

FREQUENTLY ASKED QUESTIONS

WHAT IS “WIND FOR INDUSTRY”?

One Energy defines “Wind for Industry” as wind energy projects designed to achieve a significant reduction of an industrial facility’s electric consumption from the grid. These projects involve installing one or more utility-scale wind turbines and interconnecting them on the facility’s side of their electric meter.

WHAT IS NET METERING?

Net metering is a series of state laws that provide, for a given customer with a given generator (usually a clean energy generator), that the utility company can only bill based on the NET electricity consumed at the end of the billing period. This means that it does not matter when you use the energy or when you produce it, because you are only billed on the net difference. In some cases, utilities are required to pay for net excess generation. Laws vary widely throughout the country.

WHAT IS THE DIFFERENCE BETWEEN A KW AND A KWH?

A kW is a kilowatt and a kWh is a kilowatt hour. Both are terms that are common in evaluations, wind, power bills, and sales jargon. Both are misused quite often. A kilowatt is a unit of power, whereas a kilowatt hour is a unit of energy. For a practical example, consider a 100 watt light bulb. Now consider ten 100 watt light bulbs ($10 * 100 = 1,000$ watts = 1 kilowatt). Ten light bulbs consume 1 kilowatt of power.

The problem is that there is a very big difference between turning those lights on for one minute and leaving them on for one week. To measure this difference we use power, which measures the energy used over a period of time. If you leave the ten bulbs on for one hour you have consumed one kilowatt for one hour, or one kilowatt hour. The kilowatt hour (kWh) is the most common way that utility bills are calculated because it takes into account the total energy consumed. That being said, some utilities also bill in part based on your peak demand, which is your peak energy usage during the month. Peak demand is measured in kilowatts.

HOW MUCH DOES A WIND TURBINE COST?

Generally, the utility-scale turbines in the larger megawatt class (1,000 kW+) cost \$2 million installed, +/- 10% depending on the site.

WHAT INCENTIVES ARE AVAILABLE?

There are two areas of potential incentives available for companies: the Energy Investment Tax Credit (ITC) and the Modified Accelerated Cost-Recovery System (MACRS). There are many factors that affect a company’s ability to utilize these incentives. These factors are covered in One Energy’s Initial Site Evaluation, which will provide a clear financial picture of a potential wind project. (Learn more about the Initial Site Evaluation at www.oneenergywind.com/wind-for-industry/a-typical-project).

WHAT ARE THE HIDDEN COSTS?

Typically the following costs need to be factored into a purchase: equipment purchase, delivery, electrical equipment, foundation installation, electrical installation, turbine installation, grant writing, permitting, engineering, interconnection costs, warranty, maintenance, and insurance. One Energy only quotes complete prices, which include all of the above except insurance (which we help you obtain).

WHAT IS ROI AND HOW DO I CALCULATE IT?

ROI stands for return on investment, and it is as far from standardized as can be. Every individual, banker, and company has a slightly different procedure for calculating ROI and that is fine, so long as they are clear on how they calculated it.

Entire books are written on this topic, but the most important thing to remember is to make sure you know what numbers were used in the calculations and what numbers were not. Some companies want to see depreciation included, some do not; just make sure you know what was used. Generally there are three numbers that are good tools for evaluating the overall return on investment: Simple Return, Net Present Value (NPV), and Internal Rate of Return (IRR).

Simple Return is how many years it will take to break even (initial cost, divided by annual value). RESULT IS IN YEARS.

Net Present Value is the value that you would have to have in your bank today to invest at a given rate to equal the return that you would get. This number can vary widely based on what rate you use for time value of money (what else you could be doing with it). Always make sure you know what rate was used in your calculations and how it was chosen. RESULT IS A DOLLAR VALUE.

Internal Rate of Return is the equivalent rate at which you would have to invest your money to equal the same return. RESULT IS A PERCENTAGE.

HOW CAN I TELL HOW MUCH WIND I HAVE?

In general, the easiest way to get a rough idea of the wind that you have at your site is to use a wind map published by the National Renewable Energy Lab. These maps provide fairly accurate 80 meter wind speeds. Remember that all speeds are based on annual averages. These maps, however, are just a guide and can be inaccurate. To find a revenue-grade answer, a qualified firm will perform a site-specific analysis. They will evaluate the obstructions at your site, examine the topography, and will use more detailed wind maps to provide a much more accurate number. If you are looking at a small turbine for your residence, accuracy is not a large concern. If you are considering a utility-scale turbine for your business, then you need accuracy that is proportional to the investment. One Energy uses proprietary tools to complete our revenue-grade wind assessments in-house. Our assessments are auditable, and are held to the same standards as the largest wind projects in the world. An accurate wind assessment is one of the most important factors in a project, as it is often one of the risks that cannot be mitigated.

WHAT PLANNING AND ZONING REQUIREMENTS ARE THERE?

Requirements vary widely by locality, region, zoning district, and state. To investigate what your local requirements are, you should talk to your local Planning and Zoning Administrator. One Energy will handle all planning and zoning requirements for your project.

HOW DO YOU CALCULATE HOW MUCH ENERGY A WIND TURBINE WILL PRODUCE?

Calculating potential energy production is much more complicated than simply multiplying the average wind speed by the rated power output of a turbine over the course of a year.

A wind turbine has a power curve that varies with wind speed. The wind speed also varies. Wind can be modeled using what is called a Weibull Distribution Curve (similar to a normal distribution curve, without negative numbers). When a wind resource is modeled using the correct Weibull curve, each individual element of that curve must be multiplied by the corresponding element on the power curve. In short, this is not a simple calculation. The calculations should be shown to you, and whoever provides it to you must be able to explain it. For Wind for Industry projects, we also include inflow angle, turbulence, air density, and a host of other complicated factors that need to be considered to properly model the turbine's expected production.

WHAT IS THE INFLATION RATE OF ELECTRICITY PRICES?

We do not know. We can quote historical numbers, but they are just that, history. All of our calculations at One Energy are completed assuming ZERO inflation in electricity rates. While it is likely that prices will increase, we cannot tell you by how much. Make sure that when you look at an ROI calculation, from One Energy or other potential partners, that you know what inflation rate was used and why. A few percentage points can change the results by thousands or even millions of dollars. Historical electricity rates for the past 20 years can be viewed at <http://www.oneenergywind.com/wind-for-industry/rate-control>.

WHAT ABOUT TURBINES THAT MOUNT TO ROOFTOPS?

The power contained in the wind is proportional to the cube of the speed of that wind. In other words, if you double the wind speed, you can get eight times the power. If you mount the turbine on your rooftop at 30 feet high, it will get 20-30% less wind speed than the same turbine at 100 feet, and it will get HALF of the power due to the reduced speed. In most cases, rooftop wind turbines have lost before they even begin. In theory, a wind turbine can remove 59% of the energy from the air, and some wind turbines have already shown in practice to remove above 50%. There is a reason that utility companies put their turbines on tall towers and use a three blade design. Utility-scale wind turbines capture more than an acre of air. If you want those kinds of results, you need that kind of scale.

WHICH TURBINE MANUFACTURERS DOES ONE ENERGY WORK WITH?

Only the best. No one turbine or one manufacturer is right for everyone. Each product and provider has its pros and cons. Based on your goals, One Energy will help you select the best turbine for your project. One Energy utilizes relationships from our previous large utility wind farm projects to negotiate the best price for your project.