

Distributed Wind Energy Association

Distributed Wind Model Zoning Ordinance

Permitted Use Regulation for Distributed Wind Turbines

Section 1 Purpose

It is the purpose of this regulation to promote the safe, effective and efficient use of Distributed Wind Energy Systems that are installed to reduce the on-site consumption of utility-supplied electricity.

Section 2 Findings

The [city, town or county] recognizes the common good of distributed wind systems and finds that wind energy is an abundant, renewable, and nonpolluting energy resource. Its conversion to electricity will reduce our dependence on nonrenewable energy resources, encourage stewardship and conservation of our non-renewable energy resources for future generations and decrease the air and water pollution that results from the use of conventional energy sources. Distributed wind energy systems enhance the reliability and power quality of the electrical grid, reduce peak power demands, and help diversify the State's energy supply portfolio. Distributed wind systems also make the electricity supply market more competitive by promoting customer choice, as well as fostering economic stability through job creation which encourages the growth of local, small businesses.

The State of _____ has enacted a number of laws and programs to encourage the use of distributed renewable energy systems including rebates, net metering, property tax exemptions, feed-in-tariffs, and solar easements [as appropriate]. However, many existing zoning ordinances contain restrictions that do not adequately address the installation of distributed wind turbines and substantially increase the time and costs required to obtain necessary zoning and/or construction permits.

Therefore, we find it necessary to standardize and streamline the proper issuance of zoning and building permits for Distributed Wind Energy Systems so that this clean, renewable energy resource can be utilized in a cost-effective, responsible and timely manner.

Section 3 Definitions

- 3.1 Wind Energy System: A wind energy conversion system consisting of a wind turbine, tower and associated control or conversion electronics.
- 3.2 Distributed Wind Energy System: A Wind Energy System serving a local electric load.
- 3.3 Distributed Wind Energy System Up to and Including 100 kW: A Distributed Wind Energy System which has a Rated Power Output of 100 kW or less.
- 3.4 Distributed Wind Energy System Larger than 100 kW: A Distributed Wind Energy System which has a Rated Power Output greater than 100 kW.

NOTE: The above definitions are for the specific purpose of creating useful definitions in this Model Zoning Ordinance. Industry consensus is that all projects are simply defined as Distributed Wind.

- 3.5 Total System Height: The height above grade of the fixed portion of the Tower, plus the wind turbine and extending to the uppermost reach of the rotor.
- 3.6 Rated Power Output: The power output of a Distributed Wind Energy System at a constant Hub Height wind speed of 11 m/s (25 mph).

- 3.7 Tower: A guyed or freestanding structure, anchors and foundation that is specifically engineered to support a wind turbine.
- 3.8 Hub Height: For horizontal axis wind turbines, Hub Height is the height of the center of the wind turbine rotor above the terrain surface. For vertical axis wind turbines, the Hub Height is the height of the horizontal centerline of the rotor above the terrain.
- 3.9 Obstruction: Anything that interferes with the laminar (straight, smooth) flow of wind, causing a level of turbulence that could interfere with the proper function and/or productivity of a wind turbine.
- 3.10 Swept Area: projected area perpendicular to the wind direction that a rotor will describe during one complete rotation.

Section 4 Permitted Use and Administrative Reviews

- 4.1 Distributed Wind Energy Systems Up to and Including 100 kW shall be a permitted use in all zoning classifications where structures of any sort are allowed.
- 4.2 Distributed Wind Energy Systems Larger than 100 kW shall be a permitted use in non-residential zoning classifications and will be subject to a standardized administrative review [if already in use by the zoning authority, or else Conditional Use Permit review] and approval by the authority having jurisdiction.
- 4.3 All Distributed Wind Energy Systems are subject to certain requirements as set forth below.
 - 4.3.1 System Height: Wind turbine systems shall be allowed to be tall enough to facilitate proper function. Specifically, they shall adhere to the industry standard that the entire wind turbine should be at least 30' above both (a) any Obstruction within a 500' radius, and (b) the surrounding tree height.
 - 4.3.2 Minimum System Height: In no case shall the Hub Height be less than 60'. In cases where the manufacturer's minimum Hub Height recommendation is higher than 60', that recommendation shall be used as the minimum allowable Hub Height.
 - 4.3.3 Maximum System Height: There is no limitation on system height, except as imposed by FAA regulations and the required setbacks.
 - 4.3.4 Building-Mounted Systems: Wind turbines mounted on buildings are required to follow the industry standard that the entire wind turbine should be 30' above all Obstructions within a 500' radius of the turbine, including the structure to which it is mounted, and the surrounding tree height.
- 4.4 Setback: Local building and zoning ordinances for structures shall be followed with the express provision that that no part of the wind system structure, including guy wire anchors or any other appurtenance may extend closer than ten (10) feet to any property boundary line. No setback requirement from a property line shall exceed the Total System Height as measured to the center of the base of the Tower.
 - 4.4.1 Neighboring inhabited dwelling: A Distributed Wind Energy System shall be located at least the Total System Height from any existing neighboring inhabited dwelling.
 - 4.4.2 Neighboring property line: Distributed Wind Energy Systems shall follow all setbacks, unless written permission is obtained from the existing owner of the affected adjoining property at the time of application.

- 4.4.3 Overhead power lines and other setbacks: Wind turbines shall follow existing ordinances for structures in regard to setback from overhead utility lines, roads, easements public buildings and other utilities, provided the setback requirement shall not exceed the Total System Height.
- 4.4.4 Multiple wind turbines: Applications for multiple wind turbines on a single property shall follow manufacturer or installer recommendations regarding minimum separation between turbines.
- 4.5 Access: To prevent unauthorized climbing, climbing pegs shall be removed from the lower ten (10) feet of the Tower, or ladder access shall be restricted. Fences shall not be required as they deny critical access to the Tower base.
- 4.6 Signage: A “Danger, High Voltage” sign shall be installed where it is clearly visible by persons standing near the tower base.
- 4.7 Sound: During normal operation, Distributed Wind Energy Systems shall not exceed (a) the sound levels allowed in existing zoning ordinances for the township or municipality; or if no clause exists, (b) five (5) dBA over ambient sound as measured at the closest neighboring inhabited dwelling that exists or is permitted for construction at the time of permit application for the wind energy system. This sound level may be exceeded during short-term events, such as utility outages and storms. Complainant shall bear the burden of proof until and unless the wind turbine system has been proven to be out of compliance with the ordinance.
- 4.8 Turbine Standards
 - 4.8.1 Distributed wind turbines with a rotor Swept Area of up to 200m² shall be certified to the most current version of AWEA 9.1 Small Wind Turbine Performance and Safety Standard by the Small Wind Certification Council or an accredited certification agency. Applications for provisionally certified or non-certified turbines with Swept Areas up to 200m² may be considered on a case-by-case basis, but shall, in all cases, include a description of the safety features, a power curve complying with IEC 61400-12-1 or AWEA 9.1. and an acoustic test report complying with IEC61400-11 or AWEA 9.1.
 - 4.8.2 Distributed wind turbines with rotor Swept Areas greater than 200m² shall comply with the following:
 - 4.8.2.1 Carry up-to-date certifications to IEC 61400-12 (2005 or future versions) and IEC 61400-11 (2006 or future versions), by an accredited certification agency; and
 - 4.8.2.2 Either (4.8.2.2.1) or (4.8.2.2.2) below:
 - 4.8.2.2.1 Carry an up-to-date Design Evaluation certification to IEC 61400-1 (2005 or future version), by an accredited certification agency,
 - 4.8.2.2.2 Evidence of extensive operational history (all of the requirements below)
 1. At least 500,000 hours of fleet operation
 2. At least 25 operating wind turbines

3. At least 2 years of operation from 5 wind turbines

- 4.9 Compliance with Building Codes: Permit applications for Distributed Wind Energy Systems shall comply with all applicable state and local building codes.
- 4.9.1 Tower and foundation drawings provided by the manufacturer or the project developer shall be submitted with the application. Independent engineering review and wet-stamped drawings shall not be required for Distributed Wind Energy System Up to and Including 100 kW, but may be required for all other Distributed Wind Energy Systems.
- 4.9.2 Applications for roof-mounted (or other non-traditionally mounted) turbines shall include a wet-stamped structural engineering analysis for the turbine mounting system and for the suitability of the building to which the turbine is to be mounted.
- 4.10 Compliance with FAA Regulations: Distributed Wind Energy Systems must comply with applicable FAA regulations, including any necessary approvals for installations close to airports.
- 4.11 Compliance with National Electrical Code (NEC): The installation of a Distributed Wind Energy System shall comply with section 694 (or the most-current applicable section, if updated) of the NEC. Applications must be accompanied by a single-line drawing of the electrical components in sufficient detail to allow for a determination that the manner of installation conforms to the NEC. Wet-stamped drawings shall not be required for Distributed Wind Energy System Up to and Including 100 kW.
- 4.12 Utility Notification: No grid-tied Distributed Wind Energy System shall be installed until evidence has been submitted that the applicant's utility company has been informed of the customer's intent to install an interconnected customer-owned generator.
- 4.13 Antennas: Wind turbine Towers installed under this ordinance may also be used to host antennas, so long as the structure is shown to meet the state and local structural code requirements.
- 4.14 Fee: The building permit fee for a Distributed Wind Energy System shall follow the existing fee structure for permits required of other structures in the appropriate district. In the absence of such fee structure, the permit fee for a Distributed Wind Energy System shall not exceed \$20 per kW of Rated Power Output or a maximum of \$1500. Additional charges for inspections shall apply at the standard rate used for other structures.
- 4.15 Decommissioning: A Distributed Wind Energy System that has reached the end of its useful life shall be removed within 6 months of such determination. A Distributed Wind Energy System is considered to have reached the end of its useful life when it has been inoperable for 12 consecutive months. Time extensions are allowed when good faith efforts to repair the turbine can be demonstrated. Foundations need not be removed.