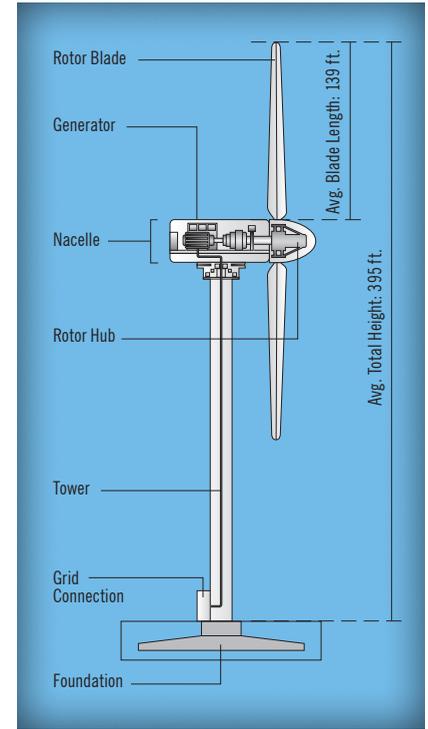


Wind Power 101



Wind power is a clean, cost-effective and readily available renewable energy source – one that’s playing an increasingly important role in the way we power our homes and businesses.

Wind farms consisting of large wind power turbines are becoming more common in the U.S. for several reasons. First, wind is free and we’ll never run out of it. Second, wind power is clean – wind turbines do not create air or water pollution. Finally, technologies that make wind energy and other renewables possible are becoming more affordable.

Wind is the world’s fastest-growing energy source. Almost every state in the U.S. has enough wind to generate clean electricity. Experts estimate that wind could supply up to 20 percent of our country’s electricity by 2030. Investing in wind energy creates more “green” jobs for our economy, provides income to landowners and communities, and helps our nation become more energy independent.

What is wind?

Wind is actually created by the sun. Because the earth’s surface is made of different types of land and water, it absorbs the sun’s heat at different rates. When hot air rises over certain parts of the earth, cooler air is drawn in to replace it, creating wind.

How do wind turbines work?

A wind turbine works like a fan, but in reverse. Instead of using electricity to make wind, like a fan, wind turbines use wind to make electricity. Most wind turbines used by electric utility companies consist of rotor blades which rotate around a horizontal hub. The hub is connected to a gearbox and generator, which are located inside the nacelle. The nacelle houses the electrical components and is mounted at the top of a tall steel tower. The foundation holds the turbine in place on the ground.

What role does wind energy play in powering my community?

Wind farms, also known as wind power plants, are groups of wind turbines in the same location that generate electricity. The electricity generated by wind farms is typically fed into the power lines of local utilities, where it is mixed with electricity from other power plants and delivered to customers.

Wind is an intermittent source of energy. In other words, we only get electricity from wind farms when the wind is blowing. That’s why wind energy today primarily supplements baseload generation sources such as coal-fired, nuclear and natural gas power plants that can run 24 hours a day, 7 days a week. Wind energy alone cannot power our homes and businesses, but it is becoming more important to our country’s energy future.

FACTS AND FIGURES

- **Size:** Wind turbines can be as tall as a 50-story building (nearly 500 ft.). A single wind turbine blade is over 120 ft. long and weighs about 12,000 lbs.
- **Materials:** The towers are cylindrical and made of steel. The blades are made of fiber-glass-reinforced polyester.
- **Speed:** Wind turbines used by electric utility companies generally require minimum average wind speeds of 9 mph. For safety reasons, wind turbines will shut off automatically when wind speeds exceed a set limit – typically around 55 mph.
- **Operation:** Utility-size wind turbines are fully automated and continually adjust to face the wind on their own. Each turbine blade automatically rotates to catch the greatest amount of wind, making it easier for the rotor to spin and generate electricity.

Is wind energy safe?

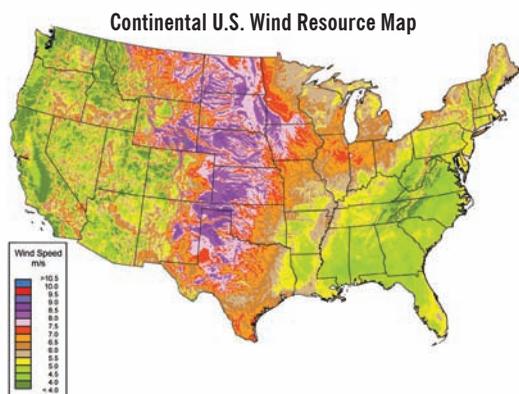
Yes. Wind energy is one of the safest ways to make electricity today. Wind turbines are built to withstand extreme weather conditions and shut off automatically when wind speeds exceed safety limits. In addition, because wind turbines don't burn any fuel to produce electricity, they do not generate air or water emissions and do not produce hazardous wastes.

What does Duke Energy do to protect wildlife?

Duke Energy always considers potential impacts to wildlife and their habitat when deciding where to build wind farms. At sites where we've chosen to build a wind project, our wildlife biologists conduct detailed environmental surveys before, during and after construction. We also work closely with government wildlife resource agencies to make sure our wind power projects have as little impact on birds, bats and other animals as possible.

Where is the ideal spot to build a wind farm?

There are many good sites in the U.S. to build wind farms. Places with the best conditions for producing strong, steady winds include rounded hilltops, mountain gaps, open plains, shorelines and over the ocean. Please see the U.S. wind resource map on this page for further details. Wind farms can take up a lot of land, but the majority of the land can still be used for other purposes like farming, ranching or recreation.



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How much electricity can a wind turbine generate?

That depends on the turbine's size and the wind's speed through the rotor blades. A wind turbine with about one megawatt of power can produce enough clean electricity for approximately 300 homes each year. Wind turbines used at Duke Energy wind farms range in power generation capacity from one to 2.5 megawatts. Wind speeds typically need to be 9 mph or higher for most utility-size wind turbines to start producing electricity.

Are wind turbines noisy?

Today's wind turbines make very little noise. On a windy day, the gentle whooshing sound of the turbine is usually masked by the wind itself. Many first-time visitors to Duke Energy wind farms are surprised at how quiet fully operational wind turbines actually are.

Do wind turbines affect property values?

A comprehensive study of nearly 7,500 home sale transactions by the U.S. Department of Energy's Lawrence Berkeley National Laboratory found no evidence that the prices of residences surrounding wind power facilities were "consistently, measurably, and significantly affected by either the view of the wind facilities or the distance of the home to those facilities."

How many people work at a typical wind farm?

It can take several hundred workers to construct a wind farm, but a farm that's already up and running only needs a handful of employees to monitor operations and perform maintenance.

BUILDING A CLEANER ENERGY FUTURE

Wind power can be a cornerstone of our energy future because it's clean, affordable, sustainable and treads lightly on our environment. Learn more by visiting the following websites:

- U.S. Department of Energy – www.energy.gov/energytips.htm
- American Wind Energy Association – www.awea.org/



DUKE ENERGY EXPERTISE

Duke Energy has been providing safe, reliable and affordable energy to our customers for more than 100 years. Today we serve about 4 million customers in the U.S. – representing a population of approximately 12 million people. We use nuclear power, fossil fuels, energy efficiency and renewable energy sources to meet our customers' electricity needs.

Since 2007, Duke Energy has invested more than \$2.5 billion to grow its commercial wind power business. Today we own and operate wind power projects in Colorado, Pennsylvania, Texas, Wisconsin and Wyoming. We believe investing in renewable power is one way we can reduce our impact on the environment and help our country meet its energy needs for the future.