

WIND ENERGY



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Assessing Wind Energy – Is it for you?

Listed below are some advantages in using Wind Energy as an alternative source of electrical power for your facilities:

- Renewable source of energy
- No pollution
- Low maintenance
- Requires fewer steps and less technology to convert electrical power vs. solar power
- Smaller footprint of area consumed vs. solar installations (per Watt energy)
- Relatively low cost of installation vs. solar panels (per Watt of energy)
- Flexibility of design (vertical turbines in denser environments, horizontal in open environments)

However, these advantages must be weighed against certain disadvantages. The greatest of these disadvantages is the fact that wind power is **only available in areas with predictable and consistent wind.**

Location, Location, Location

Favorable wind resources are crucial when assessing the installation of a wind turbine. It's not by chance most wind turbines installed in the U.S. are located in the Midwest and the Northeast regions, including New Jersey, Pennsylvania, and Delaware. These are among the states with more favorable wind conditions.

The cost evaluation of a wind system depends on the average wind speed. A minimum 11-mph to 13-mph average wind speed is considered a requirement to make wind turbine generation economically viable. In addition, wind speed has a tremendous impact on the productivity of the turbine: the higher the average wind speed the better.

Small differences in wind speed may have important impacts. The relation between the wind speed and the electricity generated is more than directly proportional (electrical power is proportional to 3 times the wind speed). A site with 16 mph average winds may generate 50% more electricity than a site with 14 mph average winds with all other factors being equal.

This is a really large impact with a huge effect on any proposed wind project and its competitiveness relative to other energy sources. Therefore, having accurate wind data is critical to not only evaluating whether or not wind power is feasible, but also to correct sizing, design, and economic analysis.

How to Assess Your Wind Resources

Several wind resource data are available to sufficiently predict wind system feasibility. However, many situations justify collecting your own wind data for cases of doubt on wind loads due to particular microclimates or hilly and mountainous areas corresponding to sheltered areas.

U.S. Department of Energy wind maps and data covering each state are generally useful tools to predict a wind system performance. Using and interpreting these resources is a necessary first step in assessing your site potential.

Payback Variables

Since there are different types of wind electrical generators and their performance and costs are dependent on wind resources, it is difficult to establish a rule of thumb for the number of years to recover the initial investment/payback.

In a case recently studied by the University of Strathclyde in England involving a single small wind system of 15kW power – able to produce 5.626 kWh/month, an amount sufficient to fulfill the average needs of 8 homes – the payback was 13 years for a stand alone system and 11 years for an on-grid net metering system.

State Incentives and Grants to Wind Energy

Though the wind energy is already competitive as compared to other electrical energy sources, state financial incentives may render the investment much more attractive and the payback much shorter.

Contact us

Remington & Vernick Engineers and Affiliates can help you assess your wind generation potential at your site and determine if it is the best overall solution for your needs. If you have a site with average wind speeds in excess of 13 mph, you possess an untapped financial resource. That resource can produce the following:

1. Direct Energy Savings; plus
2. Direct Income, through direct ownership of a wind generation system; or
3. Direct Income, through a third party lease arrangement; or
4. Combination of 2 and 3 above.

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