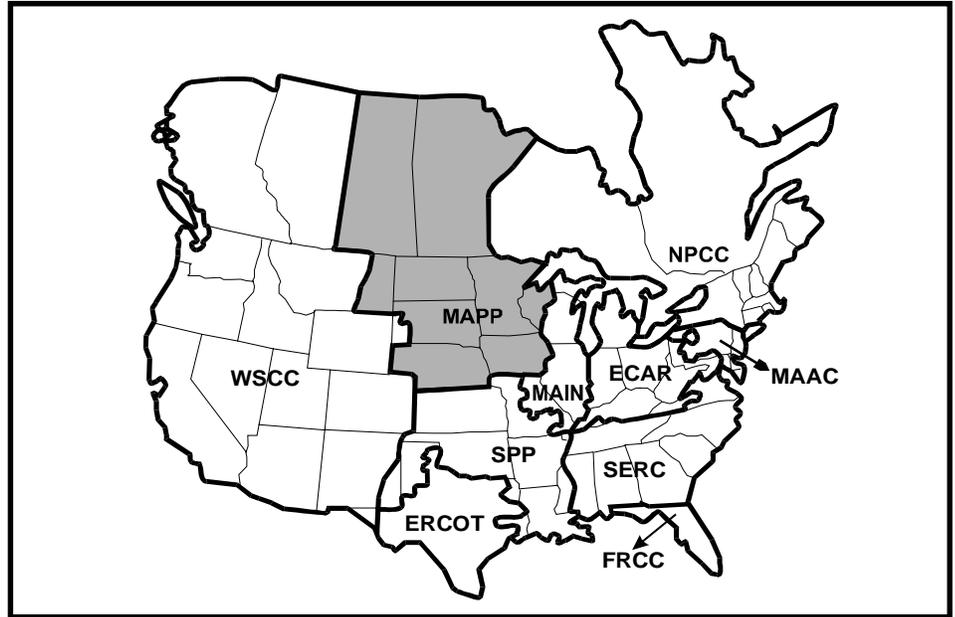
**- Jim Van Epps
General Manager
Cooperative Power**

Lignite Provides Energy for the Upper Midwest

The utilities and cooperatives using lignite are members of the Mid-Continent Area Power Pool also known as MAPP. The MAPP region includes North Dakota, Minnesota, Iowa, Nebraska, Manitoba, and Saskatchewan, as well as eastern Montana, northwestern Wisconsin, and most of South Dakota.

MAPP's purpose is to provide reliable and economical electric service to the customers of its member utilities. To do this, MAPP members work together to coordinate the installation and operation of electrical generation and transmission facilities.

MAPP is one of 10 regional power pools that make up the North American Electric Reliability Council. Each pool consists of a group of electric utilities operating under an agreement to provide economic bulk power supply by sharing reserve generation. The reliability of an interconnected transmission network helps prevent widespread power outages and assures sufficient generating capability to meet the electric demands of customers.



The Mid-Continent Area Power Pool is one of 10 regional power pools that make up the North American Electric Reliability Council.

Selling electricity is a competitive business. If a utility has generating capacity beyond what customers in its service area need, it will attempt to sell the surplus to other utilities within the Mid-Continent Area Power Pool system.

Utilities with power plants generating the lowest cost electricity will be more successful at selling surplus capacity.

Marketing excess capacity through MAPP is a critical factor in controlling a utility's wholesale power rate. Energy is marketed within the pool on an hour-by-hour basis. MAPP's interconnected transmission lines and computerized communication system enable power exchanges and the sharing of information, resulting in \$300 million in cost savings to consumers annually.

Facts About Mid-Continent Area Power Pool

Population Served: 16 million

Membership: 90 Participant and Associate Participant Members

Utilities and Cooperatives Using

Lignite-Produced Power: Seven MAPP member utilities have ownership in lignite-producing plants. Many more member utilities at some time or the other purchase power from a lignite producing plant through MAPP

Size of MAPP Region: 890,000 square miles

Miles of Transmission Lines: 19,950

Total Energy Production: 185 billion kilowatt hours

Coal-Based Energy Production: 112 billion kilowatt hours (60 percent of total)

North Dakota Lignite Based Energy

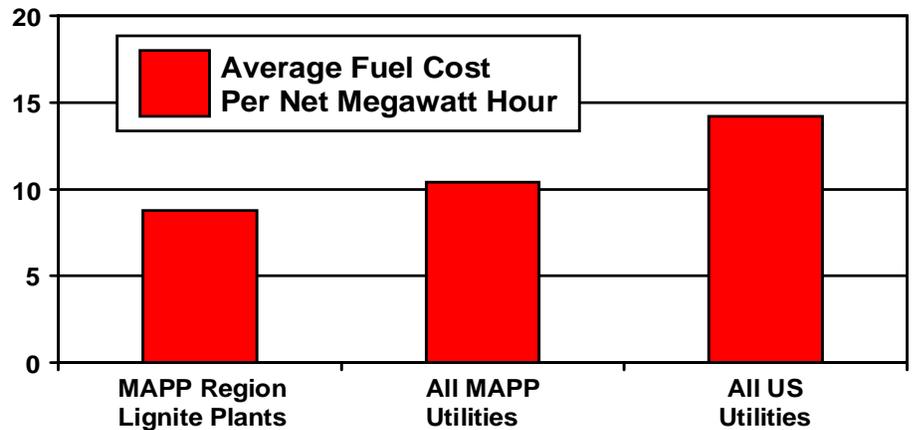
Capacity: 3,900 megawatts (total coal based energy capacity: 20,000 megawatts) - (lignite represents 20 percent of total coal based energy production in Mid-Continent Area Power Pool)

Low-Cost Lignite Energy Benefits Region

Low Coal Costs

Within the MAPP region, coal-fired power plants supply 60 percent of the electricity. The average fuel cost for coal to MAPP electric utilities averages just over \$10 per net megawatt hour, the lowest of all 10 NERC regions. Average fuel costs for coal to the eight Upper Midwest region power plants using lignite average about \$8.75 per net megawatt hour, compared to the national average of just over \$14.00 per net megawatt hour. Nebraska, Montana, Wyoming and North Dakota rank first-to-fourth respectively in low electric utility coal costs.

Electric Utility Average Coal Costs

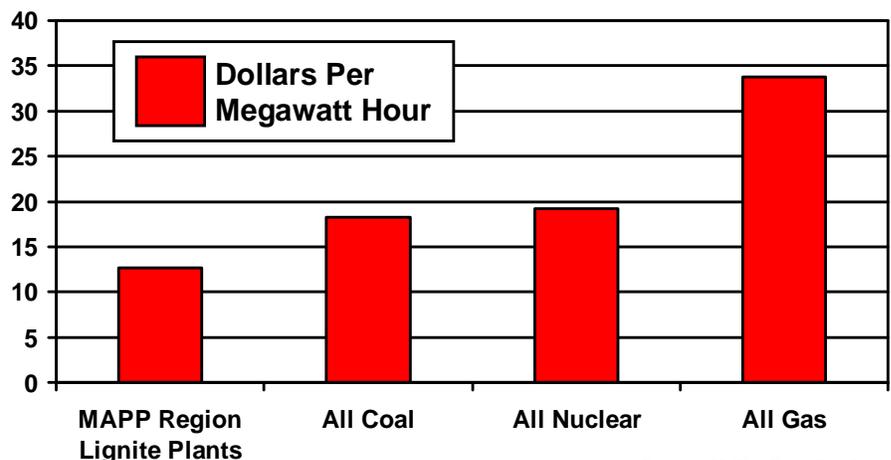


Source: Utility Data Institute

Low-Cost Electricity

Low coal costs mean that power plants using lignite generate some of the least expensive energy in America. In the Utility Data Institute's rankings of nearly 800 coal, nuclear, oil and gas power plants, five of North Dakota's seven coal-fired plants are consistently ranked among the top 60 low-cost electricity producers in the nation. MAPP region lignite plants average about \$12.50 per megawatt hour, compared to just over \$18.00 for all coal power plants in the United States.

Power Plant Average Electricity Costs



Source: Utility Data Institute

- Lignite Contributes to Upper Midwest Economy -

Lignite resources provide important contributions to the Upper Midwest economy by providing:

- Incentives for economic development by offering businesses plentiful supplies of inexpensive energy;
- Increased business activity, jobs and tax revenue resulting from lignite industry production and expenditures;

“Use of electrotechnologies can help businesses reduce their product costs which helps their competitive position in the global economy.”

**- Bob McPhail
General Manager
Basin Electric Power Coop.**

- Low cost energy for manufacturers of energy intensive products so they can compete in a global economy; and
- Opportunities to create new uses and markets through research and development which mean more jobs and economic growth.

Lignite Energy for a Clean Environment

The lignite industry not only supplies low-cost energy, but it also has an excellent record of protecting the environment. For example, in North Dakota:

- More than 70 percent of the lignite-fired electrical generation is scrubbed to remove sulfur dioxide, compared to just over 10 percent of the coal-fired generation in the eastern states.
- The state is one of only a few states that meets all federal ambient air quality standards.

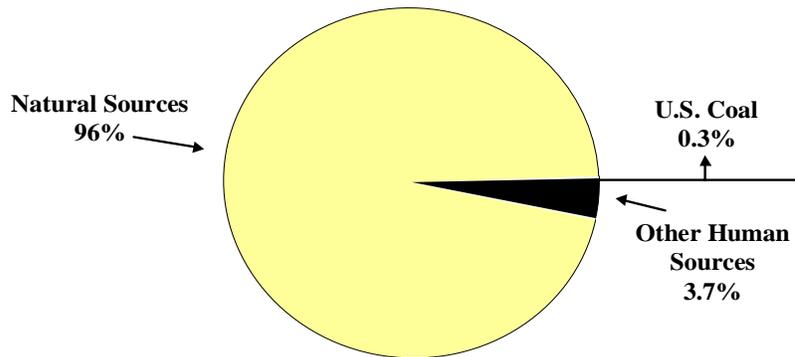
For lignite to continue as a viable option in supplying the region's future energy needs, the lignite industry must meet the challenges posed by more stringent environmental standards. Issues currently facing lignite include:

Global Warming

The proposed Kyoto Global Warming Treaty could have a devastating impact on the lignite industry. Capping carbon dioxide emissions 7 percent below 1990 levels would result in a 5 million ton decline in lignite production. Economic impacts would also be huge. According to WEFA, the treaty in the year 2010 would cost \$225 billion and result in a loss of 1.8 million jobs in the United States.

These impacts could occur because of a treaty that is based on flawed science, according to over 15,000 scientists who signed a petition in April 1998 urging the U.S. to reject the treaty. And even if the treaty is ratified by all participating countries, it will not reduce greenhouse gas emissions as developing nations such as China, India and Mexico are not required to participate.

Sources of World CO₂ Emissions



Source: DOE/EIA-0584

Coal use in the U.S. accounts for only three-tenths of one percent of total carbon dioxide emissions. Thus, even the total elimination of coal use by the U.S. would have virtually no impact on worldwide atmospheric carbon dioxide levels.

Clean Air Act

The U.S. Environmental Protection Agency (EPA) is implementing numerous amendments to the Clean Air Act that Congress passed in 1990. New SO₂, NO_x and mercury standards are being considered.

Many of EPA's proposed regulations would require reductions in power plant emissions that are beyond the requirements of the 1990 Clean Air Act. One such example is proposed regional haze regulations which would require a 10 percent improvement in visibility every 10 years, regardless of how good the existing visibility is. However, the cost to comply with these unnecessary regulations would make the operation of older power plants uneconomical.

Prior to adopting new regulatory requirements, EPA should conduct the necessary research, subject it to independent peer review, and conduct a cost-benefit analysis prior to implementing its proposals. Flexibility in meeting new standards is also desirable.

Key for Future

The key to the future is cleaner, more efficient and more economical uses for the region's abundant lignite energy resource. Recognizing this, the lignite industry is committed to supporting research and development (R&D) efforts such as North Dakota's Lignite Research, Development and Marketing Program. Through the expansion of R&D efforts, Upper Midwest residents can continue to receive reliable, low-cost energy, knowing that it is being produced cleanly and efficiently.



Published by
the Lignite Energy Council
PO Box 2277
1016 E. Owens Avenue
Bismarck, ND 58502
(701) 258-7117
<http://www.lignite-energy-council.org>