

Wind Technology Powering America

By Justin Tremblay

Brief history of wind power

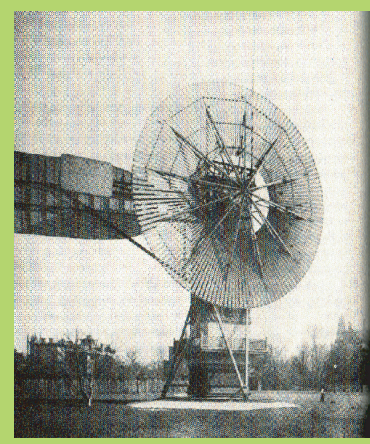


Photo #1 Charles Brush's wind machine
(Reference #1)

For many centuries people harness the power of the wind, by using it to power vessels to cross bodies of water or by the transportation of water. It wasn't until the late 1880s that Charles Brush built the first machine that could use the wind to create power (see picture #1). This machine could produce 12,000 watts of direct current (DC). To harness the power of the wind was cheaper than most other ways to produce electricity at this time. Wind energy showed little profit. As centralized power became more abundant, wind energy began to fade. The main problem with wind systems at this time was the elaborate gear systems. These gear systems soon went away when propellers began being used. Propellers with 2-4 blades could employ higher rpms and could perform in 10-mile wind or 100 mile hurricanes. Aerodynamics began to be incorporated into the design. When the 1970s came around, wind energy faded from memory. When the oil embargo began in 1973 and ended in 1974 people began looking for alternative sources of energy. People were more interested in nuclear energy. The nuclear incidents and other environmental problems prompted people to look for more reliable sources of energy. Large size wind generators began to be tested. These large sized wind generators had lots of mechanical problems and weren't very efficient. As of today, the small and medium sized windmills are extremely efficient but the blade size limits windmills growth. Another limiting factor is the price to build and maintain is much greater than the price to produce energy from non-renewable sources.

(Reference #1)

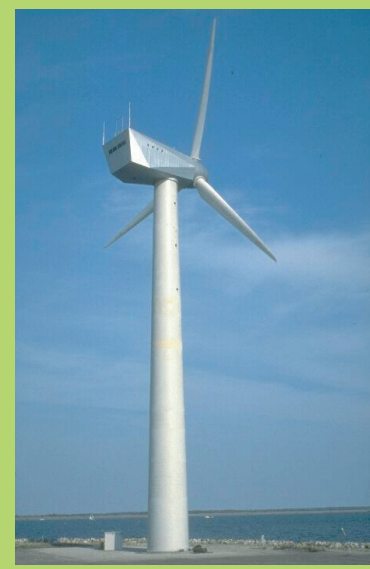
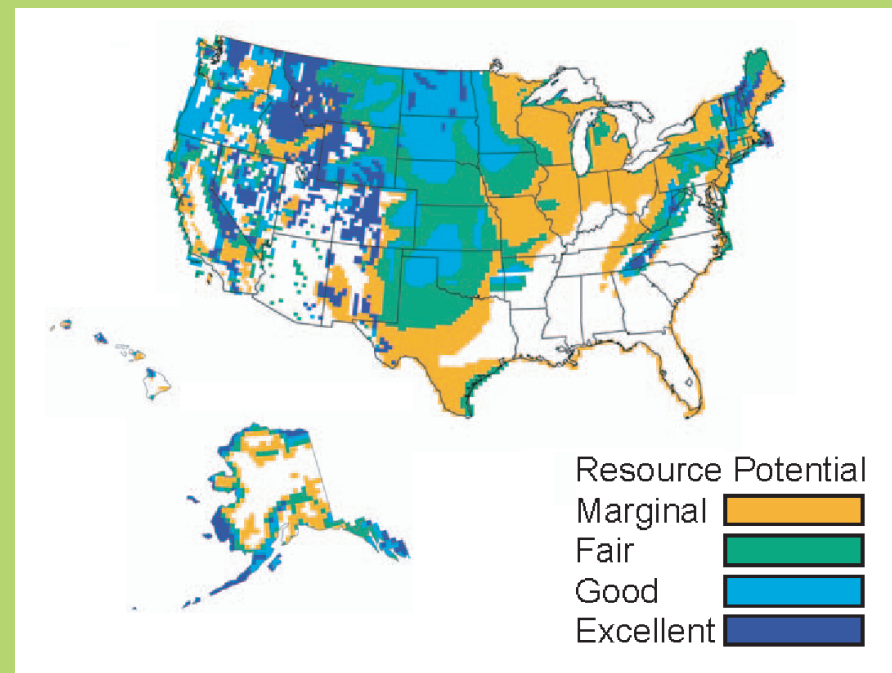


Photo #2 Modern wind turbine
(Reference #6)

Wind Resource Potential In the US



(Reference #5)

Maiden Wind Farm, a proposed site.

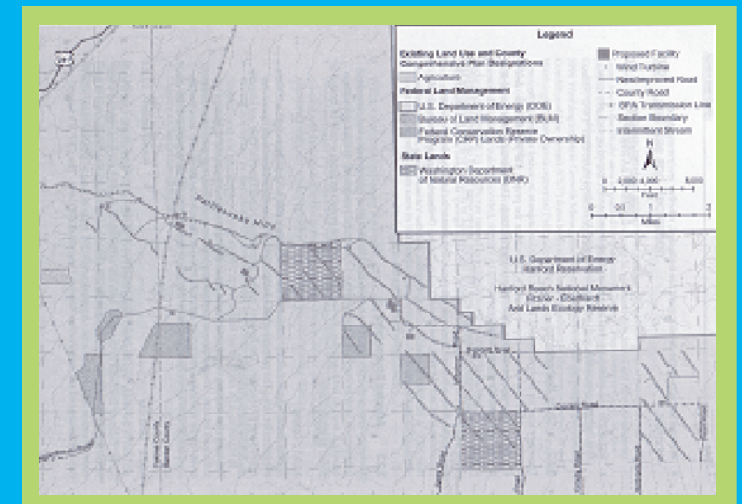


Photo #3 Photo of land property and the placement of wind turbines
(Reference #2)

Maiden Wind Farm was one of the new proposed sites to increase Washington's wind production in the year 2002. The power administrators would rent land from local farmers to put wind turbines on them. Maiden Wind Farm would be located in Benton County.

(Reference #2)

How Sustainable is Wind energy

Wind energy is a abundant resource that has little effect on the environment. With wind generators, land can be used for other things, like agriculture.

Benefits of Wind Power

- Clean and efficient.
- Renewable resource
- Land can be used for multiple purposes.
- Small wind turbines can be used at home to produce power

Costs of Wind Power

- More Expensive to build and maintain than most conventual power sources.
- Temporary loss of habitat during construction. (Reference #3)
- Need Transmission lines to transport power. Transmission lines have been linked to cause health problems and are expensive to build. (Reference #4)
- Birds and other flying animals can be killed by the spinning blades

Reference List

- 1) Righter, Robert W, Wind Energy in America: a history/ by Robert w. Righter, (1996) Norman: University of Oklahoma press
- 2) U.S. Department of Energy, Bonneville Power Administration and Benton County, Washington, Maiden Wind Farm Draft Environmental Impact Statement, (March 29, 2002)
- 3) Blackman, Carl, Do Electromagnetic fields pose Health Problems? (Fall 91) Frontier Perspectives Vol.2 issue 2, pg11
- 4) Proceedings of the Wind Energy and Birds/Bats Workshop: Understanding and Resolving Bird and Bat Impacts, May 2004
- 5) National Renewable Energy Laboratory, Wind Powering America, September 2004, (Doe/Go-102004-1899)
- 6) <http://www.cc.utah.edu/~ptt25660/wind.html>