

# SHILOH Wind Power Project

## Project Details

**Project Capacity:** 150 MW

**Number of Wind Turbines:** 100 GE Energy 1.5 MW turbines

**Project Location:** Near Birds Landing, California, in Solano County. The project encompasses about 6,800 acres of land leased from 26 local landowners. The land continues to be used for grazing.



## Project Owner

**Iberdrola Renewables** is the leading wind energy provider in the world, with more than 9,000 MW of wind power online worldwide. For more information, visit the website at [www.iberdrolarenewables.us](http://www.iberdrolarenewables.us).

## Customers:

**Pacific Gas & Electric:** PG&E Corporation is an energy-based holding company, headquartered in San Francisco. With assets valued at \$34 billion, its operations include electric and gas distribution, natural gas and electric transmission, and electric generation. It is the parent company of Pacific Gas and Electric Company - one of the largest combination natural gas and electric utilities in the United States - which provides gas and electric service to approximately 15 million people throughout northern and central California. The utility maintains a generating portfolio with one of the lowest rates of air emissions in the country. For more information, visit the web site at [www.pgecorp.com](http://www.pgecorp.com).

**Modesto Irrigation District:** Located in California's rapidly growing Central Valley, the Modesto Irrigation District (MID) provides retail electric service to over 110,000 residential, commercial, and industrial customers. MID also supplies treated drinking water to the City of Modesto and irrigation water to 59,000 acres of our nation's best farmland. Since 1887, MID has offered the benefits of community ownership, local control, and not-for-profit operation. MID - The Power to Grow [www.mid.org](http://www.mid.org)

**City of Palo Alto Utilities:** The City of Palo Alto Utilities (CPAU) is the only full-service municipal utility in California that operates services including electricity, commercial fiber optic, wastewater, natural gas and water. Visit [www.cpau.com](http://www.cpau.com) for more information.

## Technology

**Wind Turbine Type:** GE 1.5 sle

**Rated Output:** 1.5 MW (1,500 kW)

GE's 1.5 MW series wind turbine is assembled in the United States. It was the first of its size class to become

commercially available and is among the world's most popular wind turbine units. This GE 1.5 MW turbine is a variable-speed, constant frequency design with aerodynamically designed airfoils on a 77 meter rotor. For more information on the 1.5 MW wind turbine, please visit GE Energy's web site at [www.gewindenergy.com](http://www.gewindenergy.com).



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## Technology (continued)

### Tower Facts

**Type:** Three-section tubular steel

**Height:** 76 towers at 80 meters each, and 24 towers at 65 meters each

### Blade Facts

**Swept area:** 50,050 square feet (4,657 square meters)

**Length:** 122 feet (37 meters)

**Rotor Diameter:** 253 feet (77 meters)

**Revolutions per Minute:** 11-20 (one revolution every 3 to 5 seconds)



## Environmental Benefits

According to the EPA average emissions in California, the project will help offset over 380 million pounds of carbon dioxide, over 450,000 pounds of nitrogen oxide and over 250,000 pounds of sulfur dioxide. The actual emission offset will vary on the basis of what facilities might otherwise have been generating during a given hour that the facility produced energy for the California grid.\*

*\*An estimate of the nitrogen oxides, sulfur dioxide and carbon dioxide emissions benefits from the Shiloh project can be calculated using EPA e-grid information and its Power Profiler assessment tool for average emissions in the state of California.*

## Wind Energy

The American Wind Energy Association (AWEA) has announced that the industry installed more than 8,358 MW in 2008, shattering all previous records and expanding the nation's total wind power generating capacity by 50 percent in a single year. Wind farms in the United States now generate about 25,170 MW, enough electricity to power the equivalent of nearly 7 million average homes.

(Source: AWEA, Jan. 2009)

## Balance of Plant Infrastructure

**Foundations:** Each individual wind turbine foundation consists of an octagonal spread footing 48 feet in diameter and 7 feet deep.

**Transmission Interconnection:** A new 34.5kV/230kV substation is located adjacent to a new PG&E 230kV switching station.

## Engineering and Construction

**Project Site Workforce:** Averaged 95 employees on site with a peak of 160 for a total of about 160,000 person-hours. Construction began in August 2005.

## Project Benefits

**Number of Landowners:** 26

**Approximate Acreage:** 6,800 acres

**Construction Jobs:** Average 95, peak 160 (160,000 person-hours)

**Ongoing O&M Jobs:** 12

**Property Taxes:** Over \$1 million each year

**Lease Payments:** Hundreds of thousands of dollars each year



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