BIG HORN Wind Power Project

IBERDROLA RENEWABLES

Project Overview

IBERDROLA RENEWABLES' Big Horn Wind Power Project is a 200 megawatt (MW) wind energy project located near Bickleton, Wash. Big Horn sits across the Columbia River approximately 25 miles from IBERDROLA RENEWABLES' existing Klondike Wind Power Projects. The Big Horn Project is situated in an area known for its exceptional wind resources and near existing Bonneville Power Administration (BPA) transmission lines. Typically, a 200 MW wind farm can provide clean, renewable electricity to more than 60,000 homes, according to the American Wind Energy Association's calculations. The project will support the local economy through property tax payments to Klickitat County. Up to 200 jobs were created during the peak of construction, with 60 percent of hiring done locally. Between 9-11 employees operate the wind farm, with about three-quarters of them hired from the local community. While the entire project spans approximately 15,000 acres, the actual footprint of the project is about two percent of the leased land. Landowners will continue using the remainder of the land for wheat farming and grazing. In addition, a nearby area of prime habitat encompassing more than 455 acres has been preserved by IBERDROLA RENEWABLES as a conservation area.

Project Details

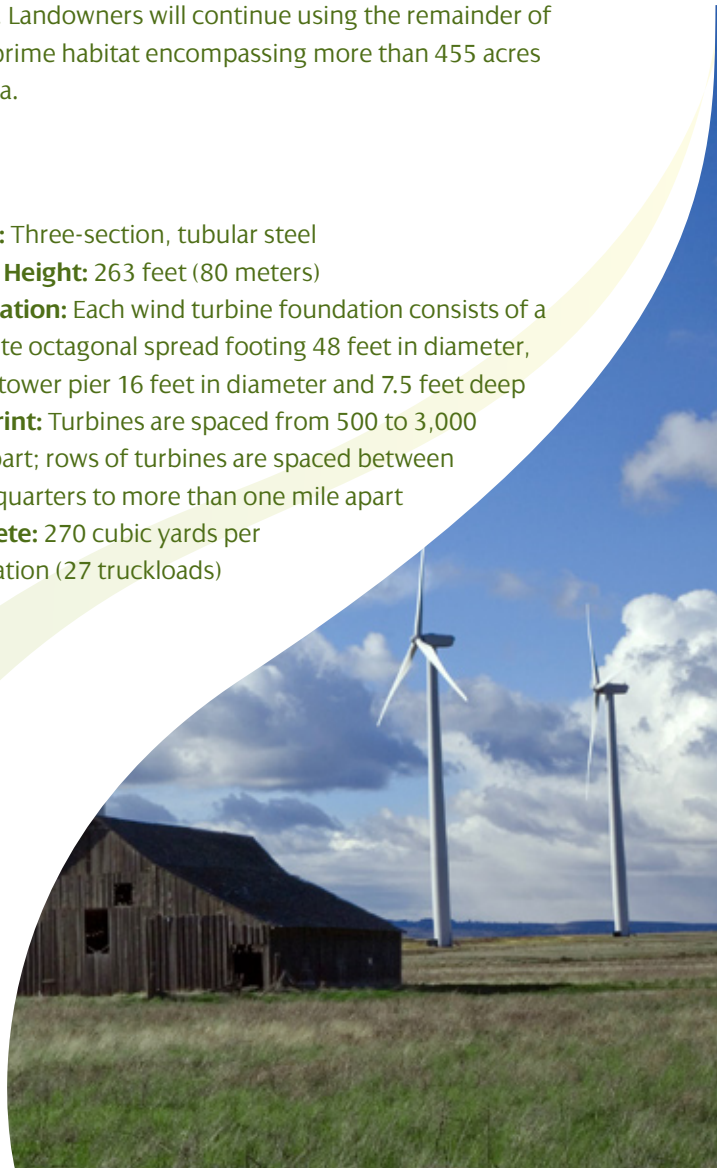
Project Capacity: 200 MW
Number of Wind Turbines: 133 GE Energy 1.5 MW
Project Location: Approximately five miles south of Bickleton, Wash., in Klickitat County

Customer: MSR Public Power Agency

The entire capacity of the Big Horn Wind Power Project has been contracted to MSR Public Power Agency. MSR is a joint powers agency consisting of the Modesto Irrigation District, the City of Santa Clara and the City of Redding. IBERDROLA RENEWABLES provides a unique "firming" product to MSR, which allows MSR to easily and efficiently integrate wind energy into their supply portfolio.

Turbine Technology

The GE Energy 1.5 MW machine is a variable-speed, constant frequency design with aerodynamic airfoils on a 77-meter rotor.
Turbine Height: 389 feet (118.5 meters) from the bottom of the tower to the tip of the highest blade, or about as high as a 30-story building
Turbine Weight: Approximately 195 tons (389,000 lbs.)
Tower: Three-section, tubular steel
Tower Height: 263 feet (80 meters)
Foundation: Each wind turbine foundation consists of a concrete octagonal spread footing 48 feet in diameter, with a tower pier 16 feet in diameter and 7.5 feet deep
Footprint: Turbines are spaced from 500 to 3,000 feet apart; rows of turbines are spaced between three-quarters to more than one mile apart
Concrete: 270 cubic yards per foundation (27 truckloads)



Plant Infrastructure

Turbine Access: 151,400 linear feet (28.7 miles) of gravel surfaced roads

Transmission Interconnection: Interconnect to BPA's Spring Creek switch station via a nine-mile 230 kilovolt (kV) transmission line

Collector Substation: 34.5 kV – 230 kV substation with two power transformers and high-voltage circuit breakers on the high side and a metal-clad switchgear enclosing multiple 38 kV circuit breakers on the low side

Collection System: Combination of underground and overhead 34.5 kV infrastructure connecting the wind turbines to the collector substation

Engineering & Construction

Engineers: Four firms (Stantec, TriAxis, Barr, Pioneer Surveying and Engineers)

Construction Contractors: Electrical (Henkels & McCoy and Christenson Electric), civil/structural (DH Blattner & Sons), met tower (Sioux Falls Tower Specialists), operations and maintenance contractor (SM Andersen)

Project Site Workforce: Average of 150 workers on site, with a peak of 200, for a total of about 160,000 work-hours

Value of Wind Energy

In 2008, U.S. wind power sailed past the 20,000 megawatt (MW) landmark, achieving in two years what had previously taken two decades – installing 10,000 MW of wind power capacity in the United States. Wind power now generates 20,152 MW, enough electricity to serve 5.3 million American homes. That's enough to generate as much electricity every year as 28.7 million tons of coal or 90 million barrels of oil. Forecasts for wind power continue to be favorable with a 155 percent increase predicted worldwide to reach 240 GW of installed capacity by 2012. (Sources: IBERDROLA RENEWABLES, American Wind Energy Association, Global Wind Energy Council)

Environmental Stewardship

IBERDROLA RENEWABLES has worked with the community to ensure conservation of wildlife and prime habitat. Specifically, IBERDROLA RENEWABLES has invested in:

- Ensuring that the footprint of the turbines is about two percent of the land leased, leaving the remaining acreage free for traditional farming and ranching.
- Conserving more than 455 acres of habitat south of the site.
- Building and placement of more than 250 bluebird boxes around Bickleton, known as the "Bluebird Capital of the World." Although bluebirds are common at wind projects, they are not at high risk. Studies indicate the turbines will not hurt the bluebird population, which generally flies well below the blades. IBERDROLA RENEWABLES partnered with the community to build the bluebird boxes as a show of support for the community's source of pride and local tourism.

- Developing ongoing community education programs that help protect native bird species.

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