

How Many Turbines Will Power a House?

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This is a common question.

Let's answer it in a few ways:

1. Do you mean that you want to take your house off the grid and that will be your only source of power? If so, you need to have extra capacity from the turbines and the batteries to make sure you are covered during times of no wind.

To do this you need to calculate or estimate:

a. How many kilowatt hours do you use each day? You can usually estimate this from finding the number of kilowatt hours used on your utility bill and dividing that number by the number of days on a bill. Make sure you do this for the most energy intensive time of the year as a safety margin. Then take this figure, multiply it by 365, and you have the amount of kilowatt hours you need to prepare for in the course of the year. This is a slight overestimate because you are multiplying the time of most intense use by 365.

b. Determine your average wind speed.

c. Look at the Excel sheet we provide on the web site that shows the number of kilowatt hours per year for each type of turbine. Pick the size of turbine appropriate for you, whether you can cluster them, etc., and see how many kilowatt hours per year you can expect from each. As a safety margin, get enough turbines to provide a wide safety margin of a few thousand kilowatt-hours.

d. Prepare for the possibility that you may have to depend on battery power for a few days of no wind. Use the figure you obtained above for the most intense use of energy and multiply it by the number of days your area could go without much wind. For example, if you use 5 kilowatt hours per day and you want to have the safety of 5 days backup, then you should pick a battery system that has 25 kilowatt-hours storage as a minimum. Take into account that battery capacities can be affected by multiple cycles, so always overbuy!

In that case, your system consists of the turbine or turbines, a charge controller for each turbine, a battery pack, and an off grid inverter.

2. Do you mean that you want to be carbon neutral?

In that case, you want to send your electricity to the grid when you produce and buy it from the grid when you don't produce, and you don't need a set of batteries in your system. In that case, take your electric bills and determine the number of kilowatt hours you use each year, and make a general match with the spreadsheet of kilowatt-hours per year for each turbine.

3. Do you really mean that you just want a good investment?

Very often, building owners, such as an owner of a tall office building, will ask whether they can power the whole building from it. The answer is almost always no. The point is that, if you are in a windy area, it will almost certainly be profitable in itself. For a building owner, it has additional benefits such as greater energy security, more points on LEEDS certification, and image. In these cases, the recommendation is that you be realistic that you may not be able to run your building from the electricity produced, but that you can reduce your electric bill profitably, and the cumulative effect on the climate of many people doing this is significant.

Another question that is often asked: Why should we get these small turbines when offshore turbines are producing electricity so cheaply?

The answer is that you would be surprised at the markup. Offshore wind can now be produced for a few cents per kilowatt hour, but, by the time it reaches your home or office, it is usually 10-20 cents. Our turbines are highly competitive against that real consumer price.