



Fact Sheet

Commonwealth of Pennsylvania • Department of Environmental Protection

Wind Farming

Wind power is a clean, sustainable, economical and fast growing source of energy in Pennsylvania. Since 1980, the cost of producing wind power has dropped almost 90 percent to about 4 cents per kilowatt-hour.

The potential to use wind energy for power in Pennsylvania is significant. It is estimated that there are more than 5,000 megawatts of untapped power in the Commonwealth's winds with the potential to generate 45 billion kilowatt-hours annually. Of this, less than 35 megawatts have been installed and 155 megawatts are planned or proposed. About 8 percent of Pennsylvania land has a potential for commercial wind energy development. With the opening of wind farms in Somerset and Fayette counties last year, Pennsylvania became the largest wind generator east of the Mississippi.

Wind power represents an economic opportunity for Pennsylvania's farms. It can provide stable income to farmers, reduce air pollution and help reduce electricity supply disruptions. The Pennsylvania Department of Environmental Protection (DEP) is working with farmers, wind developers and electric utilities to take advantage of the wind resources present in the Commonwealth.

IS WIND ENERGY AN OPTION FOR ME?

Siting a wind farm is dependent on a number of factors. Initially, the speed and availability of the wind resource is most important. The best resources tend to be located in southwestern and northeastern Pennsylvania, but a number of factors may make individual sites throughout the state good candidates for wind power.

Other factors to consider in siting a wind farm include the location's proximity to transmission lines, air traffic, local community issues and the site's environmental impacts.



WHAT ARE THE COMPONENTS OF THE WIND FARM?

A typical wind farm consists of:

- Open land – Contrary to popular belief, each turbine takes up very little land. Each turbine requires a 15-foot diameter pad with no vegetation. Developers typically site one turbine for every eight acres of land.
- Wind turbines – The turbines that actually generate the electricity are supported by towers that can reach over 200 feet in height. Wind at speeds between 7 mph and 35 mph drive wind turbines to produce electricity.
- Transmission lines – If the farm is generating electricity to sell to a utility, proximity to transmission lines will be a factor.
- Substation - Changes the voltage to match the voltage of the transmission line.
- Weather stations – These stations collect wind data that is used to adjust the turbines for maximum efficiency; and
- Access roads – These roads will be needed to facilitate construction and maintenance of the farm.

BENEFIT VS. COST: IS A WIND FARM FOR ME?

The decision to site a wind farm on your farm requires a comprehensive study. A good study will identify the speed and consistency of the wind, the costs and benefits of the wind farm financially, and the effect the wind turbines might have on local ecology (particularly birds). You should also take into account the visual and noise impacts of the farm and the effect these may have on neighbors.

There are potential hazards on wind farms, but these can usually be addressed. A wind turbine lasts for 20 to 25 years. Today's cost to develop wind power is approximately \$1 million per megawatts capacity and the payback period is a little more than three years.

Depending on the quality of wind resources on your land, wind developers and electric companies may be interested in assuming the costs and leasing the land from you for a fee.

SMALL SCALE WIND

Farms and homeowners can also use wind power to generate electricity for their own needs. These turbines are much smaller and are supported by towers starting at 30 feet tall.

A typical home consumes approximately 780 kWh of electricity per month. A wind turbine rated in a range of 5 to 15 kilowatts will cover this demand. You can expect to save 50 to 90 percent in your electric bill. Check with your local officials before erecting a turbine. A small turbine can offset more than 1.2 tons of air pollutants and 200 tons of greenhouse gases over its lifetime. It is not suitable for urban or small-lot suburban homes.

FOR MORE INFORMATION

Contact DEP's Office of Pollution Prevention and Compliance Assistance at 717-783-9981, or visit these websites:

www.paenergy.state.pa.us

www.awea.org

www.pawindcampaign.org

www.eren.doe.gov/windpoweringamerica

www.windpower.dk/core.htm

This fact sheet and related environmental information are available electronically via Internet. For more information, visit us through the PA PowerPort at <http://www.state.pa.us> or visit DEP directly at <http://www.dep.state.pa.us> (directLINK "Energy").



www.GreenWorks.tv - A web space dedicated to helping you learn how to protect and improve the environment. The site features the largest collection of environmental videos available on the Internet and is produced by the nonprofit Environmental Fund for Pennsylvania, with financial support from the Pennsylvania Department of Environmental Protection, 877-PA-GREEN.