

WIND ENERGY - NEW TECHNOLOGY BRINGS NEW EXPOSURES

Rising energy prices and concern for global warming have helped fuel a surge of interest and development in the renewable energy market. Many consumers, businesses and government entities are turning to clean energy sources, such as wind, geothermal and solar power, to supplement or even replace traditional energy sources.

With the help of federal programs such as Clean Renewable Energy Bonds, alternative energy sources have gained traction with local governments and school districts. Use of renewable energy by public entities is also a powerful educational tool for students and communities, raising public awareness of renewable options.

New technologies, however, often have unintended consequences – even clean, renewable energy technologies. While wind energy avoids many of the conventional hazards of traditional energy sources (combustible fuels, fuel storage, toxic materials), it is by no means hazard-free.

BEFORE YOU BUY A TURBINE

Any organization considering an investment in wind technology should be sure to understand the potential hazards. Wind turbine technology is evolving and can be very complicated. According to the American Wind Energy Association, several factors should be considered before you invest in wind technology:

- The supplier's customer reference list (the longer the turbine has been in use, the better)
- Warranty length and coverage (the industry standard is five years)



- Whether the turbine and tower have gone through a reliability test
- Who provided the reliability test and what the results were
- How long the company has been producing turbines, especially the specific model you are considering
- How many of the turbines have been sold and how many are still running
- How frequently the model has been redesigned
- Problems customers have encountered and how were they dealt with

HAZARD ASSESSMENT

Once you've made your turbine choice, conduct a hazard assessment before and after construction. The manufacturer should be able to help properly identify and mitigate potential risks. Remember that thoroughly assessing hazards in the planning stage is far less costly than dealing with issues after the structure is built.

SETBACKS

Confront safety, noise and aesthetics issues before beginning construction. When deciding on a location, consider local zoning issues and problems that may arise from neighboring businesses and residences. The proper setback distance from neighbors and structures will help eliminate future problems. Turbine height and location is usually evaluated on a case-by-case basis. While smaller turbines have an easier time with zoning authorities, towers can still be very tall in some circumstances.

EXTREME WIND SPEED

Extreme wind speeds during storms, especially hurricanes and tornados, can damage the wind turbine system and may affect other property. Vulnerable points will vary with each turbine design. The manufacturer should provide the exact procedures to follow to minimize damage potential.

When planning for the construction of the turbines, consider the frequency and severity of storms in your proposed turbine location. During storms, restrict access to the towers and make sure that procedures are in place for handling high-wind events.

ICE SHEDDING

Ice can accumulate on the blades and tower during extreme weather conditions and cause the system to shut down and the electronic sensors to freeze. If the system does not shut down, ice can break off of the blades and be thrown considerable distances.

To date, no injuries have been reported from thrown ice, but manufacturers recognize it as a danger. Blade design and special blade coatings are being developed to lessen the possibility of ice shedding.

Many manufacturers recommend establishing a safety zone around the turbine. You may also want to consider modifying turbine operation during ice storms.

BREAKING TURBINE BLADES

Thanks to improvements in materials, testing and design, turbine blades rarely break. Blade failure is still a possibility, due to extreme natural events (such as lightning) or to improper manufacturing, installation or maintenance. Proper site placement is important to reduce the likelihood of damage in the rare occurrence of blade breakage. Discuss site location with the manufacturer to determine a safe distance from other property.

ELECTRICAL FIRE

Wind turbines can catch fire, but this too is rare. Fires are typically allowed to burn themselves out because proper site placement creates a safe distance from other property. Involve the local authorities in the discussion of possible fire hazards.

TOWER COLLAPSE

Any structure can collapse. While infrequent, wind tower collapses have happened. Full or partial collapse can be caused by blade strikes, rotor overspeed, severe wind storms, and poor or improper maintenance. Small wind towers range as high as 140 feet, so site planning is crucial to minimize possible property damage. Routine maintenance and inspections by the manufacturer and/or dealer are important. After major wind storms, the entire structure should be inspected for possible damage.

VANDALISM

Because wind turbines seem to attract more attention than other structures, it is vital to assess nearby vandalism and trespassing risks. Access to the tower ladders should be controlled at all times. Consider fencing around the structure with locked gates to restrict access to the towers. Post warning signs and emergency numbers at the site.

EMERGENCY RESPONSE

In planning an emergency response, discuss with all emergency responders the types of risks they may face and recommended safe practices for all typical emergency scenarios. First responders need to be aware of the electrical and structural issues they will be dealing with. The manufacturer should be able to assist personnel with these procedures.

RESOURCES

American Wind Energy Association

<http://www.awea.org/>

United States Department of Energy

<http://www.energy.gov/>

Small Wind Certification Council

<http://www.smallwindcertification.org/>

Willis Utilities Practice Wind Power Brochure

http://www.willis.com/Client_Solutions/Industries/Utilities/Publications/

CONTACTS

For additional information, please contact:

Bob Lombard

Regional Director

775 323 1656, ext. 19

lombard_bj@willis.com

David F. Brawner

Senior Risk Control Consultant

615 872 3536

dave.brawner@willis.com

The observations, comments and suggestions in this report are advisory and are not intended nor should they be taken as legal advice. Please contact your own legal adviser for an analysis of your specific facts and circumstances.

