

ARTICLE 19

WIND TURBINES

SECTION 19.1 PURPOSE AND SCOPE - This article establishes general guidelines for the siting and use of wind turbine generators, anemometers and related devices and structures. This article is intended to:

- A. Protect residential areas from any potentially adverse visual or noise impacts of wind turbine generators or related devices and structures.
- B. Provide for a land use that will provide an energy source with low associated environmental impacts
- C. Provide for the removal of abandoned or noncompliant wind turbine generator towers, anemometer towers, or related devices and structures.
- D. Protect, to the extent possible, the view corridors along M-22, a state designated Heritage Route.
- E. Allow restricted use of wind turbine generator towers and anemometers of limited height.

SECTION 19.2 DEFINITIONS RELATED TO WIND TURBINE GENERATORS (See also Article 2).

- A. **Anemometer:** An instrument for measuring and recording the speed of the wind.
- B. **Anemometer Tower:** A structure, including all accessory facilities, temporarily erected for no more than two (2) years, on which an anemometer is mounted for the purposes of documenting whether a site has wind resources sufficient for the operation of a wind turbine generator.
- C. **Wind Turbine Generator:** A tower, pylon, or other structure, including all accessory facilities, upon which any, all, or some combination of the following are mounted:
 1. A wind vane, blade, or series of wind vanes or blades, or other devices mounted on a rotor for the purpose of converting wind kinetic energy into electrical energy.
 2. A shaft, gear, belt, or coupling device used to connect the rotor to a generator, alternator, or other electrical or mechanical energy-producing device.
 3. A generator, alternator, or other device used to convert the mechanical energy transferred by the rotation of the rotor into electrical energy.
- D. **Wind Turbine Generator Height:** The distance between the ground and the highest point of the wind turbine generator tower including blades.

SECTION 19.3 APPLICABILITY

- A. Wind turbine generator towers and anemometer towers under 75 feet in height shall be a permitted land use in Government, Agricultural and Residential Conservation zoning districts and not subject to the standards of Section 19.4, but subject to Article 11, Site Plan Review.
- B. Wind turbine generator towers and anemometer towers 75 feet in height and over shall only be permitted after special land use approval in accordance with Article 12, Special Land Uses, exclusively in the Agricultural and Residential Conservation zoning districts and shall be subject to all standards and the requirements of Sections 19.4 and 19.5.

SECTION 19.4 GENERAL REQUIREMENTS

- A. **Minimum Site Area.** The minimum site area for a wind turbine generator or an anemometer tower erected prior to a wind turbine generator shall be as necessary to meet required setbacks and any other standards of this ordinance.

- B. Setbacks.** Each proposed wind turbine generator or anemometer tower shall meet the following applicable setback requirements:
1. Each wind turbine generator or anemometer tower and any associated features (including guy wires) shall be set back from any adjoining lot line or road right-of-way line a minimum distance of 500 feet.
 2. A wind turbine generator tower or anemometer tower and any associated features (including guy wires) shall be setback from the right-of-way line for M-22 a minimum distance of 1,200 feet.
 3. Adjacent wind turbines must be at least ½ mile apart from each other.
- C. Maximum Height.** The maximum wind turbine generator height or the height of an anemometer tower erected prior to the wind turbine generator shall be 199 feet.
- D. Minimum Rotor Wind Vane or Blade Clearance.** The lowest point of the arc created by rotating wind vanes or blades on a wind turbine generator shall be no less than 25 feet or 1/3 of the tower height whichever is greater.
- E. Maximum Noise Levels.** Any proposed wind turbine generator shall produce sound levels that are no more than 50 decibels as measured on the dB(A) scale at the property lines of the site in question. A noise report shall be submitted with any application for an anemometer tower or wind turbine generator tower. A noise report shall be prepared by a qualified professional and shall include the following, at a minimum:
1. A description and map of the project's noise producing features, including the range of noise levels expected, and the basis of the expectation;
 2. A survey and report prepared by a qualified engineer that analyzes the pre-existing ambient noise (including seasonal variation) and the potentially affected residences, schools, public buildings or other noise sensitive land uses located within 2 miles of the proposed project site.
 3. A description and map of the cumulative noise impacts and any problem areas identified.
 4. A description of the project's proposed noise control features and specific measures proposed to mitigate noise impacts for sensitive land uses.
- F. Maximum Vibrations.** Any proposed wind turbine generator shall not produce vibrations humanly perceptible beyond the property on which it is located.
- G. Transmission Lines.** Any on-site electrical transmission lines connecting the wind turbine generator to the public utility electricity distribution system shall be located underground.
- H. Interference with Reception.** Any wind turbine generators shall be constructed and operated so that they do not interfere with television, microwave, navigational or radio reception to neighboring areas.
- I. State or Federal Requirements.** Any proposed wind turbine generator or anemometer tower shall meet or exceed any standards and regulations of the FAA, the Michigan Public Service Commission, National Electric Safety Code, and any other agency of the state or federal government with the authority to regulate wind turbine generators or other tall structures in effect at the time the special use permit is approved.
- J. Soil Conditions.** A proposal for any wind turbine generator or anemometer tower shall be accompanied by a report of the soils present on the site based on soil borings, and a description of the proposed foundation size, materials, and depth. Such foundation shall be installed below plow depth to allow for feasible future reuse of the land unless the applicant provides a financial assurance that the foundation will be removed in the event that the tower is removed.
- K. Aesthetics and Lighting.** Any proposed wind turbine generator or anemometer tower shall meet the following requirements:
1. Each wind turbine generator or anemometer tower shall either maintain a galvanized steel finish or, subject to any applicable standards of the FAA, be painted a neutral color so as to reduce visual obtrusiveness.

2. Each wind turbine generator, including all accessory structures, or anemometer tower shall, to the extent possible, use materials, and colors that will blend them into the natural setting and surrounding buildings.
3. Each wind turbine generator or anemometer tower shall not be artificially lighted,
4. Each wind turbine generator tower may be a monopole, monotube or lattice style construction and shall not include guy wires. This provision shall not apply to anemometer towers.

L. Signs. A sign no more than 4 square feet in area displaying an address and telephone number for emergency calls and informational inquiries shall be posted at the wind turbine generator or anemometer tower erected prior to a wind turbine generator. No wind turbine generator tower or anemometer tower or site shall include an advertising sign.

M. Not Essential Services. Wind turbine generators and anemometers shall be regulated and permitted pursuant to this Article of the Zoning Ordinance and shall not be regulated or permitted as essential services, public utilities, or private utilities.

N. Removal of Abandoned or Unsafe Wind Turbine Generators or Anemometer Towers

1. Any wind turbine generator or anemometer tower that is not operated for a continuous period of 12 months shall be considered abandoned.
2. Any tower found to be unsafe or not in compliance with the special land use conditions related to noise or shadow flicker placed upon it by the Planning Commission, shall be found to be in violation of the special land use permit.
3. The owner of any wind turbine generator tower or anemometer tower that is abandoned or in violation of the special land use permit shall remove the same within 90 days of receipt of notice from the Township of such abandonment or violation.
4. In addition to removing the wind turbine generator, or anemometer tower, the owner shall restore the site to its condition prior to location of the wind turbine generator or anemometer tower (excluding replanting of original vegetation and trees), subject to reasonable wear and tear and shall stabilize soils through use of ground cover.
5. Failure to remove an abandoned wind turbine generator or anemometer tower within the 90 day period provided in this subsection shall be grounds for the Township to remove the wind turbine generator or anemometer tower at the owner's expense.
6. The Planning Commission shall require the applicant to file a bond equal to the reasonable cost of removing the wind turbine generator or anemometer tower and attendant accessory structures as a condition of a special use permit given pursuant to this section.

SECTION 19.5 SPECIAL LAND USE APPROVAL REQUIRED

- A. Unless exempted under Section 19.3, all wind turbine generator and anemometer towers shall be subject to special land use approval and all requirements for special land uses in Article 12, Special Land Uses and by reference, all site plan review requirements of Article 11, Site Plan Review.
- B. Standards of Approval: In addition to the general standards of approval for special land uses under Section 11.4 and Section 11.6, all special land uses regulated under this Article shall comply with the following standards of approval:
 1. The use shall meet all general requirements listed above in Section 19.4.
 2. A performance bond is placed in conformance with 19.4.N.6, above, to ensure removal of any abandoned or dangerous wind turbine generator tower.
 3. As specified in Section 19.4.E a Noise Report is submitted including satisfactory mitigation measures to assure that no nearby residential uses will be subjected to unreasonable noise impacts.