

**TOWNSHIP OF DOUGLASS  
COUNTY OF MONTCALM**

Minutes of a regular meeting of the Township Board of the Township of Douglass, Montcalm County, Michigan, held in the Douglass Township Hall, located at 3521 W. McBrides Road, Stanton, Michigan, on the 6th day of July, 2022, at 7:00 p.m., Local Time.

PRESENT: Members: Anderson, Laper, Snyder, Althoff, Jeppesen

ABSENT: Members: None

The following ordinance was offered by Member Althoff and seconded by Member Jeppesen.

**ORDINANCE NO. 173**

**AN ORDINANCE TO AMEND THE ZONING ORDINANCE OF THE TOWNSHIP OF DOUGLASS**

**[WIND ENERGY CONVERSION SYSTEMS]**

THE TOWNSHIP OF DOUGLASS ORDAINS:

Section 1. Repeal of Existing WES Provisions. Section 2.19 of the Zoning Ordinance of the Township of Douglass is hereby repealed in its entirety.

Section 2. Approval Standards for WECS. Section 12.06 of the Zoning Ordinance of the Township of Douglass is hereby amended by the addition of Approval Standard 21, which shall read in its entirety as follows:

APPROVAL  
STANDARD

21 USE: WIND ENERGY CONVERSION SYSTEMS (“WECS”)

**A. Intent and Purpose**

1. Purpose. The most common and prevalent land use in Douglass Township is agricultural, and its preservation has been an ongoing goal within the community for many years. This Approval Standard is intended to protect

the health, safety and welfare of the residents of the Township and to encourage the safe, effective, efficient and orderly development and operation of wind energy resources in the Township while preserving and protecting the character and the stability of residential, agricultural, recreational, commercial and other areas within the Township.

2. With advances in technology of “wind energy development” in general, specific locations within the Township may support the implementation of UTILITY GRID WIND ENERGY SYSTEMs. To prepare for potential “wind development projects” within the Township, this Approval Standard will require such developments to obtain a Special Land Use Permit to ensure wind development sites are appropriately located so as to protect the character and stability of the Township’s residential, agricultural, recreational, commercial and/or industrial areas and character while simultaneously preserving and protecting the Township’s important and sensitive environmental and ecological assets and areas, open space, viewsapes and aesthetics, wetlands, and other ecological and environmentally sensitive areas. Accordingly, regulations are necessary to further the above goals and, equally important, to minimize the potential adverse effects of this emerging land use on adjacent properties.

## **B. Findings**

1. This Approval Standard has been developed with the intention of obtaining an appropriate balance between the desire for renewable energy resources and the need to protect the public health, safety, and welfare of the community and the character and stability of the Township’s residential, agricultural, recreational, commercial and/or industrial areas and preserving and protecting the Township’s important and sensitive environmental and ecological assets and areas, open space, viewsapes and aesthetics, wetlands, and other ecological and environmentally sensitive areas.
2. Based on evidence presented in this State and other jurisdictions, there are certain potential harmful secondary effects of wind energy systems that should be addressed with appropriate protective regulations, as reflected in this Approval Standard 21.
3. By allowing wind energy systems, while carefully regulating them to mitigate their potential adverse secondary effect, this will promote the health, safety, and welfare of Township residents, by providing for an alternative and sustainable energy source for the community that does not have the known adverse effects that result from reliance on hydrocarbon-based energy production alone.

## **C. Applicability**

1. The regulations of this Section shall apply within the AG/RE, Agricultural/Rural Estate Zoning District, except for those areas specifically excluded.
2. No WIND TURBINE, SUBSTATION, road, building, or other structure related to the development and operation of a Commercial WECS or WECS TESTING FACILITY shall be erected in the following locations:
  - a. Within 600 feet of the boundary of a state designated wetland, as determined by the Department of Great Lakes, Environment, and Energy (EGLE);
  - b. Within 600 feet of the Flat River;
  - c. Within one mile of Dickerson Lake, Clifford Lake, Lake Stanton, Indian Head Lake, Lake Christina, Lake Hemingway, and Lake Montcalm (collectively, “Designated Lakes”);
  - d. Within 2,640 feet of any state or federally designated endangered or threatened species habitat; and,
  - e. Within 2,640 feet of any Low Density and Medium Density, zoning district and the corporate limits of the City of Stanton.

**D. Definitions**

1. Aircraft Detection Lighting System – A lighting system with continuous 360-degree radar surveillance of the airspace around wind farms, communications towers, power lines and installations that require aircraft obstruction lighting from the ground level to above aircraft flight altitudes, automatically issuing signals to activate obstruction lighting when aircraft are detected at a defined outer perimeter.
2. Ambient: Ambient is defined as the SOUND PRESSURE LEVEL exceeded 90% of the time or L90.
3. ANSI: the American National Standards Institute.
4. Applicant: The person, firm, corporation, company, limited liability corporation or other entity, as well as the Applicant’s successors, assigns and/or transferees, which applies to the Township for a special land use permit to construct a WECS and/or WECS TESTING FACILITY. An Applicant must have the legal authority to represent and bind the PARTICIPATING LANDOWNER, and any person or entity who has executed a lease of the PARTICIPATING LANDOWNER’s property for a WECS or WECS TESTING FACILITY if different than the WECS owner.

5. A-Weighted Sound Level: The SOUND PRESSURE LEVEL in decibels as measured on a sound level meter using the A-weighting network, a method for weighting the FREQUENCY spectrum to mimic the human ear. Expressed as dB(A) or dBA.
6. Background Sound: The all-encompassing sound associated with a given environment without contribution from the source or sources of interest, as defined by ANSI S12.9 Part 3.
7. Continuous Background Sound: BACKGROUND SOUND measured during a measurement period, after excluding the contribution of transient BACKGROUND SOUNDS, as defined by ANSI S12.9 Part 3.
8. dBA: The SOUND PRESSURE LEVEL in decibels. Refers to the “a” weighted scale defined by ANSI.
9. Decommissioning: The termination of use of a UTILITY GRID WIND ENERGY CONVERSION SYSTEM or a portion of a facility.
10. Equivalent A-weighted Continuous Sound Level: The level of a steady sound which, in a stated time period and at a stated location, has the same A-weighted sound energy as the time varying sound, denoted as Leq A, and expressed as dBA.
11. Frequency: The number of oscillations or cycles per unit of time, expressed as HERTZ (Hz).
12. GIS: Geographic Information System and is comparable to GPS (global positioning system) coordinates.
13. Hertz: The FREQUENCY of sound expressed by cycles per second.
14. Hub Height: The distance from the ground level base of the structure to the center of the turbine hub or horizontal ROTOR shaft.
15. IEC: International Electrotechnical Commission. The IEC is the leading global organization that prepares and publishes international standards for all electrical, electronic and related technologies.
16. Inhabited Structure: Any existing structure useable for living or non-agricultural purposes, which includes but is not limited to, sleeping, eating, cooking, recreation, office, office storage, or any combination thereof. An area used only for storage incidental to a residential use, including agricultural barns, is not included in this definition.
17. ISO: International Organization for Standardization. ISO is a network of the national standards institutes of 156 countries.

18. Leq: The equivalent continuous sound pressure level, which is the level of a hypothetical steady sound that would have the same energy (i.e., the same time-averaged mean square sound pressure) as the actual fluctuating sound observed. For the purpose of this ordinance, unless otherwise specified, any reference to Leq shall mean the 10-minute Leq A-weighted equivalent sound level.
19. Noise Sensitive Facility: An INHABITED STRUCTURE, school, hospital, church, public library, or other area designated by the Planning Commission.
20. Non-Nuisance Complaint: A grievance involving neglected maintenance, unlocked gate, oil leak, or similar matter not directly impacting a third party or a third-party's property.
21. Non-Participating Landowner: The owner of a non-participating parcel.
22. Non-Participating Parcel: Any parcel of land which does not meet the requirements to be a participating parcel.
23. Nuisance Complaint: A grievance related to a condition of operation or ordinance violation that poses a discernable annoyance or an imminent threat to the health, safety, or welfare of a third party or which unreasonably interferes with the quiet peace and enjoyment of a third-party's property.
24. Octave Band: The FREQUENCY interval where the upper FREQUENCY is twice the lower FREQUENCY.
25. One-Third: The FREQUENCY interval where the upper FREQUENCY is the lower FREQUENCY times the cube root of two.
26. Participating Landowner: The owner of a participating parcel.
27. Participating Parcel: Any parcel of land that participates by ownership, lease or easement agreement, or other contractual agreement, with a person or entity constructing, operating, or submitting a Special Land Use Permit application for a UTILITY GRID WIND ENERGY SYSTEM.
28. Responsible Party: The APPLICANT, owner, and/or operator of a WECS or WECS TESTING FACILITY having the legal authority to perform a requirement arising under this Ordinance, at such time when such requirement arises under this Ordinance, but shall always include the owner of a WECS or WECS TESTING FACILITY and the holder of a special land use permit for an WECS or WECS TESTING FACILITY. If multiple persons or entities satisfy this definition, then they shall each be considered to be a RESPONSIBLE PARTY and shall be jointly and severally liable for performance of the applicable ordinance requirement.

29. Rotor: An element of a wind energy system that acts as a multi-bladed airfoil assembly, thereby extracting through rotation, kinetic energy directly from the wind.
30. SCADA (supervisory control and data acquisition): A temporary or permanent freestanding tower containing instrumentation such as anemometers that is designed to provide present moment wind data for use by the supervisory control and data acquisition (SCADA) system.
31. Shadow Flicker: Alternating changes in light intensity caused by the moving blade of a wind energy system casting shadows on the ground and stationary objects, such as a window at an INHABITED STRUCTURE.
32. Sound Measurement Personnel: The individual or firm selected by the Township as an independent professional to conduct and/or evaluate sound studies required by this ordinance.
33. Sound Power: The rate per unit time at which sound energy is radiated, expressed as watts (W).
34. Sound Power Level: Ten times the logarithm to the base 10, of the ratio of a given SOUND POWER to the reference SOUND POWER of 1 picowatt, expressed as decibels (dB).
35. Sound Pressure The difference at a given point between the pressure produced by sound energy and the atmospheric pressure, expressed as pascals (Pa).
36. Sound Pressure Level: Twenty times the logarithm to the base 10, of the ratio of the root-mean-square SOUND PRESSURE to the reference pressure of twenty micropascals, expressed as decibels (dB). Unless expressed with reference to a specific weighing network (such as dBA), the unit dB shall refer to an un-weighted measurement.
37. Substation: A facility consisting of transformers, switches, transmission lines, controls, and related structures and equipment designed to reduce voltage for transmission from the WECS to users.
38. Tip Height: The height of the turbine with a blade at the highest vertical point.
39. Wind Energy Conversion System (WECS): A wind energy conversion system which converts wind energy into electricity through the use of a wind turbine generator and includes the turbine, nacelle, blades, and tower as well as related electrical equipment.
40. Wind Energy Conversion System (WECS) Testing Facility: A structure and equipment such as a meteorological tower for the collection of wind

data and other meteorological data and transmission to a collection source, shall not be deemed to be a communication tower.

41. Wind Turbine: An individual structure with vertical-axis or horizontal-axis rotating blades that converts the wind's kinetic energy into electrical energy.
42. Utility Grid Wind Energy System: A system of WECS and the associated ancillary facilities which is designed and built to provide electricity to the electric utility grid.

**E. Public Utilities**

Transmission lines, sewer lines, water mains, pumping stations, SUBSTATIONS, poles, and related equipment owned or provided by public utility companies or by the Township shall be permitted in all zoning districts. Any equipment enclosures, SUBSTATIONS, equipment storage buildings or similar structures shall be subject to the special land use requirements of Chapter 12 and site plan review requirements of Chapter 13. Any office, manufacturing, or sales buildings must be located in the Commercial or Industrial zoning district. All commercial WIND ENERGY CONVERSION SYSTEMS operated by public utility companies shall be subject to the requirements of Section 21.G. "Commercial WIND ENERGY CONVERSION SYSTEMS (WECS)".

**F. Exempt Towers and WIND ENERGY CONVERSION SYSTEMS (WECS).**

Communication towers, antennas, WIND ENERGY CONVERSION SYSTEMS (windmills, turbines) and related facilities located on the premises of a farm, home, or business and which do not primarily involve the sale of electricity or communication services off the premises shall be exempt from the requirements of Section 21.G, "Commercial WIND ENERGY CONVERSION SYSTEMS (WECS)". However, exempt towers and WECS are subject to the noise limitations established for commercial WECS, as specified in Table 1 of Section 21.G.8.n, "Noise". Such units shall be allowed as a permitted accessory use in all zoning districts, providing the electricity or communication services are primarily used on site for a farm, home, or business.

1. In the case of a WECS, the TIP HEIGHT or highest point of a vertical-axis wind turbine shall not exceed eighty (80) feet and the minimum clearance from ground level to the blade at its lowest point shall be twenty (20) feet; provided, the TIP HEIGHT or highest point of a vertical-axis wind turbine shall not exceed 40 feet in the LR and LDR Districts. Roof-mounted WECS shall not be permitted in any district.
2. The minimum set-back from property lines and road right of way lines shall be equal to 3 times the TIP HEIGHT of the unit.
3. Construction Codes, Towers, & Interconnection Standards: On-site use wind energy systems, including towers, shall comply with all applicable state construction and electrical codes and local building permit and zoning compliance permit requirements. In addition, to the extent applicable, on-

site use wind energy systems, including towers, shall comply with Federal Aviation Administration requirements, the Michigan Airport Zoning Act (Public Act 23 of 1950, MCL 259.431 et seq.), the Michigan Tall Structures Act (Public Act 259 of 1959, MCL 259.481 et seq.), and local jurisdiction airport overlay zone regulations. An interconnected on-site use wind energy system shall comply with Michigan Public Service Commission and Federal Energy Regulatory Commission standards. Off-grid systems are exempt from this requirement.

4. Safety: An on-site use wind energy system shall have automatic braking, governing, or a feathering system to prevent uncontrolled rotation or over speeding. All wind towers shall have lightning protection. If a tower is supported by guy wires, the wires shall be 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 a wind energy system employing a horizontal-axis ROTOR.

#### **G. Commercial WIND ENERGY CONVERSION SYSTEMS**

Commercial WIND ENERGY CONVERSION SYSTEMS (WECS). WIND ENERGY CONVERSION SYSTEMS and WECS testing facilities, other than those exempted under Section 21.F, “Exempt Towers and WIND ENERGY CONVERSION SYSTEMS (WECS)”, shall only be allowed as special land uses in the AG/RE Agricultural/Rural Estate Zoning District. An application for a special land use permit shall be filed with the Township pursuant to Chapter 12, as to Special Land Use approvals. Supporting data and documentation must be submitted in their entirety at time of application. RESPONSIBLE PARTY shall provide to the Township updated documents throughout the lifespan of the WECS upon request by the Township Board or Planning Commission. The application process shall include the following:

1. Procedure: The Planning Commission review of a Special Land Use Permit for a UTILITY GRID WIND ENERGY CONVERSION SYSTEM is a three-step process. The first step is a pre-application conference conducted in accordance with Section 2, below. The second step is the public hearing and decision by the Planning Commission, per the procedures for review in Section 12.02 of this Ordinance. The third step, which may occur at a separate meeting, is the site plan review process as described in Chapter 13.
2. Pre-Application Conference: Before submitting a special land use application and site plan to the Planning Commission, the applicant shall conduct a pre-application conference with the public at a public facility within the County that is large enough to accommodate all attendees, prior notice of which shall be published and delivered, by and at the cost of the APPLICANT, in accordance with Section 103 of the Michigan Zoning Enabling Act, MCL 125.3103, except that the notice that is to be personally delivered or mailed to surrounding landowners shall be sent to all persons to whom real property is assessed within 1,500 feet of each proposed WECS



location and to the occupants of all structures within 1,500 feet of each proposed WECS. The APPLICANT shall provide to the Township Clerk, at least 14 days prior to the pre-application conference, a written list of all names and addresses to which the notice of the pre-application was delivered.

- a. At the pre-application conference, the APPLICANT shall present to the public a site plan showing each proposed WECS location, the height of each proposed WECS, and the type and location of all ancillary facilities proposed to be constructed, including, but not limited to, substations and any underground or aboveground utility lines. The APPLICANT shall also make a verbal presentation, providing an overview of the proposed WECS project, which shall address, at a minimum, proposed construction schedule and phasing; a description of proposed transportation routes during construction; and, the means and methods by which the APPLICANT intends to comply with the requirements of this Section relating to sound, shadow flicker, glare, and electromagnetic interference.
- b. At the pre-application conference, the APPLICANT shall afford to each member of the public in attendance an opportunity to speak for not less than three minutes and to ask questions related to the APPLICANT's proposed WECS project.
- c. The APPLICANT shall prepare a document that includes a written list of all questions posed by members of the public at the pre-application conference, and that same document shall also provide the APPLICANT's full, complete, and accurate answers to each of those questions ("Q&A Document"); provided, however, that the APPLICANT does not need to answer questions that are unrelated to the APPLICANT's proposed WECS project, and duplicative questions do not need to be answered more than once.
- d. The APPLICANT's Q&A Document shall be submitted to the Township with its subsequent application for a Special Use Permit and site plan approval. An application submitted without the Q&A Document shall be considered administratively incomplete and shall be returned to the APPLICANT without further Township action on the application.
- e. The APPLICANT shall be responsible for all costs of the pre-application conference, including, but not limited to the cost of preparing, publishing, and delivering the required public notice, and the furnishing of appropriate meeting space that is large enough to accommodate all attendees.

3. Procedure: The Planning Commission review of a Special Land Use Permit for a UTILITY GRID WIND ENERGY CONVERSION SYSTEM is a two-step process. The first step is the public hearing and decision by the Planning Commission, per the procedures for review in Section 12.02 of this Ordinance. The second step, which may occur at a separate meeting, is the site plan review process as described in Chapter 13.
4. Application Submittal: Unless specifically noted, all WECS permit information and supporting documentation shall be allocated reasonable Township review time based on complexity and outside expertise review. Requirements shall be presented in written form and allow minimum thirty (30) days before Township discussion. Township may at its discretion review provided documents sooner than thirty (30) days. The start of such time limits shall not commence until the application is determined to be administratively complete; provided, however, that the Planning Commission may, in its sole discretion, waive or defer specific requirements related to the special use request and/or site plan upon determining that such items, information, or studies are not relevant to the request or may be provided at a later date.
5. Permitting Costs: An escrow account shall be created when the APPLICANT applies for a Special Use Permit for a WECS and/or WECS Testing Facilities. The monetary amount filed by the APPLICANT shall be an amount in accordance with the Township Escrow Policy to cover all reasonable costs and expenses associated with the special use zoning review and approval process, which costs can include, but are not limited to, fees of the Township Attorney, Township Planner, and Township Engineer, as well as any reports or studies which the Township anticipates it may require related to the zoning review process for the particular application, including post-construction studies for noise or otherwise. The Township shall hire qualified professionals for each and any of the technical fields associated with the Special Use Permit, such as, but not limited to, electrical, acoustics, environment, economics, wildlife, health, and land use.
6. Special Land Use Application Requirements:
  - a. APPLICANT Identification: Name, address, and contact information for APPLICANT.
  - b. Project Description: A description of the proposed project including a proposed construction schedule.
  - c. Site Plan Requirements: The APPLICANT shall submit a site plan in full compliance with Chapter 13 of this Ordinance. The project site plans shall also include the following:

- (1) The project area boundaries, including parcel lines, dimensions, and participating and NON-PARTICIPATING PARCELS.
- (2) Names and parcel identification numbers of each parcel within the WECS boundary, including participating and NON-PARTICIPATING PARCELS.
- (3) The location, height, and dimensions of all proposed infrastructure, structures, and fencing.
- (4) Existing topography
- (5) Water bodies, wetlands, waterways, and drainage channels within the PARTICIPATING PARCEL and within 600 feet beyond the PARTICIPATING PARCEL boundary, and any Designated Lake within one mile of a PARTICIPATING PARCEL
- (6) Location of all buildings, structures, and above ground utilities within the PARTICIPATING PARCEL and within 300 feet beyond the PARTICIPATING PARCEL boundary.
- (7) The location of all existing and proposed overhead and underground electrical transmission or distribution lines within the PARTICIPATING PARCEL and within 300 feet beyond the PARTICIPATING PARCEL boundary.
- (8) GIS location data of all proposed WECS and TESTING FACILITY infrastructure and facilities and participating/leased parcels.
- (9) Site plans shall depict a contour around each proposed wind turbine that represents the permitted 30 hours per year of SHADOW FLICKER.

d. Impact Assessments

- (1) The APPLICANT shall perform pre-construction geo-technical soil testing on soil for all proposed turbine locations. The APPLICANT shall be required to share this data with the Township which will be reviewed by the Township's building official. The operation of the WECS shall not negatively impact any soil in the vicinity of the WECS.

Complaints regarding impact of the WECS on soil shall be promptly forwarded to the Township Board as part of the complaint resolution process. The Township Board will consider proof of a negative impact arising from the installation and/or operation of the WECS on a soil in the vicinity of the WECS as a violation of the conditions of the special use approval.

- (2) A background (AMBIENT) sound study shall be performed and a report provided which indicates Leq 1 second, Leq 10 second, L10, and L90 sound levels using A-weighting and C-weighting. Data shall be collected at midpoints along property lines of adjoining NON-PARTICIPATING and PARTICIPATING LANDOWNERS. Measurement procedures are to follow the most recent versions of ANSI S12.18 and ANSI S12.9, Part 3 guideline (with an observer present). Measurements shall be taken using an ANSI or IEC Type 1 Precision Integrating Sound Level Meter. The study must include a minimum of a four-day (96 hour) testing period, include one Sunday, and divide data by daytime and nighttime. The sound background study shall report for the period of the monitoring topography, temperature, weather patterns, sources of AMBIENT sound, and prevailing wind direction.
- (3) The APPLICANT shall fund and provide an economic impact study for the area affected by the WECS project. Such a study shall include probable financial impact regarding jobs, tax revenue, and lease payments. The APPLICANT shall fund and provide a separate economic impact study of property values, for parcels in the Township. Business and residential growth potential shall be considered.
- (4) 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.

- i. The APPLICANT shall identify and evaluate the significance of any net effects or concerns that will remain after mitigation efforts.
  - ii. The APPLICANT shall comply with applicable parts of the Michigan Natural Resources and Environmental Protection Act (Act 451 of 1994, MCL 324.101, *et seq.*) including but not limited to Part 31 Water Resources Protection (MCL 324.3101, *et seq.*), Part 91 Soil Erosion and Sedimentation Control (MCL 324.9101, *et seq.*), Part 301 Inland Lakes and Streams (MCL 324.30101, *et seq.*), Part 303 Wetlands (MCL 324.30301, *et seq.*), Part 323 Shoreland Protection and Management (MCL 324.32301, *et seq.*), Part 325 Great Lakes Submerged Lands (MCL 324.32501, *et seq.*), and Part 353 Sand Dunes Protection and Management (MCL 324.35301, *et seq.*).
- (5) The APPLICANT shall have a third party, qualified professional conduct an analysis to identify and assess any potential impacts on wildlife and endangered species, including impacts caused by WECS noise. 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.
- i. Sites requiring special scrutiny include wildlife refuges, other areas where birds are highly concentrated, bat hibernacula, wooded ridge tops that attract wildlife, sites that are frequented by federally and/or state listed endangered species of birds and bats, significant bird migration pathways, and areas that have landscape features known to attract large numbers of raptors. At a minimum, the analysis shall include a thorough review of existing information regarding species and potential habitats

in the vicinity of the project area. Where appropriate, surveys for bats, raptors, and general avian use should be conducted. The analysis shall include the potential effects on species listed under the federal Endangered Species Act and Michigan's Endangered Species Protection Law.

- ii. Power lines should be placed underground, when feasible, to prevent avian collisions and electrocutions. All above-ground lines, transformers, or conductors shall comply with the Avian Power Line Interaction Committee (APLIC) published standards to prevent avian mortality.
  - iii. Each wind turbine shall have a bird/bat sensor installed and utilized upon it.
  - iv. The APPLICANT shall prepare a post-construction avian and wildlife study 1-year post-construction, as well as 5-years post-construction of the completion of a WECS, which shall comply with the requirements of the U.S. Fish and Wildlife Service and the Michigan Department of Natural Resources. A copy of the study shall be provided to the Township Board.
- e. Insurance: Before commencing any work allowed by the special land use permit, the APPLICANT shall provide proof of commercial general liability (CGL) insurance for each WECS at all times for at least \$5 million for liability, personal injury, property damage, livestock damage, and future earnings loss. The following additional insurance requirements shall also apply:
- (1) In addition to the requirements stated above, the CGL policy shall include coverage for liability arising from premises, operations, independent contractors, products-completed operations, personal injury and advertising injury, contractual liability, and broad form property damage.
  - (2) Before commencing any work allowed by the special land use permit, the APPLICANT shall procure and maintain in force Workers' Compensation Insurance in statutory limits as required by Law, covering all persons employed in connection with the UTILITY GRADE WIND ENERGY SYSTEM.

- (3) Before commencing any work allowed by the special land use permit, the APPLICANT shall procure and maintain in force Employers' Liability Insurance with bodily injury limits of at least \$2 million per accident.
- (4) Before commencing any work allowed by the special land use permit, the APPLICANT shall procure and maintain in force Business Automobile Liability Insurance having limits of at least \$2 million per accident (coverage to include all owned autos, non-owned autos, hired autos/trucks and uninsured motorist).
- (5) Employers' Liability, Business Automobile Liability and CGL coverage may be arranged under a single aggregate policy for the full limits required or by a combination of underlying policies with the balance provided by Excess or Umbrella Liability policies, provided that minimum coverage per WECS is satisfied, and coverage is provided for every site where RESPONSIBLE PARTY's equipment is located.
- (6) RESPONSIBLE PARTY shall maintain in effect all insurance coverage required under this subsection e, with insurance companies lawfully authorized to do business in the State of Michigan.
- (7) All policies shall name the Township and PARTICIPATING LANDOWNERS as additional insureds. All said policies shall require that notice be provided to all such additional insured at least 30 days before such policies are terminated or cancelled.
- (8) APPLICANT shall provide proof of all insurances to the Township before commencing any work allowed by the special land use permit, and RESPONSIBLE PARTY shall thereafter provide annual proof of insurances to the Township that confirms active coverage for the RESPONSIBLE PARTY,
- (9) All policies required by this Ordinance shall remain in effect for so long as any WECS within the UTILITY GRADE WIND ENERGY SYSTEM remains physically present in the Township.

- f. Certifications: Certification that the APPLICANT has complied or will comply with all applicable federal, state, and local laws and regulations. Copies of all such permits and approval that have been obtained or applied for at the time of the application, and copies of all such permits as they are approved throughout the review/approval process.
- g. Manufacturers' Safety Data Sheet(s): 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.
- h. Safety Manual: The APPLICANT shall provide an un-redacted copy of the manufacturer's safety manual for each model of turbine without distribution restraints to be kept at the Township Hall and other locations deemed necessary by Planning Commission or local first responders. The Manual should include standard details for an industrial site such as materials, chemicals, fire, access, safe distances during WECS failure, processes in emergencies, etc.
- i. Transportation Plan: A description of the routes proposed to be used by construction and delivery vehicles and of any road improvements that will be necessary in the Township to accommodate construction vehicles, equipment, or other deliveries, and an agreement which guarantees the repair of damage to public roads and other areas caused by construction of the WECS. The Township Planning Commission, in cooperation with the Montcalm County Road Commission, shall determine the acceptable route(s).
- j. Engineering Documentation: Data and details concerning construction of the tower and its base or foundation, which must be engineered and constructed in such a manner that upon removal of said tower, the soil will be restored to its original condition to a depth of six feet. In the event the tower base is only removed to a depth of six feet, the location of the remaining base material shall be recorded on the property deed to alert future owners of the presence of such material.
- k. Maintenance Information and Schedule. Description of operations, including anticipated regular maintenance and response procedures for unanticipated maintenance or system failures. Each WECS and TESTING FACILITY must be always kept and maintained in good repair and condition in accordance with the manufacturer's operating manual and recommended procedures. The APPLICANT shall keep a maintenance log on each WECS and must provide a complete log to the Township within thirty (30) days of request.



- l. Electromagnetic Interference: Copies of reports for microwave beams, broadcast, retransmission, or reception antennae for radio, television, or wireless phone or other personal communication systems for interference.
  - m. SHADOW FLICKER: Copy of the SHADOW FLICKER analysis and modeling report.
  - n. SOUND PRESSURE LEVEL: Copy of the modeling and analysis report
  - o. Supplemental: Additional detail(s) and information as requested by the Planning Commission.
7. Site Plan Modifications: Changes to any approved site plan for a WECS or TESTING FACILITY, shall be subject to review and approval by the Zoning Administrator or Planning Commission, as applicable, in accordance with Section 13.02 D of this Zoning Ordinance. Any revised site plan must provide revised calculations to address all items required under the original plan submission (i.e. setbacks, SHADOW FLICKER, noise, etc.).
8. Commercial WIND ENERGY CONVERSION SYSTEMS - Standards and Requirements
- a. Setbacks
    - (1) NON-PARTICIPATING PARCEL: The distance between a wind turbine and the property lines of a NON-PARTICIPATING PARCEL shall be at least 1,500 feet.
    - (2) INHABITED STRUCTURE: The distance between a wind turbine and an INHABITED STRUCTURE existing at the time of approval shall be at least 1.5 times the TIP HEIGHT of the wind turbine.
    - (3) Road Right-of-Way/Railroad: The distance between a wind turbine and the nearest road right-of-way shall be at least 1.5 times the TIP HEIGHT of the wind turbine.
    - (4) Public Utility Lines: The distance between a wind turbine and an active public utility corridor, such as

overhead communication lines, shall be at least 1.5 times the TIP HEIGHT of the wind turbine.

- (5) Access Drives: Shall be no closer than 300' to NON-PARTICIPATING PARCELS.
  - (6) Met Towers/SCADA: All temporary (in place less than two years) Met towers and SCADA shall be set back from NON-PARTICIPATING PARCELS, INHABITED STRUCTURES, road/railroad right-of-way, and public utility lines at least 1.5 times the TIP HEIGHT of the tower. Permanent Met towers or SCADA shall meet the same setback requirements, except the set back from NON-PARTICIPATING PARCELS shall be at least 1,500 feet.
  - (7) An Operations and Maintenance Office building, a SUBSTATION, or ancillary equipment shall comply with any property setback requirement that may be applicable to that type of building or equipment.
- b. Height: The maximum TIP HEIGHT of any WECS or WECS TESTING FACILITY shall not exceed 500 feet.
  - c. Ground Clearance: The minimum vertical blade tip clearance from grade shall be 50 feet for a wind turbine employing a horizontal-axis ROTOR.
  - d. Safety
    - (1) Braking: Each WECS shall be equipped with a braking, or equivalent device, capable of stopping the WECS operation in high winds with or without SCADA control. Braking system shall be effective during complete GRID power failure where WECS are unable to communicate with SCADA control or receive power.
    - (2) Ice Detection: The APPLICANT shall install an ice detection system on each turbine, including but not limited to the system developed by Vestas, or other similar system, to monitor ice formation on each wind turbine (WECS) and to facilitate immediate

shutdown of any wind turbine if ice is detected on the turbine.

- (3) Fire Suppression: The APPLICANT shall provide and install on an WECS a fire suppression system, including but not limited to Fire Trace or other similar system, and insure that such system is operable at all times.
- (4) Voltage: The APPLICANT shall demonstrate WECS prohibits stray voltage, surge voltage, and power from entering ground, and shall correct any voltage issued that is caused by the WECS.
- (5) Construction of the Access Driveway that serves a WECS or TESTING FACILITY is required to protect the public health, safety, and welfare by offering an adequate means by which governmental agencies may readily access the site in the event of an emergency. All such roads shall be constructed to allow access at all times by any emergency service vehicles, such as fire, police, and repair.

e. Signage: Each WECS and TESTING FACILITY shall have one sign per turbine, or tower, located at the roadside and one sign attached to base of each WECS, easily visible throughout four seasons. Signs shall be at least two square feet in area. Signs shall be the same and shall uniquely identify each WECS. Additional signage on and around the tower is recommended. The sign shall contain at least the following:

- (1) Warning high voltage.
- (2) WECS owner's name, and operator's name.
- (3) Emergency telephone numbers and web address for owner. (List more than one number).
- (4) If WECS uses fencing, place signs on the perimeter fence at fence entrance door.
- (5) Unique identification such as address of WECS. If more than one WECS on access drive, units shall have further identification such that first responders can positively identify.

f. Security

- (1) All WECS shall be designed to prevent unauthorized access to electrical and mechanical components and shall have access doors that are kept securely locked at all times when service personnel are not present.
  - (2) All spent lubricants and cooling fluids shall be properly and safely removed from the site of the WECS within seven days of being replaced.
- g. Lighting: A lighting plan for each WECS and TESTING FACILITY. Such plan must describe all lighting that will be utilized and documentation that FAA requirements are met. Such a plan shall include but is not limited to, the planned number and location of lights, light color, activation methods, and whether any lights blink. Due to complexity in describing lighting effects for health, welfare, and safety, APPLICANT shall, if available, provide example locations with product descriptions, where similar, or proposed, lighting solutions are currently deployed. Lighting shall follow the following standards:
- (1) WECS shall comply with Federal Aviation Administration requirements, the Michigan Airport Zoning Act (Public Act 23 of 1950, MCL 259.431 et seq.), the Michigan Tall Structures Act (Public Act 259 of 1959, MCL 259.481 et seq.), and local jurisdiction airport overlay zone regulations. UTILITY GRID WIND ENERGY SYSTEMS shall comply with applicable utility, Michigan Public Service Commission, and Federal Energy Regulatory Commission interconnection standards.
  - (2) The minimum FAA lighting standards shall not be exceeded. All tower lighting required by the FAA shall be shielded to the maximum extent possible to reduce glare and visibility from the ground. The tower shaft shall not be illuminated unless required by the FAA.
  - (3) All APPLICANTs shall be required to apply and use all reasonable efforts to obtain approval for an AIRCRAFT DETECTION LIGHTING SYSTEM (ADLS). If approved by the FAA, the APPLICANT shall be required to install ADLS.
    - i. APPLICANT shall provide copies to the Planning Commission of steps to implement ADLS from the FAA.

- ii. APPLICANT shall be required to provide the Township with ADLS application documentation and approval information as well as an implementation schedule.

h. Electromagnetic Interference

- (1) No WECS shall be installed in any location where its proximity to existing fixed broadcast, retransmission, or reception antennae for radio, television, or wireless phone or other personal communication systems would produce electromagnetic interference with signal transmission or reception unless the RESPONSIBLE PARTY provides a replacement signal to the affected party that will restore reception to at least the level present before operation of the wind energy system.
- (2) No UTILITY GRID WIND ENERGY SYSTEM shall be installed in any location within the line of sight of an existing microwave communications link where operation of the wind energy system is likely to produce electromagnetic interference in the link's operation unless the interference is insignificant.
- (3) In the event that verified interference is experienced and confirmed, the RESPONSIBLE PARTY shall produce confirmation that said interference had been resolved to residents' satisfaction within thirty (30) days of receipt of the complaint. If the complaint cannot be resolved within the required time frame, the offending system shall be shut down until the issue is resolved. Any such complaints shall follow the process stated in Complaint Resolution Section 21.G.11.

i. Interconnection Standards

- (1) All electrical connection systems and lines from the WECS to the SUBSTATION connection shall be located and maintained underground. Burial depth shall be at a depth that causes no known environmental, land use, or safety issues. Depth shall be a minimum of 6 feet below grade, be deeper than drain tile and be in compliance with the most updated NEC standards, as amended or newer Code standards. All utility lines shall be staked in the field,

so as to provide notice to property owners as to the location of utilities, including installing a marker at 4-feet below-grade to identify the utility line location.

- (2) The Planning Commission may waive or modify the minimum depth or the burial requirement and allow a lesser depth or above-ground structures in limited circumstances, such as geography precludes, or a demonstrated benefit to the township. The waiver shall not be granted solely on cost savings to APPLICANT. Request for variation shall consider aesthetics, future use of land, location of utilities or drains, and effect on nearby landowners.
- (3) WECS including towers shall comply with all applicable state construction and electrical codes and local building permit requirements.

j. Use Agreements

(1) Road Use Agreement:

- i. The APPLICANT shall provide and execute a Road Use Agreement with the Township and the Montcalm County Road Commission and shall file a copy of such Agreement with the Township Zoning Administrator before construction. The Road Use Agreement is subject to review and approval of the Township attorney and the Road Commission. The RESPONSIBLE PARTY shall provide a written status report annually to the Township Board as to the ongoing scope of roadwork and shall also provide written notice to the Township Board when all required roadwork has been completed. The Township may require the renewal of the bond for roadwork to cover costs of roadwork to be completed in the future.
- ii. The APPLICANT shall post a financial security in the form of cash in an escrow account established in, a financial institution licensed in the State of Michigan for the cost of repairs of Montcalm County roads within the Township. The escrow costs are for the cost of repairs of Montcalm County roads within the Township that were damaged during the construction or operation of the wind energy facility.

This amount shall be reviewed every three (3) years and increased by a percentage that is equal to the prior three years' cumulative rate of inflation. The amount and standards for road repair work shall be determined by a third-party road inspector appointed by mutual agreement of the Township, APPLICANT, and Montcalm County Road Commission. The cash in escrow shall only be released (in whole or in part) when the Township Board, in consultation with the Montcalm County Road Commission, said third party inspector, and MDOT determines that all required road work has been completed and approved. The amount of escrow shall be determined by the Road Commission, Township Board, and the third party. The APPLICANT will post a financial security in the amount determined by these three parties. All road repairs must be complete within ninety (90) days of project completion, or maintenance completion, but shall not exceed 365 days from project commencement or maintenance completion.

(2) Drain Use Agreement:

- i. The APPLICANT shall provide and execute a Drain Use Agreement with the Township and the Montcalm County Drain Commission and shall file a copy of such Agreement with the Township Zoning Administrator before construction. The Drain Use Agreement is subject to review and approval of the Township attorney and the Drain Commission, in consultation with the Township Board and third-party inspector. The RESPONSIBLE PARTY shall provide a written status report annually to the Township Board as to the ongoing scope of work and shall also provide written notice to the Township Board when all required work has been completed. The Township may require the renewal of the bond for work to cover costs of which may be completed in the future.
- ii. The APPLICANT shall post a financial security in the form of cash in an escrow account established in, a financial institution licensed in the State of Michigan for the cost of repairs of Montcalm County drains within the Township. The escrow costs are for the cost of repairs of Montcalm County drains within

the Township that were damaged during the construction or operation of the wind energy facility. This amount shall be reviewed every three (3) years and increased by a percentage that is equal to the prior three years' cumulative rate of inflation. The amount and standards for drain repair work shall be determined by a third-party inspector appointed by mutual agreement of the Township, APPLICANT, and Montcalm County Road Commission. The cash in escrow shall only be released (in whole or in part) when the Township Board, in consultation with the Montcalm County Drain Commission, said third party inspector, and EGLE determines that all required work has been completed and approved. The amount of escrow shall be determined by the Drain Commission, Township Board, and the third party. The APPLICANT will post a financial security in the amount determined by these three parties. All repairs must be complete within ninety (90) days of project completion, or maintenance completion, but shall not exceed 365 days from project commencement or maintenance completion.

- k. Appearance: A WECS shall be painted a non-obtrusive (light environmental color) color that is non-reflective. The wind turbine base and blades shall be of a color consistent with all other turbines in the area. No striping of color or advertisement shall be visible on the blades or tower.
- l. Outdoor Storage: The storage or stockpiling outdoors of equipment, materials, parts, supplies, and other items not specifically being used for the on-going construction of a turbine or other component of a WECS shall be prohibited.
- m. SHADOW FLICKER
  - (1) The APPLICANT shall conduct an analysis of potential SHADOW FLICKER at all INHABITED STRUCTURES and surrounding public roads. The analysis shall identify the locations of SHADOW FLICKER that may be caused by the project and the expected durations of the flicker at these locations from sunrise to sunset over the course of a year.
  - (2) SHADOW FLICKER shall not exceed thirty (30) hours per year at a participating INHABITED STRUCTURE or public road and zero (0) hours per



year at a non-participating INHABITED STRUCTURE parcel line.

- (3) SHADOW FLICKER shall not exceed zero (0) hours per year at ANY boundary line of a NON-PARTICIPATING PARCEL or anywhere within the boundaries of a NON -PARTICIPATING PARCEL.
- (4) The analysis shall identify areas where SHADOW FLICKER may affect the occupants of the structures or motorists and include a SHADOW FLICKER mitigation plan, which describes measures that shall be taken to eliminate or mitigate SHADOW FLICKER that occurs over the limits established by this subsection.

n. Noise:

- (1) The audible sound from a UTILITY GRID WIND ENERGY SYSTEM at a NOISE SENSITIVE FACILITY within a PARTICIPATING PARCEL, and at and within the boundaries of a NON-PARTICIPATING PARCEL, shall not at any time exceed the Sound Level (Leq) levels shown in Table 1, measured in accordance with the methodology described in Sections 21.G.8.n(6)-(10), as applicable to the time and purpose of the measurement.

**Table 1 –Sound Level (Leq) Limits**

Zone	Time	Sound Level (dBA)
NOISE SENSITIVE FACILITY within a PARTICIPATING PARCEL	7 a.m. to 10 p.m.	50
	10 p.m. to 7 a.m.	45
NON-PARTICIPATING PARCEL	7 a.m. to 10 p.m.	45
	10 p.m. to 7 a.m.	40

- (2) In the event audible noise from the operation of the UTILITY GRID WIND ENERGY SYSTEM contains a prominent discrete tone, the limits set forth in Table 1 shall be reduced by five (5) dBA. For a prominent discrete tone to be identified as present, the equivalent-continuous SOUND PRESSURE LEVEL in the ONE-THIRD OCTAVE BAND of interest is required to exceed the arithmetic average of the equivalent-continuous SOUND PRESSURE LEVEL for the two adjacent ONE-THIRD

OCTAVE BANDs by five (5) dB for center frequencies of five hundred (500) Hz and above, by eight (8) dB for center frequencies between one hundred and sixty (160) Hz and four hundred (400) Hz, or by fifteen (15) dB for center frequencies between twenty five (25) and one hundred and twenty-five (125) Hz as specified by ANSI S12.9 Part 3, Annex B.

- (3) Any noise level resulting in a fraction shall be rounded up to the next whole number.
- (4) Sound Modeling Study – The APPLICANT shall provide a predictive sound modeling study of all WIND TURBINE noise for a UTILITY GRID WIND ENERGY SYSTEM to verify that ordinance requirements can be met for the limits set in Table 1. The sound modeling must follow International Standard, ISO 9613-2 “Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation.” The sound modeling study shall use the maximum apparent wind turbine SOUND POWER LEVELs as determined by measurement according to IEC 61400 – Part 11, or as determined by analytical calculations according to the manufacturer, plus 2 dB to each FREQUENCY band. The SOUND POWER source shall be modeled at HUB HEIGHT. Modeling shall include topographical information and assume hard ground (G=0) for all large areas of pavement and water, and mixed ground (G=0.5) for all other land. The sound modeling study shall include a map with all proposed wind turbine locations, all Noise Sensitive Facilities, and all participating and NON-PARTICIPATING PARCELS. The sound study map shall be overlaid with sound contour lines extending out to the 30 dBA sound contour line, at 5 dBA intervals from the center of the proposed UTILITY GRID WIND ENERGY SYSTEM.
- (5) Post Construction Sound Survey – A post construction sound study shall be performed by the SOUND MEASUREMENT PERSONNEL selected by the Planning Commission, at the expense of the WECS owner, within 12 months of the commencement of the operation after the commencement of the operation of the WECS to

determine compliance with Table 1. above. The WECS owner may conduct a parallel post-construction sound study at the same time but shall not in any way interfere with the scheduling or conduct of the study being performed by the SOUND MEASUREMENT PERSONNEL. The measurements and the reporting of data shall be conducted generally in accordance with the most recent versions of ANSI S12.9 Part 3 (with or without an observer present [*see subsection 6.vii* below, concerning unattended measurements]), ANSI S12.18, and otherwise, as described below. The survey shall address noise complaints on file with the Township and may require additional measurement locations as deemed necessary by the Planning Commission. Should the sound survey indicate a non-compliant measurement, the owner of the UTILITY GRID WIND ENERGY SYSTEM will be required to resolve the issue within seven days of receipt of the sound survey. If the issue cannot be resolved within the required time frame, the offending turbine shall be shut down until the issue is resolved.

(6) Methodology for Post Construction Sound Survey

- i. Sound Measurement Personnel and instrumentation shall be as required in Section 21.G.8.n(9)-(10).
- ii. A calibration check shall be performed and recorded before and after each measurement period.
- iii. The measurement period shall be two hours minimum and shall be continuously observed by a trained attendant. For NOISE SENSITIVE FACILITIES within PARTICIPATING PARCELS, sound level data shall be aggregated in 10-minute measurement intervals.
- v. Compliance will be demonstrated when the Leq Sound Level of each two-hour measurement interval is less than or equal to the Leq sound level limits as set forth in Table 1. Representative intervals are defined as:
  - (a) Periods complying with the precise method for accurate measurements of ANSI S12.18.

Measurements shall be made either downwind as defined in ANSI S12.18, or if the atmospheric conditions are such that the direction of the wind vector is within an angle of  $\pm 45$  degrees of the annual prevailing wind direction.

- (b) Periods where the concurrent turbine hub-elevation wind speeds are sufficient to generate within 1 dB of the maximum continuous rated SOUND POWER from the nearest wind turbine to the measurement location.
- (c) Periods where ground level gusts are equal to or less than 7 m/s (15.66 mph).

vi. The sound level measured in each measurement interval above may be corrected for transient BACKGROUND SOUND and CONTINUOUS BACKGROUND SOUND, according to ANSI S12.9 Part 3.

vii. Unattended measurements. The SOUND MEASUREMENT PERSONAL may collect and use unattended measurements for the purpose of evaluating compliance with the maximum sound levels listed in Table 1 above, subject to the requirements of this provision. Unattended measurement may be performed and used only if reasonable efforts have already been made to collect attended measurements, but valid measurements could not be obtained with attended measurements because maximum sound power levels could not be obtained during attended measurements or due to other technical problems with the weather or otherwise. When relying on unattended data to evaluate compliance, all background, non-turbine noise shall be removed, consistent with the procedures of ANSI S12.9, to evaluate turbine-only sound.

(7) Measurement Locations for Post-Construction Sound Study

i. The specific measurement locations shall be the projected loudest locations and shall be chosen by the

SOUND MEASUREMENT PERSONNEL and approved by the Planning Commission prior to the Post Construction Sound Survey.

- ii. The measurement locations shall be performed at Noise Sensitive Facilities for PARTICIPATING PARCELS and at parcel boundary lines for NON-PARTICIPATING PARCELS. The locations shall be in close proximity to one or multiple wind turbines and/or locations which have modeled sound levels closest to limits identified in Table 1. A 3:1 ratio (wind turbines to measurement locations) will be used to determine the number of measurement locations, with a minimum of eight measurement locations. The measurement locations shall include, but are not limited to, the following:
  - (a) A minimum of four measurements of different NON-PARTICIPATING PARCELS. The measurement location shall be at the parcel boundary line nearest the closest wind turbine of the UTILITY GRID WIND ENERGY SYSTEM.
  - (b) A minimum of two measurements of different PARTICIPATING PARCELS. The measurement location shall be at the NOISE SENSITIVE FACILITY, measured 50 feet from the façade nearest the closest wind turbine of the UTILITY GRID WIND ENERGY SYSTEM.
  - (c) A minimum of two additional measurement locations determined necessary by the SOUND MEASUREMENT PERSONNEL and approved by the Planning Commission. If both parties agree, a measurement location deemed unnecessary may be omitted from the required locations.
- iii. The microphone shall be positioned at a height of 5 feet  $\pm$  1 foot above the ground, and oriented in accordance with the characteristics of the microphone so that the FREQUENCY response is as flat as possible.

- iv. To the greatest extent possible, measurement locations should be located away from potential contaminating sources of noise such as major highways, industrial facilities and urban areas.
- v. To the greatest extent possible, measurement locations shall be at the center of unobstructed areas that are maintained free of vegetation and other structures or material that is greater than 2 feet in height for a 50-foot radius around the sound monitoring equipment.
- vi. To the greatest extent possible, measurement locations should be at least 50 feet from any known sound source.
- vii. Meteorological measurements of the surface wind speed and direction shall be collected using anemometers at a height of 6.6 foot  $\pm$  0.7 foot above the ground, near each noise measurement location. Care should be taken to avoid noise measurement contamination from the anemometer operation.

(8) Reporting of Measurement Data - The reports of the SOUND MEASUREMENT PERSONNEL and of the WECS owner (if a parallel study was performed) shall be submitted to the Planning Commission within 45 days of completion of the post-construction sound survey and shall include, at a minimum, the following:

- i. A narrative description of the sound from the UTILITY GRID WIND ENERGY SYSTEM for the compliance measurement period result.
- ii. A narrative description of the sound measurements collected.
- iii. A map showing the wind turbine locations, noise measurement locations, and all Noise Sensitive Facilities.
- iv. The dates, days of the week and hours of the day when measurements were made.
- v. The wind direction and speed, temperature, precipitation, and sky condition for each measurement interval. Meteorological

measurements of the wind speed and direction will be reported at both the surface height, and at hub level (to be provided by the UTILITY GRID WIND ENERGY SYSTEM from the closest wind turbine), based on five second integration intervals. Both the average and maximum wind speeds for each measurement interval shall be reported.

- vi. The wind energy output for each measurement interval for the closest wind turbine.
- vii. Identification of all measurement equipment by make, model, and serial number.
- viii. All meteorological, sound, windscreen and audio instrumentation specifications and calibrations.
- ix. All A-weighted equivalent sound levels for each measurement interval.
- x. All 1/3 OCTAVE BAND linear equivalent sound levels for each measurement interval and identification of tonal periods.
- xi. All attendant's notes and observations.
- xii. All concurrent time stamped turbine operational data including the date, time and duration of any noise reduction operation or other interruptions in operations if present.
- xiii. All periods removed from the data due to temperatures above or below manufacturer specifications, wind speeds above ANSI S12.18 limits.
- xiv. All corrections for transient background and CONTINUOUS BACKGROUND SOUND according to ANSI S12.9 Part 3. All methodology, data, field notes, and calculations shall be included. Audio recordings may be submitted for identification of intrusive noise events. Audio collection shall occur through the same microphone/sound meter as the measurement data. Audio recordings shall be time stamped (hh:mm:ss), at an adequate quality for identifying events, and in mp3 format.

xv. All other information determined necessary by the Planning Commission.

(9) Measurement of Sound from Routine Operation – As an ongoing condition of any special use permit for a UTILITY GRID Wind Energy System, the Zoning Enforcement Officer or Township Supervisor may require measurements of the sound from routine operation of the completed system. Such measurements may be required to determine compliance with this ordinance and the special use permit, to investigate a community complaint, or for validation of the calculated sound levels presented to the Planning Commission in support of the special use permit. The measurements and the reporting of the data shall be conducted as described below. Should the measurements indicate a non-compliant measurement, the owner and the operator of the UTILITY GRID WIND ENERGY SYSTEM shall be required to resolve the issue within seven (7) days of receipt of the report. If the issue cannot be resolved within the required time frame, the offending turbine shall be shut down until the issue is resolved.

i. Methodology - Refer to Section 21.G.8.n(10).

ii. Measurement Locations

(a) Measurement locations shall be determined by the Zoning Enforcement Officer and Supervisor beforehand. The measurement locations shall include, but are not limited to, the following representative locations:

(I) For PARTICIPATING PARCELS, a minimum of one measurement location at the NOISE SENSITIVE FACILITY of the complainant, measured 50 feet from the façade nearest the closest wind turbine of the UTILITY GRID WIND ENERGY SYSTEM.

(II) For NON-PARTICIPATING PARCELS, a minimum of one measurement location at the parcel



boundary line of the complainant nearest the closest wind turbine of the UTILITY GRID WIND ENERGY SYSTEM.

(III) Any measurement location determined necessary by the Planning Commission.

(b) The microphone and measurement locations shall be as specified in Section 21.G.8.n(7).i through vii.

iii. Reporting of Measurement Data Measurement. Reports shall be submitted to the Planning Commission within 45 days of completion and shall include the information indicated in Section 21.G.8.n(8).

(10) General Sound Survey Methodology

i. All sound studies will be completed by the SOUND MEASUREMENT PERSONNEL selected by the Township. Fees for such studies shall be paid from the escrow fund described in Section 21.G.5, or in case of studies conducted after the post-construction sound survey, by the RESPONSIBLE PARTY in advance.

ii. SOUND MEASUREMENT PERSONNEL. The SOUND MEASUREMENT PERSONNEL shall be independent of the UTILITY GRID WIND ENERGY SYSTEM, well qualified by training and experience in measurement and evaluation of environmental sound and are Board Certified members of the Institute of Noise Control Engineering (INCE).

iii. Measurement Instrumentation. Measurement devices shall comply with the following requirements:

(a) A sound level meter or alternative sound level measurement system shall meet all Type 1 performance requirements of American National Standard Specifications for Sound Level Meters, ANSI S1.4.

- (b) An integrating sound level meter (or measurement system) shall also meet the Class 1 performance requirements for integrating/averaging in the International Electrotechnical Commission Sound Level Meters, IEC Publication 61672-1.
- (c) A filter for determining the existence of tonal sounds shall meet all Class 1 performance requirements of American National Standard Specification for Octave- Band and Fractional Octave-Band Analog and Digital Filters, ANSI S1.11.
- (d) An acoustical calibrator shall be used of a type recommended by the manufacturer of the sound level meter that meets the Type 1 performance requirements of American National Standard Specification for Acoustical Calibrators, ANSI S1.40.
- (e) A microphone windscreen shall be used of a type that meets or exceeds the sound level meter manufacturer's recommendations.
- (f) The sound level meter shall have been calibrated by a laboratory within 24 months of the measurement, and the microphone's response shall be traceable to the National Bureau of Standards.
- (g) The sound level meter shall be used with the fast meter response and sampling frequency of 10 samples per second.
- (h) Anemometer(s) used for surface wind speeds shall have a minimum manufacturer specified accuracy of  $\pm 1$  mph providing data in five second integrations.
- (i) Compass used for surface wind direction shall have a minimum manufacturer specified accuracy of  $\pm 3^\circ$  providing data in five second integrations.
- (j) Thermometer used for surface temperature shall have a minimum manufacturer specified

accuracy of  $\pm 2^{\circ}\text{C}$  providing data in five second integrations.

- (k) A digital recording device used to store the time waveform of the SOUND PRESSURE LEVELs shall comply with the requirements of ANSI/ASA S1.13.
- o. Emergency Services Training: The APPLICANT shall provide training for the Stanton City Fire Department and/or Six Lakes and Day Township Fire Department(s) on behalf of Douglass Township and all fire departments that provide mutual aid to Douglass Township before beginning operations of the UTILITY GRID WIND ENERGY SYSTEM and shall likewise provide regular training at least annually thereafter. The RESPONSIBLE PARTY shall report annually to the Township Board as to the status of the training of the above-mentioned Fire Departments, in addition to reporting annually to the Township Board of any incidents that required response by the Fire Department (or any Fire Departments responding via mutual aid) to the WECS.
- p. Ground Lease for WECS Site: To the extent that a ground lease, which is entered and executed for the sole purpose of creating an individual WECS site, is deemed to effectuate a “division” of a parcel or tract, as that term is defined by the Michigan Land Division Act, MCL 560.101, *et seq.*, the resulting parcel created by that division shall not be subject to the dimensional lot requirements of this Ordinance (i.e., minimum area, minimum width, and minimum yards), provided that the resulting parcel and its use thereof as a WECS site shall otherwise fully comply with the requirements of this Approval Standard 21.

## 9. DECOMMISSIONING

- a. Prior to commencing operation of a UTILITY GRID WIND ENERGY CONVERSION SYSTEM or any component within the system, the APPLICANT shall submit a decommissioning plan. The plan shall include the following:

- (1) The anticipated life of the project
- (2) The estimated decommissioning costs which do not include salvage value in current dollars
- (3) The method of ensuring funds will be available for decommissioning and restoration
- (4) The anticipated manner in which the project will be decommissioned and the site restored
- (5) A provision to give notice to the Township one year in advance of decommissioning. A surety bond to assure payment of the cost of decommissioning may be required.
- (6) The standard for inactivity shall be 12 months. Inactivity means that the UTILITY GRID WIND ENERGY SYSTEM has ceased to generate electric power.
- (7) A provision requiring the RESPONSIBLE PARTY to update the value of the decommissioning bond or surety every two (2) years based on a rate of 1.5 times the CPI (consumer price index) for each year.

b. At the time of decommissioning the RESPONSIBLE PARTY shall be required to do the following:

- (1) Commence the decommissioning and restoration process within 30 days of a determination by the Township Board that an individual wind turbine or WECS system is no longer operable. The process of decommissioning and restoration shall be completed within 12 months of the date of the Township Board's determination; provided, the Board may extend this period upon a finding that due to seasonal conditions, the complexity of the process, or other reasonable factors beyond the owner's control a longer period is warranted; and provided further, that that the owner of a parcel on which a wind turbine is to be decommissioned may retain foundational elements of the wind turbine and/or the access roads leading to it, upon applying for and receiving site plan approval for such improvements from the

Planning Commission under Chapter 13 of this Ordinance.

- (2) Repair any public roads damaged by the construction and/or deconstruction of the UTILITY GRID WIND ENERGY SYSTEM
- (3) Remove all towers and other components of the system.
- (4) Remove all foundations and underground components to a depth of not less than six feet below ground level.
- (5) Remove all roads and driveways not accepted for use by either the Montcalm County Road Commission or the property owner.
- (6) Restore the site to previous condition prior to the installation of the WECS as indicated on the approved site plan. This area shall be restored so it will properly/naturally drain. It shall be filled with like soil that was removed, including topsoil, and restored to a state compatible with the surrounding land.

c. To ensure proper removal of each WECS structure and foundation in its entirety when it is abandoned or non-operational, application shall include a proof of the financial security in effect before a building permit is approved. The security shall be licensed in the State of Michigan and be in the form of cash deposit, irrevocable bank letters of credit, or bond with a credit rating of at least "A" in a form approved by the Township Attorney. It establishes the obligation of the RESPONSIBLE PARTY to remove the structure in a timely manner. Security is based on a per turbine cost and is to be backed by owner assets, operator assets, and/or parent company assets.

- (1) The amount of each WECS security guarantee (surety) shall be the average of at least two independent (of APPLICANT) decommissioning quotes, obtained by the Planning Commission and approved by the Board, plus 20%. Salvage value shall not be included in the cost of removal and restoration. Quotes shall be prepared by an engineer approved by the Township Board. The decommissioning method shall be approved by the

Township Board, based on recommendations of the chosen engineer. Security guarantee shall be updated by the RESPONSIBLE PARTY every two (2) years at the rate of 1.5 times CPI (consumer price index) for each year.

- (2) Such financial guarantee shall be deposited or filed with the Township Clerk after a special use has been approved but before construction operations begin on the WECS project. Such financial security shall be irrevocable and non-cancelable (except by written consent of the RESPONSIBLE PARTY and Township Board) for at least 30 years from the date of approval or for the life of the UTILITY GRID WIND ENERGY SYSTEM, whichever is longer. Failure to keep such financial security in full force and effect at all times while the structure exists shall constitute a material and significant violation of a special use approval and this ordinance and shall subject the RESPONSIBLE PARTY to all remedies available to the Township, including enforcement action, fines, revocation of the special use approval and WECS removal.
  - (3) The RESPONSIBLE PARTY shall be pay all attorney fees and other costs incurred by the Township in the event that the structure is not voluntarily removed and the Township has to enforce removal.
10. Post-Construction Monitoring: The RESPONSIBLE PARTY shall be responsible for complying with all requirements of this section when the WECS facility is operating and providing periodic reports, as specified. In accordance with the Township's Escrow Policy, the RESPONSIBLE PARTY shall establish an escrow account in an amount sufficient to pay the cost of Township experts to conduct, provide, and/or review all reports, studies, and documentation related to the post-construction performance of the WECS facility.
11. Complaint Resolution: A complaint resolution process shall be established by the Township Board, including a "Complaint" form to be completed by residents experiencing negative effects from the wind energy facility and submitted to the Township Board. The Complaint Resolution Process shall include, but not limited to:
  - a. Receiving and Forwarding of Complaints: A third party answering switchboard, website or equivalent, shall be paid for and maintained

by the RESPONSIBLE PARTY. The cost to maintain and support shall be funded in the amount of \$20,000 and be replenished by the owner annually or at any time that balance falls below \$5,000. The Township Board shall select a complaint resolution process that is independent of the facility operator or owner and that concurrently informs the Board and the operator of any complaint.

- b. Investigation of Complaints: Township shall initiate an investigation into a complaint within thirty (30) days and may utilize escrow funds to hire the appropriate expert(s).
- c. Hearing of Complaints: Township Board may schedule a public hearing following completion of Investigation of Complaints where experts, residents and/or RESPONSIBLE PARTY may present information before the Township Board. Notice of hearing shall be given not less than 15 days prior to the hearing date by first class mail to all property owners within 300 feet of the facility that was the subject of the complaint and shall be published in a newspaper of general circulation within the Township.
- d. The Township Board reserves the right to require WECS RESPONSIBLE PARTY to shut down any WECS unit that does not meet ordinance requirements until such WECS unit complies or is removed.

## 12. Compliance

- a. The initial development and any subsequent changes shall fully comply with all applicable requirements of the Zoning Ordinance and other laws, ordinances, and rules of the federal, state, county, and township governments in effect at the time of such development or change. Non-compliance with ordinance requirements or conditions of approval may result in revocation of the permit.
- b. NUISANCE COMPLAINT compliance shall be resolved after section "Complaint Resolution" is completed. RESPONSIBLE PARTY shall provide resolution plan within 30 days and resolve complaint within 90 days. WECS may be shut down during resolution time to extend resolution time to 180 days.
- c. For NON-NUISANCE COMPLAINT compliance, and upon formal notice from Township or Resident to WECS permit holder, WECS permit holder shall respond within seven (7) days with resolution plan, and up to 30 days to resolve the issue Failure to resolve any NON-NUISANCE COMPLAINT may result in permit loss.
- d. In addition to any other remedies or complaint resolution procedures set forth in this Section, violations of this Section shall also

constitute a municipal civil infraction in accordance with Chapter 21 of this Ordinance. Each day on which any violation of this Section continues shall constitute a separate offense. The Township may bring an action for an injunction to restrain, prevent or abate any violation of this Section.

- e. Upon change of ownership, operator or parent company, the Township shall receive from the new owner, operator or parent company notification and updated documents within 30 days including, but not limited to, legal proof of change, corporate legal contact, security bond updates, emergency contact, and local contact.
- 13. Douglass Township and its representatives shall have the authority to inspect the WECS (any of the wind turbines, the roads and/or accessory structures) upon reasonable notice of at least 24 hours to the APPLICANT. The APPLICANT may require that a representative of the APPLICANT accompany the Township and/or its representatives on any inspection.
- 14. Post-Construction Documentation: Within six (6) months of completing construction of each individual WECS, the APPLICANT shall submit as-built site plan drawings of the constructed structure(s). The APPLICANT should submit a hard copy of the drawing set and electronic file formats including Adobe PDF, GIS, and CAD files. The information in the drawings should include: location data (x,y,z coordinates) of site features, inclusive of turbines, access roads, junction boxes, underground collection lines, aboveground transmission lines, and borings underneath roads and drains.

Section 3. Validity and Severability. Should any portion of this Ordinance be found invalid for any reason, such holding shall not be construed as affecting the validity of the remaining portions of this Ordinance.

Section 4. Effective Date. This ordinance shall become effective seven (7) days after its publication or seven (7) days after the publication of a summary of its provisions in a local newspaper of general circulation.

AYES: Anderson, Laper, Snyder, Althoff, Jeppesen

NAYS: None

ORDINANCE DECLARED ADOPTED.



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Ronda L. Snyder, Clerk  
Township of Douglass

STATE OF MICHIGAN        )  
  ) ss.  
COUNTY OF MONTCALM    )

I, the undersigned, the duly qualified and acting Clerk of the Township of Douglass, Montcalm County, Michigan (the “Township”), do hereby certify that the foregoing is a true and complete copy of an ordinance adopted by the Township Board at a regular meeting on July 6, 2022, the original of which is on file in my office. Public notice of said meeting was given pursuant to and in compliance with Act No. 267, Public Acts of Michigan, 1976, as amended, including in the case of a special or rescheduled meeting, notice by posting at least eighteen (18) hours prior to the time set for the meeting.

IN WITNESS WHEREOF, I have hereto affixed by official signature on this \_\_\_\_\_ day of \_\_\_\_\_, 2022.

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Ronda L. Snyder, Clerk  
Township of Douglass