

RUGBY Wind Power Project



Project Overview

Located in Pierce County, North Dakota, the Rugby Wind Power Project's 71 wind turbines generate 149 megawatts (MW) of clean, renewable energy. Missouri River Energy Services (MRES), based in Sioux Falls, South Dakota, purchases 40 MW of output from the Rugby project, enough electricity to power almost 11,000 MRES homes in 60 member communities in the states of Iowa, Minnesota, North Dakota and South Dakota. The Rugby Wind Power Project supports the local economy by contributing substantial revenue to the community through payments to Pierce County and to landowners, and by the economic boost provided during construction. At the peak of Rugby's construction, the project employed more than 250 construction workers.



Project Details

Project Capacity: 149.1 megawatts (MW), enough to power up to nearly 45,000 homes.

Number of wind Turbines: 71

Project Location: Near Rugby, North Dakota, in Pierce County. The project encompasses about 9,554 acres of land leased from 49 local landowners. The land continues to be used to grow corn, wheat, canola and sunflowers.



Construction Contractor

Wanzek Construction, Inc., headquartered in Fargo, North Dakota, specializes in heavy and industrial projects in market sectors including Renewable Energy, Conventional Power, Industrial Process and Heavy/Civil Construction. Wanzek is a relationship-based, direct-hire company providing a full slate of construction services from site preparation, foundation design and turbine erection to balance-of-plant construction and project management.

Local Economic Benefits

Project site workforce: 300,890 direct-labor hours with an average site workforce of 124 and a peak of 275. Construction began in October 2008 and was completed in December 2009.



Customer

Missouri River Energy Services (MRES), based in Sioux Falls, is an organization of 60 member communities in the states of Iowa, Minnesota, North Dakota and South Dakota. MRES members in North Dakota include Cavalier, Hillsboro, Lakota, Northwood, Riverdale and Valley City. MRES member communities own and operate local electric distribution systems. MRES is a provider of electric power and energy to its members.





Local Economic Benefits (continued)

Landowner payments:

Approximately \$1.5 million annually

Taxes paid to support local services, schools and public safety: \$600,000-\$1,000,000 annually

Technology

Wind Turbine Type: Suzlon S88

Rated Output: 2.1 MW (2,100 kW)

Turbine Height: 407 feet (124 meters) as measured from the bottom of the tower to the tip of the highest blade. That's about as high as a 28-story building.

Nacelle Weight: Approximately 79 tons (158,000 lbs.)

Tower Facts: Four-section, tubular steel

Tower Height: 256 feet (78 meters)

Tower Weight: 204 tons (408,000 lbs.)

Blade Facts

Swept Area: 65,466 square feet (6,082 square meters) per turbine

Blade Length: 142 feet (43 meters)

Rotor Diameter: 288 feet (88 meters)



Foundations

Each individual wind turbine foundation consists of an octagonal spread footing of 54 feet and is nine feet deep. Concrete volume is 456 cubic yards per turbine or 32,376 total cubic yards – that's 3,238 truckloads.

Balance of Plant Infrastructure

Turbine Access:

Provided 16 miles of gravel-surfaced roads

Transmission Interconnection:

Otter Tail Power Company's 230kV system

Engineering and Construction

Total project-labor hours worked:

300,890 with no loss time to injuries

Civil and installation contractor worked:

215,742 total labor hours

Electrical and substation contractor worked:

53,093 total labor hours

Equipment supplier worked: 32,055 labor hours

Construction

Wanzek Construction, headquartered in Fargo, ND:

Road construction and upgrades, foundation construction, turbine installation and O&M building construction

Great Southwestern Construction:

Underground and overhead collection system installation, transmission line installation and substation construction

Sioux Falls Tower/GEC:

Met tower installation

Suzlon Wind Energy Corp:

Turbine commissioning