

Wind power



Primary Wind series
BY MARIE WISE
[WASHINGTON, USA]

IN 2009, the U.S. wind power industry added nearly 40 percent to its total power-generating capacity. The United States is nearing the point where 2 percent of its electricity will come from wind. The Department of Energy has estimated that wind power could supply 20 percent of the country's electricity by 2030. The current leading states in wind power production are Texas, Iowa, and California.

ACCORDING TO the World Wind Energy Association, based in Germany, 82 countries used wind energy on a commercial basis in 2009. The top five countries using wind power that year were the United States, China, Germany, Spain, and India. They accounted for nearly 73 percent of the world's capacity.

THE LOUDEST objections to wind power concern the noise created by turbines on wind farms. The Acoustic Ecology Institute, a clearinghouse for information on sound and the environment, found that of the nearly 400 wind farms operating in the United States, about a dozen have created significant noise issues.

THE FIRST offshore wind energy lease with the U.S. government was signed in October by Cape Wind Associates. The project covers 25 square miles on the outer continental shelf off Cape Cod, Mass., and calls for a 130-turbine wind farm with a capacity of 468 megawatts and an average output of 182 megawatts. Meanwhile, Google and a New York financial firm announced this fall that they will invest

in a proposed \$5 billion effort to create a backbone of underwater transmission lines along the Atlantic coast, which would eventually carry electricity from a string of planned offshore wind farms.

THE EARLIEST KNOWN use of wind power was the sailboat. The first windmills were developed in Persia sometime between 500 and 900 and were used to automate the tasks of grinding grain and pumping water.

INVENTOR Charles F. Brush designed and built the first known wind-powered electric generator behind his home in Cleveland in the winter of 1887-88. Brush's contraption was a 144-blade windmill measuring 56 feet in diameter. It produced 12 kilowatts of power at its peak.

AROUND 1920, German physicist Albert Betz demonstrated that a wind turbine could convert a maximum of 59 percent of the kinetic energy in wind into mechanical energy. The first wind turbine connected to an electric power grid was installed in Denmark in 1975.

TODAY'S WIND turbines convert up to 50 percent of the energy in wind into electricity – a high level of efficiency. Wind power now meets about 2 percent of global electricity demand. The wind energy sector provided 550,000 jobs in 2009 (more than double the 235,000 jobs it afforded in 2005), and that number is expected to reach one million by 2012.

—PAULENGLEMAN