

ELK RIVER Wind Power Project



Project Overview

The Elk River Wind Project is a 150 megawatt (MW) wind energy project located in Butler County, Kansas. Empire District Electric Company selected Elk River and entered into a 20-year agreement with Iberdrola Renewables to purchase wind energy from the facility. Empire anticipates it will purchase approximately 550,000 megawatt-

hours of energy annually from the project, enough energy to meet the annual needs of about 42,000 homes. Joplin, Missouri-based Empire chose to add wind energy to its portfolio for its price stability, environmental friendliness, and the economical cost for its customers.

Project Details

Project Capacity: 150 MW

Number of Wind Turbines: 100

Project Location: In Butler County, approximately 45 miles east of Wichita, Kansas, near Beaumont. Total site is 7,907 acres with five local land owners. The land is primarily utilized for grazing of cattle.

Customer: Empire District Electric Company

Based in Joplin, Missouri, The Empire District Electric Company (NYSE: EDE) is an investor-owned, regulated utility providing electricity, natural gas (through its wholly owned subsidiary The Empire District Gas Company), and water service, with approximately 215,000 customers in Missouri, Kansas, Oklahoma and Arkansas. Certain subsidiaries of the Company also provide fiber optic and Internet services.



Technology

Wind Turbine Supplier: GE Energy

Wind Turbine Type: GE 1.5 MW

Rated Output: 1.5 MW (1,500 kW)

Turbine Height (to the tip of the highest blade): 389 feet (118.5 meters)

Turbine Weights:

Tower: 270,000 lbs.

Rotor: 73,000 lbs.

Nacelle: 115,000 lbs.

Foundation: Each wind turbine foundation consists of a concrete octagonal spread footing 48 feet in diameter.

Footprint: 48 feet in diameter, spaced 500 to 1000 feet apart within each string

Concrete: 248 cubic yards per turbine or 27,000 total cubic yards (2,700 truckloads)

Tower: Three section tubular steel

Tower Height: 262.5 feet (80 meters)





Balance of Plant Infrastructure

Turbine Access: Approximately 20 miles of gravel surfaced roads

Foundations: Each wind turbine foundation consists of a concrete octagonal spread footing 48 feet in diameter, with a 16 foot diameter pedestal which is 7.5 feet deep from the top of pedestal to base of foundation. It has 140 anchor bolts, each 8 feet long and 1 ¼ inch diameter. The volume of concrete used is 248 cubic yards per turbine, equal to 27,000 total cubic yards or 2,700 truckloads.

Transmission Interconnection: Latham Substation. A 4.2 mile transmission line connects the project substation to the interconnection substation.

Collector Substation:

Two power transformer bays (34.5 to 345kV) with a switchgear enclosure housing six 34.5kV breakers to a six circuit collector feeder system



Collection System:

Six circuits and 575V/35.5kV GSU transformers at each turbine

Engineering & Construction

Engineers: Stantec Consulting Engineers (Substation, Switching Station, Collection System); Triaxis Consulting Engineers (345kV Transmission Line); Barr Engineering (Geotechnical Engineering, Foundation and Road Design)

Construction: Mortenson (Civil Infrastructure, Foundations, Turbine Erection); Christenson (Collection System and Tower Wiring); Par Electrical (Substation, Switching Station and Transmission Line); Sioux Falls Tower (Met Tower Turn Key); SM Anderson (O&M Building Turn Key)

Project Site Workforce: During peak construction, project workforce totaled approximately 200 people.

Construction Timeline: Groundbreaking on civil work in May 2005 with Substantial Completion in December 2005

Project Benefits

Households Served: The 100-turbine installation will provide enough electricity to serve approximately 42,000 homes.

CO₂ offset: The project is projected to offset 344,569 metric tons of CO₂ per year.

Number of Landowners: Five

PILOT (Payment In Lieu Of Taxes): The PILOT agreement provides for a total payment of \$2,250,000 to Butler County, Kansas over the project's 15 year lifetime.

Approximate Acreage: 7,907 acres. Approximately two percent of the project's land area is occupied by the actual turbine footprint, leaving the rest of the land available for other purposes, including cattle ranching and farming operations.

Construction Jobs: Up to 200

Ongoing O&M Jobs: 8 to 10 full-time, permanent employees



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