

CHAPTER XIV - E
WIND ENERGY CONVERSION SYSTEMS
(Amendment Ordinance No. 144, 2-14-2007)

SECTION 14E.01 PURPOSE. The purpose of this Chapter is to establish standards and procedures by which the installation and operation of a Wind Energy Conversion System ("WECS") shall be governed within the Township as a special use.

SECTION 14E.02 DEFINITIONS.

- (a) Applicant: The person who applies for Township approval under this Chapter as well as the Applicant's successor(s), assign(s) and/or transferee(s) of any approved WECS or Testing Facility. An Applicant must have the legal authority to represent and bind the landowner or lessee who will construct, own, and operate the WECS or Testing Facility. The duties and obligations regarding zoning approval for any approved WECS or Testing Facility shall be with the owner of the WECS or Testing Facility, and jointly and severally with the operator or lessee of the WECS or Testing Facility if different than the owner.
- (b) Interconnected WECS: A WECS which is electrically connected to the local electrical power utility system and could feed power back into the local electrical power utility system.
- (c) Testing Facility: A structure and the equipment used to determine the potential for the placement of a WECS.
- (d) WECS Height: The distance between the ground (at normal grade) and the highest point of the WECS, as measured from the ground (at normal grade) to the highest point of the WECS (i.e., the tip of the blade, when the blade is in the full vertical position).
- (e) Wind Energy Conversion System (WECS): A combination of:
 - 1. A surface area (typically a blade, rotor, or similar device), either variable or fixed, for utilizing the wind for electrical power; and
 - 2. A shaft, gearing, belt, or coupling utilized to convert the rotation of the surface area into a form suitable for driving a generator, alternator, or other electricity-producing device; and
 - 3. The generator, alternator, or other device to convert the mechanical energy of the surface area into electrical energy and overspeed control to limit the speed of blade revolution to below the design limits of the WECS; and

4. The tower, pylon, or other structure upon which any, all, or some combination of the above are mounted; and
5. Other components not listed above but associated with the normal construction, operation, and maintenance of a WECS.

SECTION 14E.03 APPLICABILITY.

- (a) WECSs and Testing Facilities: These structures may be allowed as a special use, subject to the regulations and requirements of this Chapter and the review procedures, standards and criteria of Chapter XVII of this Ordinance.
- (b) WECSs and Testing Facilities used for commercial purposes (i.e., "Commercial WECSs and Testing Facilities") shall be allowed only in the AG and I-1 Zoning Districts.
- (c) Commercial WECSs and Testing Facilities produce electrical energy which is primarily sold to consumers located beyond the lots where Commercial WECSs and Testing Facilities are located.
- (d) WECSs and Testing Facilities used for private purposes (i.e., "Private WECSs and Testing Facilities") shall be allowed in any zoning district.
- (e) Private WECSs and Testing Facilities produce electrical energy which is primarily consumed by uses on the lots where the Private WECSs or Testing Facilities are located.

SECTION 14E.04 SITE PLAN REQUIREMENTS. All applications for a WECS or Testing Facility special use approval shall be accompanied by a final site plan drawn to scale and displaying all of the following information.

- (a) All requirements for a final site plan contained in Chapter XV shall also be met.
- (b) All lot lines and dimensions, including a legal description, shall be provided.
- (c) Location and height of all proposed buildings, structures, electrical lines, towers, guy wires, guy wire anchors, security fencing, and other aboveground structures associated with the WECS or the Testing Facility shall be shown.
- (d) Location and height of all adjacent buildings, structures, and aboveground utilities and equipment located within three hundred (300) feet of the exterior boundaries of the lot where the proposed WECS or Testing Facility will be located shall be shown. Specific distances to other on-site buildings, structures, and utilities shall also be provided. The location of all existing and proposed overhead and underground electrical transmission or distribution lines, located on the lot involved as well as within one thousand (1,000) feet of the boundaries of the lot, shall be shown, whether to be utilized or not with the WECS

or Testing Facility. The Planning Commission may waive this requirement for Private WECSs or Testing Facilities.

- (e) Separation distances shall be shown for the WECS or Testing Facility from all other structures located on the lot where the WECS or Testing Facility will be located.
- (f) Elevation shall be shown on the lot on which the WECS or Testing Facility shall be located, accurately depicting the proposed WECS or Testing Facility location and its relationship to the elevation of all existing and proposed buildings and structures within three hundred (300) feet of the proposed WECS or Testing Facility. The Planning Commission may waive this requirement for Private WECSs or Testing Facilities.
- (g) The access driveway to the WECS and any Testing Facility shall be shown, together with a detailed narrative regarding dimensions, composition, and maintenance of the proposed driveway. The Planning Commission may waive this requirement for Private WECSs or Testing Facilities.
- (h) Planned security measures to prevent unauthorized trespass and access shall be described. The Planning Commission may waive this requirement for Private WECSs or Testing Facilities.
- (i) The Applicant shall provide to the Township a written description of the maintenance program to be used to maintain the WECS and any Testing Facility. The description shall include maintenance schedules, the types of maintenance to be performed, and removal procedures and schedules should the WECS or Testing Facility become obsolete or abandoned. The Planning Commission may waive this requirement for Private WECSs or Testing Facilities.
- (j) The Applicant shall provide such additional information as is reasonably required by the Planning Commission.

SECTION 14E.05 BUILDING CODE COMPLIANCE. The WECS and any Testing Facility shall be designed and installed in full compliance with the Uniform Building Code. A copy of the manufacturer's installation instructions and blueprints shall be provided to the Township for the WECS and any Testing Facility. Included as part of or as an attachment to the installation instructions shall be standard drawings of the structural components of the WECS and support structures, and any Testing Facility and support structures, including tower, base and foundations. Engineering data and calculations shall be provided to demonstrate compliance with the structural design provisions of the Uniform Building Code. Soil borings extended to a minimum depth of ten (10) feet below the base of the proposed foundations should be provided as the basis for foundation design. Drawings and engineering calculations shall be certified by a registered engineer licensed in the State of Michigan.

SECTION 14E.06 ELECTRICAL CODE COMPLIANCE. Electrical equipment and connections for the WECS and any Testing Facility shall be designed and installed in full

compliance with the applicable local, state and national electrical codes such as the American National Standards Institute (ANSI) and Underwriters Laboratory (UL) and relevant international standards. A copy of the manufacturer's installation instructions and blueprints shall be provided to the Township.

SECTION 14E.07 DESIGN STANDARDS.

- (a) WECS Height: The permitted maximum of the WECS Height for Commercial WECSs shall be three hundred (300) feet, including the blade in the vertical position. For Private WECSs, the maximum height shall be one hundred (100) feet.
 - 1. State and federal regulations may require a lesser maximum for WECS Height.
 - 2. The applicant shall submit the proposed WECS design to the Federal Aviation Administration ("FAA") for comments or required approval.
 - 3. As a condition of approval, the Township may require a lesser WECS Height if reasonably necessary to comply with the special use standards in this Chapter or in Chapter XVII of this Ordinance.
 - 4. A WECS shall be constructed with a tubular tower, not a lattice tower.
- (b) Testing Facility Height: The Testing Facility Height for Commercial Testing Facilities, measured from the ground (at normal grade) to the highest point of the Testing Facility (i.e., the tip of the blade, when the blade is in the full vertical position), shall be no greater than one hundred ten (110%) percent of the WECS Tower Height. For Private Testing Facilities, the maximum shall be one hundred ten (110%) percent of the WECS Tower Height.
- (c) Setbacks: No part of a WECS or a Testing Facility (including guy wire anchors) shall be located within or above any required front, side or rear yard setback. The setback for placement of a WECS or a Testing Facility shall be at least one hundred ten (110%) percent of the WECS Tower Height from each property line of the lot where the structure is located and at least one hundred ten (110%) percent of the WECS Tower Height feet from any public road right-of-way. Furthermore, no WECS or Testing Facility shall be located within one hundred ten (110%) percent of the WECS Tower Height feet of the high water mark of Lake Michigan.
- (d) Rotor or Blade Clearance: Blade arcs created by a WECS shall have a minimum of seventy-five (75) feet of clearance over and from any structure, building, adjoining property or tree. The minimum rotor or blade clearance above ground level shall be twenty (30) feet.

- (e) Rotor or Blade Safety: Each WECS shall be equipped with both a manual and automatic braking device capable of stopping the WECS operation in high winds within eighty (80%) percent of the design limits of the rotor.
- (f) Tower Access: To prevent unauthorized climbing, a WECS and a Testing Facility must comply with at least one (1) of the following provisions.
 - 1. Tower climbing apparatus shall not be located within twelve (12) feet of the ground.
 - 2. A locked anti-climb device shall be installed and maintained.
 - 3. A tower capable of being climbed shall be enclosed by a locked, protective fence at least ten (10) feet high.
- (g) Signs: Each WECS and Testing Facility shall have one (1) sign, not to exceed two (2) square feet in area, posted at the base of the tower. However, if the WECS or Testing Facility is fenced, the sign shall be placed on the fence. The sign shall contain at least the following information:
 - 1. High voltage warning;
 - 2. Manufacturer's name;
 - 3. Emergency numbers (list more than one [1] number);
 - 4. Emergency shutdown procedures; and
 - 5. Any sign regulated by the Federal Aviation Administration ("FAA") shall include a precise location description with latitude and longitude and shall also contain both the Applicant's current telephone number and the current telephone number for the FAA's regional office having jurisdiction over the Township.
- (h) Lighting: A lighting plan for each WECS and Testing Facility shall be subject to the approval of the Planning Commission as part of the special use approval procedure. The plan must describe all lighting that will be utilized, including any lighting that may be required by the FAA. The plan shall include but not be limited to the planned number and location of lights, light color and whether any lights will be flashing. Strobe lights and a strobe effect created by the rotating blades and lights are prohibited.
- (i) Electromagnetic Interference:
 - 1. Prior to the issuance of a building permit, the manufacturer shall provide sufficient data and documentation to establish that the installation will not cause electromagnetic interference to any property owner or resident.

2. The WECS installation shall comply with the regulations of the Federal Communications Commission, or any successor agency, currently located at 47 CFR 15.
3. Upon the complaint of any property owner or resident, an investigation shall be performed by an agent of the Township. The agent shall submit a report of the agent's findings to the Planning Commission for review and evaluation. A fee for the report shall be established by the Planning Commission. After review and evaluation of the report, the Planning Commission shall determine if the installation causes electromagnetic interference to any property owner or resident. The fee for the report shall be paid by the complainant, unless the Planning Commission determines that there is electromagnetic interference to a property owner or resident, in which case the owner of the WECS shall pay the fee.
4. If electromagnetic interference is caused by the installation of a WECS, the installation shall be deemed a public nuisance. The violation shall be corrected within ninety (90) days from the date of notification. If the electromagnetic interference cannot be remedied, the WECS shall be removed or relocated.

(j) Noise Control:

1. For a Commercial WECS or Testing Facility, a baseline noise emission study of the proposed site and the noise impact upon all areas within one (1) mile of the proposed WECS or Testing Facility location must be completed (at the Applicant's cost) prior to any placement of a WECS or a Testing Facility, and then submitted to the Township. At the time of a special use application the Applicant must also provide estimated noise levels at each property line for the lot where the WECS or Testing Facility is proposed to be located.

Prior to the issuance of a building permit, the WECS manufacturer shall provide sufficient data and documentation to establish that the WECS will not produce noise levels in excess of those stipulated in the following table.

Ambient Reading Without Windmill (decibels)	Maximum Permitted Reading with Windmill Operating (decibels)
45	55.4
50	56.2
55	61.0
60	61.2
65	65.4

2. Decibel level readings shall be measured at the closest property line to the WECS.
 3. After the WECS has been approved and installed, sound measurement shall be performed to determine ambient and operating decibel levels. The sound level shall be measured on a sound level meter using the A-weighting network.
 4. Upon the complaint of a property owner or resident, ambient and maximum permitted decibel measurements shall be performed by an agent designated by the Planning Commission. The agent shall submit recorded sound measurements to the Planning Commission for review and evaluation. A fee for the service shall be established by the Planning Commission. The fee shall be paid for by the complainant unless maximum permitted decibel readings have been exceeded, in which case the WECS owner shall pay the fee.
 5. If maximum readings are exceeded, the installation shall be considered a public nuisance. The violation shall be corrected within ninety (90) days from the date of notification. If the noise violation cannot be remedied, the WECS shall be removed or relocated.
- (k) Utility Company Interconnection (Interconnected WECS): All distribution lines from the Interconnected WECS to the electrical grid connection shall be located and maintained underground (both on the lot where the WECS will be located and off-site). The Planning Commission may waive the requirement that distribution lines for the Interconnected WECS which are located off-site be located and maintained underground if the Planning Commission determines that to install, place, or maintain such distribution lines underground would be impractical or unreasonably expensive.

SECTION 14E.08 APPROVAL STANDARDS. In addition to other requirements and standards contained in this Chapter, the Planning Commission shall not approve any WECS or Testing Facility unless it finds that all of the following standards are met:

- (a) The general special use standards in Section 17.03 of this Ordinance; and
- (b) The WECS and Testing Facility will not pose a safety hazard or unreasonable risk of harm to the occupants of any adjoining properties or area wildlife.

SECTION 14E.09 WATER PUMPING AND ORNAMENTAL WIND DEVICES. Water pumping and ornamental wind devices which are not WECSs shall be exempt from this Chapter, so long as they do not exceed the height limitations for permitted accessory structures (i.e., those permitted as of right) within the zoning district where they will be located. Such devices may also be regulated by other provisions of this Ordinance.

SECTION 14E.10 INSPECTIONS. The Township shall have the right upon issuing any WECS or Testing Facility special use permit to inspect the lot on which the WECS or Testing

Facility is located at all reasonable times. The Township may hire a consultant to assist with any such inspections at the Applicant's cost.

SECTION 14E.11 GOOD REPAIR AND CONDITION. Each WECS and Testing Facility must be kept and maintained in good repair and condition at all times. If a WECS or Testing Facility is not maintained in operational and reasonable condition or poses a potential safety hazard, the Applicant shall take expeditious action to correct the situation. The Applicant shall keep a maintenance log on each Commercial WECS and Testing Facility which the Township can review on a monthly basis (or a more frequent basis if circumstances warrant).

SECTION 14E.12 ABANDONMENT. Any WECS or Testing Facility which is not used for nine (9) successive months or longer shall be deemed to be abandoned and shall be promptly dismantled and removed from the lot. All above and below ground materials must be simultaneously removed. The ground must be restored to its original condition within sixty (60) days of abandonment. The Zoning Administrator may grant extensions to these deadlines if good cause is shown.

SECTION 14E.13 SECURITY. If a special use is approved pursuant to this Chapter, the Planning Commission may require security in the form of a cash deposit, surety bond, or irrevocable letter of credit (in a form, amount, time duration and with a financial institution deemed acceptable to the Township), which will be furnished by the Applicant to the Township in order to ensure full compliance with this Chapter and any conditions of approval. When determining the amount of the required security, the Township may also require an annual escalator or increase based on the Federal Consumer Price Index (or the equivalent or its successor). The financial guarantee shall be deposited or filed with the Township Clerk after a special use has been approved but before construction commences upon a WECS or Testing Facility. At a minimum, the financial security shall be in an amount determined by the Township to be sufficient to have the WECS or Testing Facility fully removed (and all components properly disposed of and the land returned to its original state) should the structure or structures become abandoned, dangerous or obsolete, or not in compliance with this Ordinance or the special use approval. The financial security shall be kept in full force and effect during the entire time while a WECS or Testing Facility exists or is in place. The financial security shall be irrevocable and non-cancelable (except by the written consent of both the Township and the then-owner of the WECS or Testing Facility). Failure to keep such financial security in full force and effect at all times while a WECS or Testing Facility exists or is in place shall constitute a material and significant violation of a special use approval and this Ordinance, and will subject the Applicant to all available remedies for the Township, including possible enforcement action and revocation of the special use approval.

SECTION 14E.14 ROAD REPAIR. Any damages to a public road located within the Township resulting from the construction, maintenance, or operation of a WECS or Testing Facility shall be repaired at the Applicant's expense.

SECTION 14E.15 LIABILITY. The Applicant shall insure each Commercial WECS and Testing Facility at all times for at least \$2,000,000.00 for liability to cover the Applicant,

Township and landowner. The Township shall be specifically named as an additional insured and may not be removed without its prior written notice and consent. Removal of the Township as an additional insured without its notice and consent shall constitute a breach of the special use approval conditions.

SECTION 14E.16 COLOR. Each WECS and Testing Facility shall be painted a non-obtrusive (e.g., white, beige or gray) color that is non-reflective. No striping of color or advertisement shall be visible on the blades or tower.

SECTION 14E.17 VIBRATIONS OR WIND CURRENT. Under no circumstances shall a WECS or a Testing Facility produce vibrations or wind currents humanly perceptible beyond the property boundaries of the lot on which the WECS or Testing Facility is located.

SECTION 14E.18 ENVIRONMENTAL ASSESSMENT OR IMPACT. At the Township's request, the Applicant for a WECS which exceeds two hundred (200) feet in height shall fund an environmental assessment or impact study and/or other relevant reports or studies (including, but not limited to, assessing the potential impact on endangered species, eagles, birds, or other wildlife) as required by the Township for review by the Township regarding the area or surrounding areas where the WECS will be located.

