Wind farms facts

Wind farms facts

It"s not like wind hasn"t been earning its keep. For centuries, we"ve used it to mill grains, power ships and even to generate electricity, starting in the 1930s. But as energy demand climbs, so have efforts to turn wind into a viable option for producing electricity on a large scale. Wind turbines in particular are what people think of when discussing wind power. These turbines can measure more than 400 feet (122 meters) tall and weigh in at close to 400 tons.

Interest in wind has been outpacing other renewable methods for new electrical power generation for a few years, increasing more than 31 percent between 2008 and 2009 alone [source: U.S. Energy Information Association]. Besides its enormous promise, there are a couple of factors that have contributed to these gains. First, in 2009, wind generators were eligible for government incentives in the United States, encouraging developers to take the plunge. Secondly, Title IX of the 2008 Farm Bill made it easier and more attractive for farmers and ranchers to undertake wind projects.

Less than 2 percent doesn"t sound like much, but when you consider the rate at which it"s gaining popularity, wind has the inside track to becoming a much more viable alternative for large-scale energy production.

This technology was carried to the New World, where it played an important role in settling the wilderness and plains of early America. As new technologies emerged, the windmill lost ground to steam engines and inexpensive electric power when, in the 1930s, the Rural Electrification Program brought inexpensive electricity to the rural U.S. [source: National Archives].

So, with all the noise about clean energy, what kind of improvement are we really talking about with wind? Consider that every year 1MW of wind energy can offset approximately 2,600 tons of carbon dioxide (CO2) [source: NREL], and the interest comes into focus. The simple math is less fossil fuel consumption equals less CO2. And measuring carbon reduction has become a key benchmark for monitoring the progress of alternative energy adoption.

In Massachusetts, for example, the average resident produced 4.5 tons of CO2 as a result of using electricity in 2004. Just 1MW of wind energy could power up to 400 homes without emitting any CO2. And besides reducing CO2 levels, wind power is dramatically easier on water supplies, with the same 1MW of wind energy saving about 1,293 million gallons of water [source: NREL].

One of the chief concerns among wind opponents is the danger the installations pose to native wildlife. After all, these massive turbines spin at lethal speeds and the colossal structures take up large swaths of space that would otherwise be wilderness, or open flight paths for birds.

One particularly highly publicized wind farm, Altamont Pass in California, has been a lightning rod of

controversy because of the impact poor planning has had on the bird population. According to the Center for Biological Diversity, as many as 1,300 eagles, falcons, hawks and other predatory species are killed each year because the wind turbines were constructed along a critical migration route.

Research conducted at other wind farms, however, has shown that bird populations have not been significantly impacted, and the National Academy Of Sciences has stated that bird fatalities from wind farms represent a fraction of the total number of bird deaths caused by humans [source: National Research Council].

And what"s the source of this magical, unending source of free and clean energy? The sun. The sun warms up our planet, but because of surface irregularities and its rotation, the Earth doesn"t heat uniformly. These variances in temperature also cause irregularities in air pressure, and air molecules migrate from areas of high air pressure to areas of low air pressure. This results in wind, the intensity, duration and direction of which are influenced by a number of factors including weather, vegetation, surface water and topography [source: EIA].

All of these variables add to wind"s unpredictability and contribute to the concern that it could never be consistent enough to meet all of our energy needs. Some of the most predictable winds occur offshore, which, of course, adds to construction costs.

With so much potential, companies are positioning themselves to take advantage. In fact, production surged between 2000 and 2006. And even later, in 2009, while world economies plunged, the wind industry thrived.That year alone, the installed wind power capacity, or the amount of energy capable of being produced by existing equipment, increased to 158,000 megawatts (that 31 percent jump we discussed in Fact No.10) [source: Roney]. World production is currently capable of serving the needs of 250 million people, and more than 70 countries have installations.