

Fact sheet for Missouri's first utility-scale wind farms

Rural electric cooperatives have long been pioneers when it comes to bringing affordable electricity, and the quality of life it provides, to the people they serve. When it came to the frontier of wind energy in Missouri, rural electric cooperatives again helped open the way. Associated Electric Cooperative Inc. agreed to buy all the power from the proposed wind farms, enabling Wind Capital Group and John Deere Wind Energy to move forward with their vision to build Missouri's first utility-scale wind farms.

The Bluegrass Ridge, Cow Branch and Conception wind energy projects in northwest Missouri were developed by Wind Capital Group. WCG's president is Tom Carnahan.

Project financing was provided by John Deere Wind Energy, based in Johnston, Iowa, a unit of Deere & Company, the world's leading manufacturer of agricultural equipment.

Associated Electric Cooperative Inc. is the wholesale power supplier for 51 rural electric cooperatives in Missouri, southeast Iowa and northeast Oklahoma and will buy all the electricity produced by the wind farms for 20 years.

Combined, the three farms total 157 megawatts.

Associated Electric Cooperative and Wind Capital Group have partnered in a fourth, and Missouri's largest, wind farm. Announced in April 2009, construction began in July 2009 on the 150-MW Lost Creek Wind Farm in DeKalb County.

Lost Creek Wind Farm

When considering the intermittent nature of wind energy, Associated projects Lost Creek Wind Farm will produce the amount of energy used by about 27,000 member households.

- The farm being developed by Wind Capital Group is under construction in DeKalb County.
- Construction began in July 2009 and is scheduled to be complete in spring 2010.
- 100 1.5-MW General Electric turbines will tower 400 feet high.
- The farm will connect to NW Electric Power Cooperative, a member-owner of Associated Electric Cooperative.

Bluegrass Ridge Wind Farm

Announced Jan. 31, 2006, the Bluegrass Ridge Wind Farm covers about 10,000 acres in Gentry County, Mo., near King City.

It consists of 27 Suzlon S-88, 2.1-megawatt turbines totaling 57 MW.

Commercial operation began in early 2007.

Electricity from three turbines at the Bluegrass Ridge farm is sold to the city of Columbia.

Between 100 and 150 workers were on site during peak construction in mid- to late-October 2006 at Bluegrass Ridge.

Cow Branch Wind Energy Project

Construction began in early 2007 on the Cow Branch Wind Energy Project, located between Rock Port and Tarkio, Mo., in Atchison County.

Announced July 2006, the project was finished and began operating in spring 2008.

It has 24 Suzlon S-88, 2.1-megawatt turbines.

About 35 Atchison County landowners are involved in the wind farm, which spans more than 7,000 acres.

Conception Wind Farm

Located near the town of Conception in Nodaway County, the third wind farm was announced Oct. 20, 2006, and began commercial operations in spring 2008.

It consists of 24 Suzlon 2.1-MW turbines.

About 20 Nodaway County landowners are involved in the Conception Wind Farm, which spans more than 7,000 acres.

Wind turbines require special transport

- Many of the turbine components, including tower sections, blades and nacelles (the gearbox/generator housing that sits on top of the tower) require highway patrol escort in Missouri as they are transported to construction sites.
- Once assembled, each tower is about 260 feet tall and weighs nearly 200 tons.
- Foundations for the wind farm towers are 15 feet in diameter and 34 feet in depth.

- The largest crane in North America was on site to place the nacelles on top of the towers.
- Each wind turbine generates at 600 Volts. Voltage is stepped up to 34.5 kV in the base of each tower and is then stepped up to 161 kV in the switchyard. NW Electric Power Cooperative – one of Associated’s six owner generation and transmission cooperatives – constructed and updated the transmission system to support and transmit power from the wind farms.
- Landowners receive annual lease payments for hosting turbines, and the county benefits from an expanded tax base and job creation.

Facts about wind turbine components:

Suzlon turbine information in U.S. terms	
Make of WTG	Suzlon S-88
Rated output	2.1 MW or 2,100 kW
Number of tower sections	four
Hub height	80 m or 262.5 feet
Rotor diameter	88 m or 289 feet
Number of blades	three
Length of blades	42.5 m or 139.5 feet
Weight of each blade	6,700 Kg or 14,771 lbs.
Weight of rotor w/ blade	35,172 Kg or 77,541 lbs.
Weight of nacelle	72,040 Kg or 158,821 lbs.
Weight of tower	180,970 Kg or 398,971 lbs.

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