

Blue Flint Ethanol

Building a Brighter Energy Future

In February of 2007, a bright new chapter in our energy future began as the Blue Flint Ethanol plant went online. This innovative plant near Underwood, North Dakota produces over 55 million gallons of ethanol per year. Ethanol is blended with gasoline to produce a clean-burning fuel that's good for our economy and good for our environment.

Most of the ethanol is shipped by truck or rail to areas where it's in demand. A blend of 90 percent gasoline and 10 percent ethanol produces a high-octane, clean-burning fuel that can be used in all vehicles. Ethanol is also used to produce E85, which is 85 percent ethanol and 15 percent gasoline. E85 is used in flexible-fuel vehicles.

INNOVATION BY LOCATION

Located adjacent to Coal Creek Station, Blue Flint Ethanol is the first co-located, directly integrated ethanol plant in the world. The plant's location is a key factor in making Blue Flint one of the most cost-effective, energy-efficient, environmentally friendly ethanol plants in the country. The secret is in the steam.



As a by-product of generating electricity, Coal Creek Station produces excess steam. Blue Flint Ethanol uses that steam to

heat corn and turn it into liquid, an essential step in the ethanol production process. Most ethanol plants need a \$25 million boiler to liquefy the corn. Using the steam from the power plant eliminates the need for the boiler, saving millions in both initial and ongoing production costs.

PROCESS

The entire process, from corn to ethanol, takes about three to four days. The plant has three 500,000 bushel corn silos – enough for about 30 days of production. Every hour, Blue Flint Ethanol uses 2,250 bushels of corn and produces 6,000 gallons of ethanol.



Blue Flint Ethanol with Coal Creek Station in the background.

ADVANTAGES OF ETHANOL

Blending ethanol with gasoline creates a higher-performance fuel that burns cleaner and cooler than gasoline alone. That reduces emissions and reduces wear and tear on engine parts. Ethanol blends are good for your vehicle, our environment and our economy. By making ethanol from renewable, home-grown corn, we reduce our dependence on foreign oil.



ECONOMIC IMPACTS

Blue Flint Ethanol has 37 employees earning total wages and benefits of \$2 million a year. The overall economic impact of the plant is about \$200 million a year. The local and regional economy benefits from good-paying jobs, which create a more diversified and stable economic base.



Blue Flint Ethanol as seen from the 21st floor of Coal Creek Station (looking east).

AGRICULTURAL IMPACTS

The plant also has a positive impact on our most important industry: agriculture. Blue Flint Ethanol uses 20 million bushels of corn per year, ensuring a steady market for this locally-grown commodity.

As a by-product, the plant also produces distillers grain, a high-protein livestock feed. Blue Flint Ethanol has the capacity to produce 167,000 tons of dried distillers grain and 430,000 tons of wet distillers grain per year. That's enough to feed about 225,000 head of cattle.

ENVIRONMENTAL FACTS

Coal Creek Station uses the latest in modern emissions control technologies to exceed the most stringent air quality standards. Blue Flint Ethanol also uses state-of-the-art technology to exceed the high standards set by the EPA. Blue Flint is a zero discharge facility, producing no solid or liquid waste. Due to its use of steam from Coal Creek Station, Blue Flint uses less water and produces fewer emissions than a typical ethanol plant. In fact, Blue Flint is one of the most energy efficient, environmentally friendly ethanol facilities in the country.

PLANT INFORMATION

Blue Flint Ethanol is a joint venture of Headwaters Incorporated and Great River Energy. It was built by Fagen, Inc. of Granite Falls, Minnesota at a cost of \$95 million. The plant's name comes from the blue flint corn grown by Mandan, Hidatsa and Arikara Indian tribes that once lived in the Missouri River Valley, near the plant site. Electricity for the plant is supplied by McLean Electric Cooperative of Garrison, North Dakota. Blue Flint Ethanol uses about 40 percent of the cooperative's load.

WEB SITES

Information on Blue Flint Ethanol
www.blueflintethanol.com

Information on Headwaters Incorporated
www.headwaters.com

Information on Great River Energy
www.greatriverenergy.com

American Coalition for Ethanol
<http://ethanol.org/>

Ethanol Across America
<http://ethanolacrossamerica.net/>

GoE Fuel
<http://goefuel.com/>

Renewable Fuels Association
<http://www.ethanolrfa.org/>

Minnesota Extension Service – Using Distillers Grains for Livestock Feed
<http://www.ddgs.umn.edu/>

ABOUT GREAT RIVER ENERGY

Great River Energy is a not-for profit wholesale electric cooperative, serving 28 distribution cooperatives in Minnesota and covering 60 percent of the state, geographically. It is the second largest power supplier in Minnesota. For more information, visit www.GreatRiverEnergy.com.

