

FARMERS CITY

Wind Power Project



Project Overview

The Farmers City Wind Power Project is located in Atchison County, Missouri, in the northwest corner of the state. The 73 wind turbines at this project will generate 146 megawatts (MW) of clean, renewable energy and contribute jobs and tax revenue to the local community. The project supports the local economy through lease payments to local landowners and tax payments to the county.

The project's construction period, which concluded when the project became operational in early 2009, created numerous jobs. When the project reached operation, it was the largest wind project in Missouri, and nearly doubled the wind power capacity in Missouri. The project takes its name from a historic farmers market that was located within the wind farm's boundaries.



Project Details

Project Capacity: 146 megawatts (MW)

Number of Wind Turbines: 73

Project Location: Near Tarkio, Missouri, in Atchison County. The project encompasses about 14,000 acres of land leased from 44 local landowners. The project footprint covers less than one percent of the project's total acreage. The land continues to be used for corn and soybean farming.

Developer and Owner

With over 12,700 MW of renewable energy in operation globally, and nearly 4,700 MW of that wind power located in the U.S., Iberdrola Renewables is part of the world's leading provider of wind power. Iberdrola Renewables Inc. is incorporated in the U.S. and headquartered in Portland, Ore., with a principal corporate office outside of Chicago along with offices and wind farms in numerous states. Iberdrola Renewables employed more than 850 people in the U.S. at the end of 2010.



Technology

Wind Turbine Type: Gamesa G87

Rated Output: 2.0 MW (2,000 kW)

Turbine Height: 397 feet (121 meters) as measured from the bottom of the tower to the tip of the highest blade.

Nacelle Weight: Approximately 70 tons (140,000 lbs.)

Tower Facts: Four-section, tubular steel

Tower Height: 256 feet (78 meters)

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Tower Weight: 203 tons (406,000 lbs.)

Technology (continued)

Blade Facts:

Swept Area: 63,957 square feet (5,944 square meters) per turbine

Blade Length: 138 feet (42 meters)

Rotor Diameter: 285 feet (87 meters)

Revolutions per Minute: 9 to 19 (one revolution every 3 to 7 seconds)

Foundations

Each individual wind turbine foundation consists of an octagonal spread footing of 58 feet, eight feet deep. Concrete volume is 372 cubic yards per turbine or 27,156 total cubic yards – that's 2,716 truckloads.

Balance of Plant Infrastructure

Turbine Access: Provided six miles of gravel-surfaced roads.

Transmission Interconnection

To MidAmerican Energy Company's 345kV system.



Engineering

Total project man-hours worked:

235,133 with no loss time to injuries

Civil and installation contractor worked:

184,053 total man-hours

Electrical and substation contractor worked:

32,560 total man-hours

Equipment supplier worked: 18,520 man-hours



Construction

M.A. Mortenson: Road construction and upgrades, foundation construction, and turbine installation

MJ Electric: Underground and overhead collection system installation and substation construction

Aerial Erectors/GEC: Meteorological tower installation

Gamesa: Turbine commissioning

Project Site Workforce:

Average 100 on site with a peak of 150. Construction began in May 2008 and substantially completed in March of 2009.

Project Benefits

Households Served: Farmers City will produce enough clean, renewable electricity each year to power the approximate equivalent of 33,000 typical Missouri homes.

Local Economic Benefits

Taxes paid by Farmers City Wind Project:

\$600,000-\$1,000,000 annually

Local landowner payments paid by Farmers City Wind Project:

Approximately \$365,000 annually



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