

Spiritwood Station

Meeting Future Energy Needs

In May 2006, Great River Energy announced that it would build Spiritwood Station as part of the proposed Spiritwood industrial park near Spiritwood, North Dakota.

The plant would be located about 8 miles east of Jamestown, North Dakota.

COMBINED HEAT AND POWER PLANT—A FIRST FOR NORTH DAKOTA

Spiritwood Station – as one of three major components of the industrial park – will be the first combined heat and power plant built in North Dakota.

A combined heat and power plant generates two primary products: electricity and steam.

Through Spiritwood Station, Great River Energy will generate up to 62 megawatts of baseload electricity and up to 37 megawatts of peaking electricity that will be sold into the regional energy market.

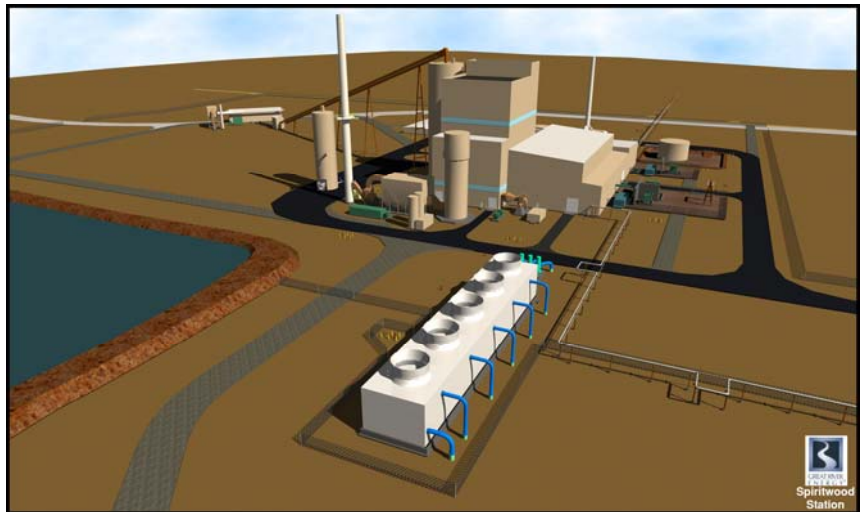
Spiritwood Station will also supply 550,000 pounds of steam per hour to the Cargill Malt plant near Spiritwood, North Dakota, and to Spirit Ethanol, a proposed 100-million-gallon-per-year ethanol plant being developed by the Newman Group.

Otter Tail Power Company, as the local service provider, will supply electricity to the Cargill Malt plant and the proposed Spirit Ethanol plant.

HIGHLY EFFICIENT PLANT

Spiritwood Station will be highly energy efficient – at about 66 percent, as compared to most conventional coal-based power plants which are about 30 to 35 percent efficient.

Combined heat and power plants such as Spiritwood Station are highly energy efficient because they take advantage of the energy in the steam which is normally released to the cooling towers.



A drawing of what the proposed Spiritwood Station would look like.

In essence, Cargill Malt and Spirit Ethanol will serve as the cooling towers. However, both facilities will utilize the energy in the steam in their production processes that would normally be released in the cooling towers.



HIGH QUALITY FUEL SOURCE

The fuel source for Spiritwood Station will be lignite – which will be dried using innovative coal drying technology developed at Great River Energy's Coal Creek Station.



Lignite will be dried using innovative coal drying technology from Great River Energy's Coal Creek Station near Underwood, ND.

The beneficiated (upgraded) lignite – about 610,000 tons per year – will then be shipped via rail from Underwood, ND, to Spiritwood Station.

That 25 percent moisture product will have a heating value of about 7,500 Btus per pound. The dried fuel will result in less coal use, high efficiencies, reduced maintenance and reduced emissions as compared to the pre-dried product.

The use of dried lignite will also result in lower emissions, including less carbon dioxide emissions per unit of energy produced.

BEST AVAILABLE CONTROL TECHNOLOGIES

In addition to utilizing beneficiated lignite, Spiritwood Station will use Best Available Control Technologies to control emissions. Utilization of state-of-the-art technologies will make Spiritwood Station one of the cleanest coal-based power plants in the world.

WASTEWATER WATER SOURCE

The water source for Spiritwood Station will come from multiple sources, with wastewater from the Cargill Malt plant as the primary source.

BACK UP BOILERS

Three back-up natural gas boilers will be available to

provide a full supply of process steam if the electric generating system is down for maintenance.

PLANT SITE

Spiritwood Station will be located about one mile south of Spiritwood, North Dakota, on a 10 acre site adjacent to Cargill Malt.

CONSTRUCTION IMPACTS

Construction of Spiritwood Station began in mid-October 2007. The plant is scheduled to start operating in 2010 – following 2.5 years of construction.

The cost of Spiritwood Station is about \$276 million.

The plant will have a significant impact on the local economy through the creation of 480 construction jobs and 42 operating jobs (25 direct jobs at the combined heat and power plant and 18 indirect jobs for transportation of the beneficiated lignite from Underwood to Spiritwood).

OTHER BENEFITS

When fully operational, Spiritwood Station will provide competitive priced electricity, and will have a positive impact on the agricultural industry by providing steam to operate Cargill Malt (buyer of barley) and Spirit Ethanol (buyer of corn), reducing the need for imported fuels at the industrial park.

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.



Great River Energy owns and operates two power plants in North Dakota:

- Stanton Station, located near Stanton, North Dakota, and operational since 1966.
- Coal Creek Station, located near Underwood, North Dakota, and operational since 1979.

For more information about this project and Great River Energy, visit www.GreatRiverEnergy.com or call 701-442-7036.