SHIAWASSEE COUNTY ZONING ORDINANCE
ARTICLE 4
SPECIFIC USE REGULATIONS
RECOMMENDED AMENDMENTS TO SECTION 4.3.76
APRIL 20, 2018 DRAFT

Section 4.3.76 Wind Energy Conversion Systems ("WECS")

1. Purpose

   A. The provisions herein are set forth to establish regulations for the siting, design, installation and operation of wind energy conversion systems and testing facilities as a land use in Shiawassee County ("County") and to protect the general public health, safety, and welfare in the development, implementation and operation of the land use in the County.

2. Definitions

   A. Abandoned shall mean any WECS or WECS Testing Facility that is not operated or is found to be inoperable due to lack of repair, sustained damage or other cause for a continuous period of ninety (90) days.

   B. Ambient Sound Level shall mean the decibel measurement or dB(A) of background sound pressure level exceeded 90% of the time or L90 at a given location prior to the installation of a WECS.

   C. Decibel shall mean the unit of measurement used to express magnitude of sound pressure and sound intensity.

   D. dB(A) shall mean the sound pressure level in decibels in the "A" weighted scale defined by ANSI. A method for weighting the frequency spectrum to mimic the human ear.

   E. Height is defined as the vertical distance measured from the ground level at the base of the tower to the uppermost vertical extension of any blade, or the maximum height reached by any part of the WECS, whichever is greater.

   F. Hub Height shall mean the vertical distance measured from ground level to the center of the turbine hub.

   G. LAMax shall mean the maximum sound level at an instant in time.

   H. Manual and Automatic Controls are mechanical measures to limit rotation of WECS blades so as not to exceed the designed limits of the conversion system.

   I. Professional Engineer shall mean an engineer licensed in the State of Michigan.

   J. Participating and Non-Participating Parcels:

      1. Participating Parcel shall mean a parcel of record that is to be used, occupied, maintained, let, leased or authorized to be used for any purposes of developing a WECS, including construction of improvements, providing access to improvements, or to meet requirements and regulations set forth herein.

2. Non-Participating Parcel shall mean a parcel of record that is not a Participating Parcel.

K. Shadow Flicker shall mean the alternating changes in light intensity caused by the moving blade of a WECS casting shadows on the ground and/or structures.

L. Sound Pressure shall mean the average rate at which sound energy is transmitted through a unit area in a specified direction. The pressure of the sound measured at a receiver.

M. Sound Pressure Level shall mean the sound pressure mapped to a logarithmic scale and reported in decibels.

N. Wind Energy Conversion System ("WECS") shall mean any structural device (such as a wind generator, windmill, or wind turbine) that measures and/or converts wind into electricity through the use of specialized equipment, and includes both (1.) horizontal axis wind energy system design in which the shaft is parallel to the ground and the blades are perpendicular to the ground; and (2.) vertical axis wind energy system design where the rotating shaft is perpendicular to the ground and the cups or blades rotate parallel to the ground. Also included in the definition are the associated improvements for the transmission of electrical energy to the electrical utility grid. Forms of WECS include:

1. Agricultural WECS shall mean any WECS that is accessory to a permitted farm or agricultural operation, and is designed and built to directly and immediately serve the needs of the farm or agricultural operation.

2. Private WECS shall mean any WECS that is accessory to a principal non-agricultural use located on the same lot, and is designed and built to serve the principal use. Excess electricity generation may be sold to a utility but shall not exceed fifty (50) percent of the principal use's monthly electricity use or such WECS shall be considered a Commercial WECS.

3. Commercial WECS shall mean any WECS and associated accessory structures that are designed and built to primarily provide electricity to the electric utility's power grid. The Commercial WECS is a principal use of property and may occupy the same property as another principal use.

4. Commercial WECS Farm shall mean an electricity generating operation consisting of two or more Commercial WECS under common ownership, control or operation, and includes substations, testing facilities, transmission lines and other buildings accessory to such operation, whose main purpose is to supply electricity to the energy grid and off-site customers or consumers.

O. WECS Testing Facility shall mean the structure and equipment erected and used to determine the potential for the placement of one or more WECS improvements and contains instrumentation, such as anemometers or other meteorological devices, designed to provide wind speeds and other data.

3. Approval Required

   A. It shall be unlawful to construct, erect, install, use or locate any WECS within the zoning jurisdiction of Shiawassee County unless a special use permit, final site plan, administrative site plan, or a zoning permit has been approved pursuant to this Ordinance and Section.

   B. Agricultural WECS that are accessory to established farm and agricultural operations are permitted by right and shall be exempt from the general standards, provisions and requirements of this section. Agricultural WECS projects shall otherwise conform to the regulations of the zoning district for an agricultural accessory structure, including maximum height and minimum setback standards as provided in Section 5.6.4. Such compliance shall be verified upon application of a zoning permit.

   C. Private WECS are permitted by right with conditions and are subject to administrative site plan review and approval to determine compliance with the general standards, provisions and requirements of this section and this Ordinance.

   D. Commercial WECS are permitted by issuance of a special use permit and approval of a final site plan by the Planning Commission. Multiple Commercial WECS as part of a Commercial WECS Farm may be applied for under a single special use permit as long as all Participating Parcels under application are located within a single Township under the County's jurisdiction. If a multiple Commercial WECS or a Commercial WECS Farm project involves siting Commercial WECS in multiple townships, a separate special use permit is required for those Commercial WECS within each Township under the jurisdiction of this Ordinance. An application for special use permit and final site plan shall contain information required pursuant to Article 12 for special use permit approval, Article 14 for final site plan approval, and other information as required in this Section and in this Ordinance.

   E. WECS Testing Facilities are permitted by issuance of a special use permit and approval of a final site plan. WECS Testing Facilities preceding implementation of multiple WECS shall be considered temporary improvements and shall be limited in duration to no more than two (2) years from the date of special use permit approval. Continuation of operation beyond two (2) years shall require a special use permit (in addition to the original special permit) to be applied for, reviewed and approved pursuant to Article 12.

      1. In the event that multiple WECS are proposed as a coordinated development or as a Commercial WECS Farm and it is necessary that a WECS Testing Facility be erected to monitor meteorological conditions for the life of a Commercial WECS project, such WECS Testing Facility shall be included as part of the special use permit and final site plan approval process for the Commercial WECS Farm.

      2. The applicant shall provide general information regarding the extent of the area under study that will be served by the test results from a WECS Testing Facility. An application for special use permit and final site plan shall contain information required pursuant to Article 12 for special use permit approval, Article 14 for final site plan approval, and other information as required in this section and in this Ordinance.

4. General Standards. The following requirements and standards shall apply to all WECS Testing Facilities and WECS unless specifically excluded:

A. Sound Levels.

1. An applicant for a Commercial WECS shall provide a study and report declaring the ambient and potential sound created by a Commercial WECS. The study should specifically address sound created by a Commercial WECS at Non-Participating Parcel boundaries and along property lines between Participating and Non-Participating Parcels. The study and report must be produced with the most current protocol for ANSI S12.9, Part 3, ANSI S12.100 and other applicable ANSI standards and methodology for the measurement of sound to the extent that those standards and methods are applicable to providing accurate and substantive information for review by the Planning Commission. This study and report must be certified by a qualified and certified acoustician and include the following:

   a) A description and map of the existing land uses and structures within one (1) mile of a proposed Commercial WECS. The description and map shall include the location of structures, their use or uses, distances from a source of sound or WECS and ambient decibel readings (including the date and time when measurements are taken) for each identified land use and structure described and mapped.

   b) A description and map of the sound producing features of each Commercial WECS, including the range of decibel levels expected (measured in dB(A)) and the basis for the expectation.

   c) A detailed description of the proposed sound control features for each Commercial WECS, including specific measures to minimize sound to meet requirements herein.

2. An applicant for a private WECS shall provide documentation from the manufacturer in lieu of the above study and report.

3. The sound generated from a Private or Commercial WECS shall not exceed forty-five (45) dB(A) LAMax at any Non-Participating Parcel boundary.

B. Height.

1. Private WECS shall not exceed one hundred (100) feet in height.

2. Commercial WECS and WECS Test Facilities shall not exceed five hundred (500) feet in height.

3. Compliance with FAA regulations, the Michigan Airport Zoning Act and the Michigan Tall Structures Act shall be verified by the applicant.

C. Setbacks

1. Property Line Setbacks.

   a) WECS Testing Facilities and Commercial WECS shall not be subject to property line setbacks between Participating Parcels.

   b) All WECS Testing Facilities shall maintain a setback from Non-Participating Parcel property lines a distance equal to or greater than one hundred (100)

percent of its height as measured from the base of the structure to the nearest Non-Participating Parcel property line.

c) All Private WECS shall maintain a property line setback from a Non-Participating Parcel property line a distance equal to or greater than one hundred fifty (150) percent of its height as measured from the base of the structure to the nearest Non-Participating Parcel property line.

d) All Commercial WECS shall maintain a setback from a Non-Participating Parcel property line a distance equal to or greater than three hundred twenty-five (325) percent of its height as measured from the base of the structure to a Non-Participating Parcel property line.

2. Principal and Accessory Structure Setbacks on Participating Parcels.

a) All WECS Testing Facilities and WECS shall maintain a setback of one hundred (100) percent of its height as measured from the base of the structure to the exterior wall of a principal structure on a Participating Parcel that is used for residential, commercial or assembly purposes.

b) For accessory structures, the Planning Commission may, at its discretion, allow a setback that is less than one hundred (100) percent of a WECS Testing Facility or Commercial WECS height as measured from the base of the structure to the exterior wall of accessory structures on a Participating Parcel, depending on the current use of such accessory structures and potential impact on the use of those accessory structures.

3. Public Rights-of-Way. All WECS Testing Facilities and WECS must be setback a distance equal to or greater than one hundred (100) percent of the height of the structure as measured from the base of the structure to a public road or railroad right-of-way. No setback is required from a drain right-of-way.

4. Existing Utility Lines. All WECS Testing Facilities and WECS must be setback a distance equal to or greater than one hundred (100) percent of the height of the structure as measured from the base of the structure to an existing above-ground public electric power line, telephone line or under-ground gas transmission line, unless said utility owner provides a waiver of such setback. Utility lines implemented as part of the application for a WECS Testing Facility or WECS, or those utility lines installed after the approval of a WECS Testing Facility or WECS, shall be exempt from meeting this requirement.

D. Shadow Flicker.

1. Commercial WECS shall be designed, sited and operated in such a manner as to mitigate shadow flicker on any Non-Participating Parcel and prohibit shadow flicker from occurring on any Non-Participating Parcel for more than twenty (20) hours per year.

2. Shadow Flicker Impact Analysis. The applicant shall provide a study identifying through modeling the potential impact of shadow flicker that may be caused by a Commercial WECS and the expected durations of the shadow flicker from sun-rise to sun-set over the course of a calendar year. The area of study for modeling purposes shall be for a distance of no less than twenty (20) times the rotor diameter of each

Commercial WECS.

3. Site plans and associated documents and drawings submitted as part of the special use permit shall identify measures to be taken to meet the requirements herein.

E. Decommissioning. WECS Testing Facilities and Commercial WECS considered under this Section must contain a Decommissioning Plan acceptable to the Planning Commission to ensure that structures and appurtenances are properly decommissioned upon the end of their operational life, cessation of use, or determination that WECS facilities are determined Abandoned.

1. A Decommissioning Plan shall be submitted for review and approval detailing how facilities and improvements will be decommissioned, a Professional Engineer's estimated cost of decommissioning, the financial resources to be used to accomplish decommissioning, and the surety bond holder with which the financial resources shall be deposited for use by the County to implement the Decommissioning Plan upon failure of the owner or operator to implement upon cessation of use or determination of being Abandoned.

2. If it is alleged by the Zoning Administrator that a Commercial WECS or WECS Testing Facility is Abandoned, the Planning Commission shall provide written notice to the owner or operator of a hearing before the Planning Commission to consider evidence that the WECS or WECS Testing Facility is Abandoned. If a determination is made that WECS facilities are Abandoned, the Planning Commission shall provide the owner and/or operator of such determination and obligations of the owner and/or operator of the standards and conditions of the special use permit regarding a determination of Abandoned facilities.

3. Within ninety (90) days of the above hearing where the Planning Commission has determined that a WECS or WECS Testing Facility is abandoned, the owner or operator shall effect the Decommissioning Plan, and obtain a demolition permit to remove the WECS or WECS Testing Facility.

   a) Failure to obtain a demolition permit within the time period provided in this subsection shall be grounds for the County to remove the WECS or WECS Testing Facility at the owner's and/or operator's expense.
   b) If a WECS or WECS Testing Facility is repaired, a Professional Engineer (hired at the expense of the owner or operator) shall certify the safety of the WECS Testing Facility or WECS prior to the resumption of operation.

4. Decommissioning shall include removal of all equipment associated with the WECS or WECS Testing Facility including all materials above ground and below ground to a depth of four (4) feet below average grade in the immediate surrounding area. The site shall be restored to a condition that reflects the specific character of the site including topography, vegetation, soils, and drainage.

   a) Restoration shall include: road repair, if any, and all re-grading, soil stabilization, and re-vegetation necessary to return the subject property to a stable condition consistent with conditions existing prior to establishment of the wind energy system. Upon written request by the property owner, access drives and associated drainage improvements, if any, may continue to exist.

   b) The restoration process shall comply with all federal state, and county

regulations, including but not limited to local erosion control, soil stabilization and/or runoff requirements or ordinances and shall be completed within one (1) year.

c) Extensions may be granted upon request to the Planning Commission prior to the expiration of the one (1) year requirement for decommissioning to be completed.

5. The Decommissioning Plan shall also include an agreement between the owner or operator and the County that includes, but is not limited to, the following conditions:

a) The financial resources for decommissioning shall be in the form of a surety bond with a replenishment obligation and shall be deposited with a bonding agent acceptable to Shiawassee County.

b) The surety bond for decommissioning shall be one hundred and twenty-five percent (125%) of the estimated removal and restoration cost, with an annual increase by the Consumer Price Index ("CPI"). The Planning Commission may require independent verification of the adequacy of this amount from a Professional Engineer.

c) The Planning Commission shall review the amounts deposited for removal, site restoration, and administration costs every five (5) years, to ensure they are adequate for these purposes. The Planning Commission as part of the special use permit may reasonably increase the surety amount, but shall not exceed twenty-five (25) percent of the previous year's total financial resource.

d) Shiawassee County shall have access to the surety bond funds for the express purpose of completing decommissioning under the Decommissioning Plan. If decommissioning is not completed by the owner or operator within one (1) year upon the determination of a WECS being Abandoned as described above, action shall be taken to draw upon the surety bond for administrative fees and costs associated with decommissioning pursuant to the Decommissioning Plan.

e) The County is granted the right of entry onto the site, pursuant to reasonable notice to the property owner, to effect or complete decommissioning pursuant to the Decommissioning Plan.

f) The County is granted the right to seek injunctive relief to effect or complete decommissioning, as well as the County's right to seek reimbursement from the owner or operator for decommissioning costs in excess of the surety bond amount, and to file a lien against any real estate owned by the owner or operator, or in which they have an interest, for the amount of the excess, and to take all steps allowed by law to enforce said lien.

F. Enforcement: The enforcement of the Ordinance shall be the responsibility of the Shiawassee County Zoning Administrator, or his or her designee, or as otherwise appointed, directed, or hired by the Board of Commissioners.

1. An owner or operator, landowner, firm, association, corporation or representative agent of any WECS Testing Facility or WECS that is found by Shiawassee County to be in violation of the special use permit, or to be Abandoned or unsafe as defined in this Ordinance:

a) Shall provide abatement by shut down, repair, or removal of the wind energy system upon written notification from the Zoning Administrator (or other County designee).

b) Shall be subject to all enforcement mechanisms available to the County.

c) May be subject to revocation of the special use permit for excessive and continued violations as provided for in Article 12 of the Ordinance.

d) May be required to reimburse Shiawassee County for cost(s) and expenses of obtaining other relief including a temporary or permanent injunction; such reimbursement may include costs and reasonable attorney fees.

2. Annual Inspection. All WECS Testing Facilities and WECS shall be inspected annually by an Authorized Factory Representative or Professional Engineer to certify that each structure is in good working condition and not a hazard to the public. An annual report shall be submitted to the Planning Commission.

3. Should an aggrieved Shiawassee County resident allege that a WECS is not in compliance with the requirements of this Ordinance, the procedure shall be as follows:

a) Complaints must be submitted to the Zoning Administrator, or his or her designee, in writing from the affected resident, and include their name, address, contact information. If the affected resident does not own the property allegedly being subjected to violations of the Ordinance, the name, address and contact information for the owner of that parcel shall be provided.

b) Upon investigation by the Zoning Administrator, or his or her designee, if a complaint is deemed credible, the owner or operator of the WECS Testing Facility or WECS shall be notified in writing. Within fourteen (14) calendar days of the date of notice, the owner(s) and/or operator of the WECS Testing Facility or WECS shall provide a statement of compliance or non-compliance. As part of the special use permit, an annual escrow account (reviewable on an annual basis) shall be established sufficient to pay for independent investigations conducted by qualified professionals acceptable to the County to determine compliance with the requirements of this Ordinance.

c) If the WECS Testing Facility or WECS is found to be in violation of the Ordinance and/or this Section, the owner or operator shall take immediate action to bring the WECS Testing Facility or WECS into compliance, or cease operation of the WECS Testing Facility or WECS until compliance can be maintained. In the event the owner(s) and/or operator fails or refuses to bring the WECS Testing Facility or WECS into compliance within ten (10) days thereafter, the County may seek any relief by law afforded to it.

G. Safety Measures. The following safety measures are to be implemented for Testing facilities and WECS.

1. Controls and Brakes. All Private and Commercial WECS turbines shall be equipped with manual and automatic controls to limit rotation of blades to a speed below the designed limits of the Private or Commercial WECS. A Professional Engineer must

certify that the rotor and over-speed control design and fabrication conform to applicable design standards.

2. Building and Trade Codes. All WECS testing facilities and WECS shall meet applicable state and national construction codes (where applicable).

3. Installation Certification. The Professional Engineer shall certify that the construction and installation of the WECS Testing Facility or WECS meets or exceeds the manufacturer's construction and installation standards.

4. Climb Prevention. All WECS Testing Facilities and WECS must be unclimbable by design or protected by anti-climbing devices.

5. Fire Risk. All WECS Testing Facilities and WECS must adhere to all applicable electrical codes and standards, and shall remove fuel sources, such as vegetation, from the immediate vicinity of electrical equipment and connections.

6. Interference. It shall be the responsibility of the applicant to submit acceptable documentation as part of the special use permit application to determine if the improvement would in any way cause interference with microwave transmissions, residential television reception or radio reception and to prevent such interference from occurring. The applicant shall also provide documentation that the location of the WECS Testing Facility and WECS will not interfere with the operation of existing WECS.

7. Waste. All solid wastes, whether generated from supplies, equipment parts, packaging, operation or maintenance of the WECS Testing Facility and WECS shall be removed from the site immediately and disposed of in an appropriate manner. All hazardous waste generated by the operation and maintenance of the improvement shall be removed from the site immediately and disposed of in a manner consistent with all local, state, and federal rules and regulations.

8. Liability Insurance. The owner(s) or operator(s) of the WECS Testing Facility or WECS shall maintain a current liability insurance policy to cover installation and operation. For a Private WECS accessory to a principal residence, proof of homeowner's insurance with specific coverage for the Private WECS shall satisfy this requirement.

9. The owner or operator shall notify the Shiawassee County Zoning Administrator in writing within twenty-four (24) hours of an occurrence of a WECS Testing Facility or WECS collapse, failure, fire, collector or feeder line failure, or injury to person or property caused by the WECS or WECS Testing Facility. See E.3 above for notice of repair.

H. Additional Considerations.

1. No WECS or WECS Testing Facility shall have advertising or signage of any kind unless required by standards referenced in this Section for purposes of safety or operation.

   a) A Commercial WECS or WECS Testing Facility shall not have lighting of any kind unless required by standards referenced in this Section or of the Federal Aviation Administration ("FAA") for purposes of safety or operation. If lighting of a

Commercial WECS or WECS Testing Facility is required, lighting shall be controlled by an aircraft detection lighting system unless otherwise restricted or prohibited by the FAA.

2. Color and Appearance. Structures and improvements shall be painted a neutral color that is acceptable to Shiawassee County or otherwise required by law. The main structure of any WECS shall be of a monopole (tubular) design.

J. Compliance with Federal Rules and Regulations.

1. It shall be the responsibility of the owner(s) or operator of the WECS Testing Facility or Commercial WECS to complete the proper FAA applications and obtain the proper permits, where applicable, for the construction of such improvements.

2. Compliance with Additional Regulations. It shall be the responsibility of the owner(s) or operator of a Commercial WECS to contact the FAA regarding additional permits necessary or any other applicable Federal or State regulations for the installation, prior to granting of a special use permit by the Planning Commission. Documentation that applicable permits have been obtained and requirements of these agencies have been met must be supplied to the County Building Department prior to the issuance of construction permits.

K. Studies.

1. Migratory and Game Birds. An avian study is required to be conducted by a qualified professional to determine any potential impacts one or more Commercial WECS may present to migratory and game birds. As part of the special use permit application, the study and its results must provide assurances that a Commercial WECS does not negatively impact the path of migratory birds or the viability of game birds.

2. Endangered Species. An endangered species study is required and is to be conducted by a qualified professional to determine any potential impacts the Commercial WECS may present to endangered species. The study as part of the special use permit application must provide assurances that the Commercial WECS does not negatively impact endangered species.

L. Administrative Provisions Following Approval.

1. An approved special use permit for a Commercial WECS or Commercial WECS Farm shall expire if construction of a Commercial WECS or Commercial WECS Farm has not commenced within thirty-six (36) months from the date of issuance. Commencement shall mean the erection of a Commercial WECS structure.

2. Amendment to Site Location Following Special Use Permit and Final Site Plan Approval. The Zoning Administrator may approve changes in location of Commercial WECS and WECS Test Facilities as minor site plan modifications so long as such site location is not altered more than one hundred (100) feet, continues to meet all regulations of this Section, and the improvement remains on the same parcel.