

## Home Wind Turbines



### Overview

Owning a small residential wind turbine gives homeowners the opportunity to have free, environmentally-friendly electricity for their homes. But make sure your home is energy efficient before buying a home wind turbine. Generating wind power in an efficient home will maximize the amount of money you can make selling your excess energy.

### Is Wind Energy Right for Your Home?

Purchasing a home wind energy system is an investment that takes an average of six to 15 years to pay off using utility bill savings. After that, your wind turbine will generate power to your home free and even provide you with some income if your system generates more energy than you use. So how can you make the most money from your wind turbine? Use the least amount of energy in your home!

By making your home as energy efficient as possible, which may include adding insulation, duct sealing or upgrading an outdated refrigerator, you will reduce the amount of energy a wind system needs to fully power your home. This will cut back the time it takes to get a full return on your investment. As with home solar panels, it's recommended that you consult with an energy auditor or energy retrofit contractor to find the most cost-effective ways to minimize your use of electricity.

If you and your home are ready for wind, keep in mind that most home wind turbines are designed to provide 50 to 90 percent of a home's electrical needs, depending on the wind speed and energy usage of the house. Individual wind turbines for homes are entirely different from the big turbines that you see in wind farms today. However, most home wind turbines are more appropriate for rural houses – the towers can be too high for urban and suburban use, they can sometimes be noisy for close-by neighbors, and there's often more reliable wind in rural areas without lots of buildings or other houses around to block the wind. To get a general idea of the wind speeds in your area, visit the U.S. Department of Energy's site to see a U.S. Average Wind Speed Map.

Wind turbines typically start moving in wind speeds of seven to 10 miles per hour, so when the wind isn't blowing, you will be using energy from your utility provider. But if the wind is blowing and you're not using all of the energy created by your system, that energy (as long as your turbine is connected to the power grid) can be sold to your electrical utility. Your utility provider will then pay you for that excess energy, which will ultimately help you balance out your utility bills and in some cases provide a small income.

While owning your own wind energy system isn't cheap, energy prices have been rising continually, which may mean an even faster return on your investment. And in terms of energy efficiency, if your home is decked out with energy-efficient appliances and insulation, renewable energy is considered the next step to a zero-energy home.

### Comparing Home Solar to Home Wind Power

Home solar panels or a home wind turbine? To make this choice, you should first be clear about what your goal is:

- **Generating Your Own Power:** If you want to make a long-term investment in producing your own energy to reduce your carbon footprint and protect yourself from rising energy prices, then either type of system can help get you there.

- **Lowering Your Bills Today:** If your primary motivation is to lower your utility bills while spending the least amount of money up-front, you should consider an energy retrofit first to make sure you're not wasting a lot of energy in your house right now. To use a simple analogy, before you pour water into a bucket, you should first make sure that the bucket isn't leaking.
- **Making an Investment:** If you are looking for an investment opportunity (selling the energy you produce back to your utility for a profit, for example) then the numbers probably won't work out in your favor, regardless of the type of system you choose – at least not yet! However, the rebates and tax credits available right now for renewable energy systems may make it a better deal now than over the next few years.

To get started, find out how much solar and/or wind resource you can capture on your home or property because renewable energy is very site specific. For example, solar panels and shade from tall trees and nearby buildings don't mix well. As a result, the amount of solar energy you can harness may be quite different from your neighbor. But where shading may rule out solar electric panels, solar hot water systems can work quite well even with some shading. In many cases, solar hot water systems are even more efficient in capturing the sun's energy than solar panels are!

As far as home wind turbines go, most wind turbines so far have been in rural areas, but newer models exist for urban/suburban settings which offer quiet, low-maintenance electricity generation. An average annual wind speed of 10 miles per hour or more is the only fuel they need.

The U.S. Department of Energy has great information and maps to help you get started evaluating the energy resources in your general region to compare wind energy potential and solar energy potential.

### Evaluating Your Home for Solar and Wind Potential

To know for sure if your site has enough sun or wind for a system of either type to make sense, a contractor in your area needs to do a site evaluation. You can either contact a solar panel installer and a home wind turbine dealer to ask each of them for an evaluation, or HSB can help you find an independent energy consultant who can evaluate your site for the feasibility of each option, and potentially find ways for you to reduce your utility bills through energy efficiency upgrades at the same time.

Finally, figuring out the dollars and cents for either type of system will depend on the different rebates, production incentives and tax credits available to you through your utility, city and state legislation. While these vary tremendously around the country, the US Department of Energy has developed a website for rebates and tax credits which can help you identify the unique set of incentives available to you, wherever you live.