

PROPOSED WIND POWERED GENERATOR AMENDMENT
TO THE GOLDEN TOWNSHIP ZONING ORDINANCE

6-01-06

Section XIII-B
Wind Powered Generator Systems
ORDINANCE #42

13B.1 Purpose

The township has received and expects to receive requests to place Wind Powered Generator systems both private and commercial within the township. These standards are intended to achieve a balance between 1) the public need for clean renewable energy, 2) practical latitude for specific uses of land by the land owner, 3) farm land preservation and 4) protecting the public health, safety, and general welfare.

13B.2 Definitions

- a. Ambient: The sound pressure level exceeded 90% of the time or L90.
- b. ANSI: American National Standards Institute.
- c. Bonds: Bonds must be provided from the State of Michigan Treasury Department's list of acceptable bond companies and approved by the affected agencies.
- d. Commercial Wind Powered Generator (CWPG) systems: A wind powered generator system designed and built to provide electricity to the electric utility grid.
- e. dB(A) : Sound pressure level in decibels. Refers to the "a" weighted scale defined by ANSI. A method for weighting the frequency spectrum to mimic the human ear.
- f. Decibel: The unit of measure to express the magnitude of sound pressure and sound intensity.
- g. IEC: International Electrotechnical Commission. A global organization that prepares and publishes international standards for all electrical, electronic, and related technologies.
- h. ISO: International Organization for Standardization. A network of the national standards institutes of 156 countries.
- i. MET Tower: A freestanding tower containing anemometer instrumentation to provide wind and meteorological information.
- j. Options: The use of lower noise equipment and greater minimum setbacks where the Planning Commission deems it feasible and in the best interest of the township.
- k. Private Wind Powered Generator (PWPG) system: An on site privately owned wind powered generator system designed and built to provide electricity primarily to the land owner.
- l. Rotor: An element of the wind generator that acts as a multi-bladed airfoil assembly, thereby extracting through rotation, kinetic energy directly from the wind.

- m. SCADA Tower: A freestanding tower containing instrumentation such as anemometers that provides present moment wind data for use by Supervisory Control and Data Acquisition (SCADA) system.
- n. Shadow Flicker: Alternating changes in light intensity caused by the moving blade of a wind generating system casting shadows on the ground and stationary objects.
- o. Sound Pressure: Average rate at which sound energy is transmitted through a unit area in a specific direction. The pressure of the sound measured at a receiver.
- p. Sound Pressure Level: The sound pressure mapped to a logarithmic scale and reported in decibels (dB).
- q. Wind Powered Generator (WPG) system: A system that converts wind energy into electricity through the use of a wind turbine generator and include the turbine, blades, and tower as well as related electrical equipment. This does not include the wiring to connect to the grid.
- r. Wind Site Assessment: An assessment to determine the wind speeds at a specific site and the feasibility if using that site for construction of a wind powered generator system.

13B.3 Private Wind Powered Generator (PWPG) systems: PWPG systems shall be considered a Special Use in all zoning districts. Prior to installation of a PWPG system, an application for Special Use Permit and site plan shall be filed in accordance with Sections 12 & 13 hereof and will include documentation that sound pressure level, construction code, and safety requirements have been met, proof of applicant's public liability insurance, and exception consent documents properly registered with the Oceana County Register of Deeds.

- 1. Property Set-Back: The distance between a PWPG system and the owner's property line or nearby occupied dwellings shall be a minimum of 1.5 times the height of the tower including the top of the blade in the vertical position. Exceptions for neighboring property are allowed with the written consent of those property owners.
- 2. Sound Pressure Levels: PWPG systems shall not exceed 55dB (A) at the property line closest to the system or nearby occupied dwellings. This sound pressure level may be exceeded during short-term events such as utility shortages and/or severe wind storms. If the ambient sound pressure level exceeds 55dB (A), the standard shall be ambient dB(A) plus 5dB(A). Exceptions for neighboring property are allowed with the written consent of those property owners.
- 3. Construction Codes, Towers, & Interconnection Standards: PWPG systems shall comply with all state construction and electrical codes and local building permit requirements. PWPG systems shall comply with Federal Aviation Administration requirements, the Michigan Tall Structures Act (Public act 259 of 1959, MCL 259.481 et seq.). Interconnected PWPG systems shall comply with Michigan Public Service Commission and Federal Regulatory Commission standards. Off grid systems are exempt from this requirement.
- 4. Safety: PWPG systems shall have automatic braking, governing and a feathering system to prevent uncontrolled rotation and over speeding. All wind towers shall have lightning protection. If supported by guy wires, the wires shall clearly visible to a height of at least six feet above the guy wire anchors. The minimum vertical

blade tip clearance from grade shall be 20 feet for any system using a horizontal axis rotor.

13B.4 Wind Site Assessment and Monitoring for Private and

Commercial WPG Systems: Installation of MET towers for assessment of a PWPG system or CWPG system site shall require an application for Site Plan and Special Use Permit in accordance with Section 12 & 13 hereof. The application shall include a copy of the applicant's lease with the land owner granting authority to install the MET tower and requiring the applicant to remove all equipment and restore the site after completion of the assessment and proof of the applicant's public liability insurance. The set-back from non-leased property shall be 1.5 times the height of the tower. Guy wires shall be no closer than 10 feet from non-leased property lines and adequately marked or fenced. Leased property can contain more than one parcel and the requirement shall apply to the combined properties.

Prior to installation of an anemometer 60 feet or higher, an application for Site Plan and Special Use Permit shall be filed in accordance with Sections 12 & 13 hereof and will include a copy of the applicant's lease with the land owner granting authority to install the MET tower and requiring the applicant to remove all equipment and restore the site after completion of the wind assessment, and proof of the applicants public liability insurance.

SCADA and MET towers shall also comply with the property set-back requirements. The set-back shall be 1.5 times the height of the SCADA and MET tower. An operations and maintenance office building, substation, or ancillary equipment shall comply with any property set-back requirement that may be applicable to that type of building. Exceptions for neighboring property or public rights of way are allowed with written consent of those property owners, provided that the lease lasts the useful life of the tower.

13B.5 Commercial Wind Powered Generator (CWPG) systems: CWPG systems shall be a Special Use in the Agriculture Residential Zone and require a Site Plan and Special Use Permit application, signed by the property owner and developer, in accordance with Sections 12 & 13 hereof. The application shall also include the following:

1. Insurance: Proof of the applicants' public liability insurance.
2. Lease Documents: Proof of lease of the property.
3. Consent Documents: Copies of any written waivers granted by neighboring property owners properly registered with the Oceana County Register of Deeds.
4. Sound Pressure Level: Copy of modeling and analysis report.
5. Certifications: Certification that the applicant has complied with all applicable state and federal laws and regulations.
6. Visual Impact: Visual simulation of how the completed project will look from four viewable angles.
7. Environmental Impact: Copy of the Environmental Impact analysis.
8. Avian and Wildlife Impact: Copy of the Avian and Wildlife Impact analysis.
9. Power Line Location: Location of buried on-site and off-site buried and overhead power distribution lines to the township line.

10. Shadow Flicker: Copy of the shadow flicker analysis and steps for mitigation.
11. Manufacturers' Material Safety Data: Documentation shall include the type and quantity of all materials used in the operation of all equipment, including but not limited to, all lubricants and coolants, operation of braking systems, and ice control.
12. Road Maintenance: Plan to protect and maintain all roads used during construction, repair, and replacement, and a bond in an amount agreeable to the Golden Township Board and the Oceana County Road Commission for maintenance and repair of such roads.
13. Decommissioning: A plan for decommissioning and a bond to cover the estimated cost of removal and restoration of the site in the event of abandonment.
14. Compliant Resolution: Description of the compliant resolution process.

CWPG system projects shall meet the following standards and requirements:

1. Property Set-Backs: The distance between a CWPG system and the property lines of adjacent non-leased properties including rights of way shall be a minimum of 1.5 times the height of the tower including the top of the blade in its vertical position. Where property is leased on both sides of a private right of way a tower may be placed no closer than one rotor radius from the closest edge of the private right of way. Leased property may include more than one piece of property and the requirement shall apply to the combined properties. Setback shall apply to occupied dwellings. There is no set-back on lot lines of adjacent leased properties. Exceptions for neighboring property are allowed with the written consent of those property owners.
2. Sound Pressure Level: The sound pressure level of a CWPG system shall not exceed 55dB(A) measured at the property lines nearest the CWPG system between leased and non-leased properties. This sound pressure level shall not be exceeded for more than 3 minutes in any hour of the day. If the ambient sound pressure level exceeds 55dB(A), the standard shall be ambient dB(A) plus 5 dB(A). Exceptions to this requirement are allowed with the written consent of property owners. As part of the application and prior to installation, the applicant shall provide modeling and analysis that will confirm that the CWPG system will not exceed the maximum permitted sound pressure levels. Modeling and analysis shall conform to IEC 61400 and ISO 9613. After installation of the CWPG system, sound pressure level measurements shall be done by a third party, qualified professional according to the procedures in the most current ANSI S12.18. All sound pressure levels shall be measured with a sound meter that meets or exceeds the most current version of ANSI S1.4 specifications for a type II sound meter. Documentation of the sound pressure levels shall be provided to the planning commission and township board within 60 days of the operation of the project. Sound pressure level readings may be required by the planning commission or township board for compliant resolution.
3. Construction Codes, Towers, and Interconnection Standards: CWPG systems shall comply with all applicable state construction and electrical codes and local building permit requirements. Systems shall comply with FAA requirements and Michigan Tall Structures Act (P.A. 259 of 1959, MCL 259.481 et seq.) The

minimum FAA lighting standards shall not be exceeded; lighting must be shielded to the extent possible to reduce glare and visibility from the ground. CWPG systems shall comply with applicable utility, Michigan Public Service Commission, and Federal Energy Regulatory Commission interconnection standards.

4. Safety: All CWPG systems shall be designed to prevent unauthorized access to electrical and mechanical components and shall have access doors that are securely locked at all times when service personnel are not present. All spent lubricants and cooling fluids shall be properly and safely removed in a timely manner from the site. Emergency contact information shall be kept current with the zoning administrator. A minimum 4sq.ft. sign, shall be placed at the road entrance to warn visitors of the potential danger and will contain emergency contact information. The minimum vertical blade clearance from grade shall be 50 feet for a system using a horizontal axis rotor.
5. Visual Impact: All CWPG systems shall use tubular towers and blades which are finished in a single, non-reflective matte finished color. No lettering, company insignia, advertising, or graphics shall be on any part of the tower, hub, or blades. Nacelles may have the lettering that exhibits the manufacturers' and /or owners identification.
6. Electromagnetic Interference: CWPG systems shall not be installed in any location where its proximity to existing fixed broadcast, retransmission, or reception antennae for radio, television, or wireless communication systems would produce electromagnetic interference with signal transmission or reception unless the applicant provides a replacement signal to the affected party that will restore reception to at least the level present before that installation. No system shall be installed in any location within line of sight of an existing microwave communications link where the system's operation is likely to produce electromagnetic interference in the link's operation unless the interference is insignificant.
7. Environmental Impact: The applicant shall have a third party, qualified professional conduct an analysis to identify and assess any potential impacts on the natural environment including, but not limited to wetlands and other fragile ecosystems, historical and cultural sites, and antiquities. The applicant shall take appropriate measures to minimize, eliminate, or mitigate adverse impacts identified in the analysis. The applicant shall identify and evaluate the significance of any net effects or concerns that will remain after mitigation efforts. The applicant shall comply with applicable parts of Act 451 of 1994 including Part 31 Water Resources Protection, Part 91 Soil Erosion and Sedimentation Control, Part 301 Inland Lakes and Streams, Part 303 Wetlands, Part 323 Shoreland Protection and Management, and Part 353 Dunes Protection.
8. Avian and Wildlife Impact: The applicant shall have a third party, qualified professional conduct an analysis to identify and assess potential impacts on wildlife and endangered species. The applicant shall take appropriate measures to minimize, eliminate or mitigate adverse impacts identified in the analysis. The

applicant shall identify and evaluate the significance of any net effects or concerns that will remain after mitigation efforts. Sites requiring special scrutiny include bird refuges and other areas birds are highly concentrated, bat hibernacula, wooded ridge tops that attract wildlife, sites that are frequented by federally listed endangered species of birds and bats, significant bird migration pathways, and areas that have landscape features known to attract large numbers of raptors. The analysis shall indicate whether a post construction wildlife mortality study will be conducted and, if not, the reasons why a study does not need to be conducted. Power lines shall be placed underground, when feasible, to prevent avian collisions and electrocutions. All above ground lines, transformers, or conductors shall comply with Avian Power Line Interaction Committee (APLIC) published standards to prevent avian mortality.

9. Shadow Flicker: The applicant shall conduct an analysis on potential shadow flicker at occupied structures. The analysis shall identify locations of shadow flicker that may be caused by the project and the expected durations of the flicker at these locations from sun-rise to sun-set over the course of a year. The analysis shall identify problem areas where shadow flicker may affect the occupants of the structures and describe measures that shall be taken to eliminate or mitigate the problems.
10. Decommissioning: The applicant shall submit a decommissioning plan approved by the township. The plan shall include: 1) the anticipated life of the project, 2) estimated cost of decommissioning and salvage value in current dollars, 3) bonding to cover the cost of decommissioning, restoration, and maintenance and repair of roads, 4) anticipated manner in which the project will be decommissioned and the site restored.
11. Compliant Resolution: The applicant shall develop a process to resolve complaints from nearby residents concerning the construction or operation of the project. The process may use an independent mediator or arbitrator and shall include a time limit for acting on a complaint. The process shall not preclude the local government from acting on a complaint or violation of this ordinance. During construction and operation the applicant shall maintain and make available to nearby residents and the zoning administrator a telephone number where a project representative can be reached during normal business hours.