

## **Section 7.27 Wind Energy Systems (WES)**

**A. Definitions:** For the purpose of this Section, the following terms and phrases shall have the following meanings.

1. Ambient: The sound pressure level that exists at least 90% of the time or L90.
2. ANSI: American National Standards Institute.
3. dB(A): The sound pressure level in decibels. Refers to the “a” weighted scale defined by ANSI. A method for weighting the frequency spectrum to mimic the human ear.
4. dB(C): The sound pressure level in decibels of frequencies below 1k Hz. Refers to the “c” weighted scale defined by ANSI SI.43-1997.
5. Decibel: The unit of measure used to express the magnitude of sound pressure and sound intensity.
6. Horizontal Axis Wind Energy System: A wind turbine design in which the shaft is parallel to the ground and the blades are perpendicular to the ground.
7. Hub Height: The vertical distance measured from ground to the center of the turbine hub.
8. MET (meteorological) Tower: The structure and equipment used to determine the placement or potential placement of a WES, containing instrumentation such as anemometers designed to provide wind data.
9. Non-participating Parcel: Any property within the Township other than Participating Parcels.
10. On-Site Use Wind Energy System (“On-Site WES”): A WES with the purpose of providing energy to only the property where the structure is located, or to adjacent properties under the same ownership or control as the property where the structure is located, or to adjacent properties with the consent of the owners of the property where the structure is located and the owners of the adjacent properties.
11. Participating Parcels: Any property or portion thereof in the Agricultural zoning district owned or under the control of any person by lease, easement or any other agreement, and proposed for the placement of an On-Site WES, the inclusion within a Wind Energy Conversion Facility, or the placement of a MET Tower, transmission line or any other Wind Energy System or easements which are directly or indirectly related to a Wind Energy Generation Facility.
12. Pre-Existing Sound Pressure Level: The amount of background sound at a given location prior to the installation of WES which may include, but shall not be limited to traffic, machinery, lawnmowers, human activity, and the interaction of wind with the landscape. The sound levels are to be measured on a dB(A) weighted scale as defined by the American National Standards Institute.
13. Shadow Flicker: Alternating changes in light intensity caused by the moving blade of a WES casting shadows on the ground and stationary objects.
14. Sound Pressure: 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.
15. Sound Pressure Level: The sound pressure mapped to a logarithmic scale and reported in decibels (dB).

16. Total Height: 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 Wind Energy System (WES) whichever is greater.
17. Utility Scale Wind Energy System: A WES designed and constructed to provide electricity to the electric utility grid and occupied by a number of turbines that exceed combined total potential power output greater than a maximum of ten (10) kW.
18. Vertical Axis Wind Energy System: A wind generator design where the rotating shaft is perpendicular to the ground and the cups or blades rotate parallel to the ground.
19. WES Rotor Diameter: The distance measured across the central potential swept area of a WES blade's pattern.
20. Wind Energy System (WES): Equipment that converts and then stores or transfers energy from the wind into forms of energy and includes any base, blade, foundation, generator, nacelle, rotor, tower, transformer, turbine, vane, wire, or other component used in the system. Also refers to the term "wind turbine" or "wind generator".
21. Wind Energy Generation Facilities (WEGF): Electricity generating facilities consisting of one or more Utility Scale wind turbines under common ownership or operational control, and includes substations, MET Towers, cables/wires and other buildings accessory to such facility, whose main purpose is to supply electricity to off-site customers.

**B. On-Site WES or MET Towers, Application Requirements.** In addition to the information required by Articles 14, Site plan Review, and Article 15, Special Land Uses, the following additional application information shall be provided:

1. Name of property owner(s), parcel identification number and address.
2. Zoning classifications of the participating parcel.
3. Proposed type, number and height of the On-Site WES or MET towers to be constructed including the manufacturer and model, product specifications regarding noise output (measured in decibels dB(A), total rated generating capacity, dimensions, rotor diameter, description of ancillary facilities (including but not limited to tower design, color and wiring), and MSDS, Material Safety Data Sheets.
4. Evidence that the Michigan Public Service Commission, the subject utility company and regional transmission operator have been informed of the applicant's intent to install an interconnected, customer-owned generator and that such connection has been approved.
5. A map drawn to scale depicting the participating parcel's property lines, locations of existing roads and access drives, structures including above and below ground surface utility lines, public easements and existing mature vegetation.
6. The required setbacks shall be displayed upon the participating parcel's site plan, in addition to the information required by Article 14.
7. The location(s) of the On-Site WES or MET towers and its supporting electrical system's components including distances from existing structures, utility lines or any other possibly impacted items on site.
8. An engineered set of plans illustrating the proposed On-Site WES or MET towers must be prepared or reviewed by a registered engineer.

9. Standard drawings of any proposed equipment for review of the structural components of the On-Site WES or MET towers, including structures, towers, bases and footings. A registered engineer's certification is required for all drawings and any necessary calculations that indicate that the system complies with all local, state, and federal building, structural and electrical codes.

**C. On-Site WES or MET Towers, Design Standards.** The following standards and requirements shall apply in addition to all other provisions of this Ordinance.

1. Public Health, Safety and Welfare: Installation of the proposed On-Site WES or MET towers shall be consistent with the public health, safety and welfare of Lake Township.
2. MET Tower Duration: MET towers are specifically designed to gather data for located WES. Notwithstanding any other provision of this Zoning Ordinance to the contrary, the Township has determined that special use permits for such data gathering should not extend beyond two (2) years. Accordingly, as a condition of approval, no MET tower shall continue in operation for a period exceeding two (2) years after the MET tower is erected or becomes operational. The two (2) year special use permit expiration is an express condition to issuance of any special use permit whether or not such limitation is stated in the permit and violation of that condition shall subject the special use permit to revocation pursuant to Section 2.4.(C). See also Section 2.4(C) regarding permit expirations and extensions.
3. State, Federal and Local Regulations: On-Site WES and MET towers must comply with all state, federal and local laws and regulations, including but not limited to the applicable requirements of the Federal Aviation Administration (FAA), the Michigan Airport Zoning Act and the Michigan Tall Structures Act both prior to and after installation. No On-Site WES or MET towers shall be located on any property in such a manner as to interfere with the safe take off, approach and landing of aircraft at any non-publicly owned airport as defined by the Michigan Airport Zoning Act as amended.
4. Technological Obsolescence: The On-Site WES and MET towers must minimize the adverse impacts of technological obsolescence of such equipment.
5. Height: No On-Site WES shall exceed a total height of thirty-five (35) feet. No MET tower shall exceed a total height of one hundred seventy-five (175) feet.
6. Visual Appearance
  - a. On-Site WES and MET towers shall be required to be a neutral, non-reflective, non-obtrusive color which must be maintained throughout the life of the product.
  - b. On-Site WES and MET towers shall not be artificially lighted except to comply with the applicable FAA or other federal, state or local requirements, or to the extent necessary for the reasonable safety and security thereof.
  - c. No advertising is permitted upon an On-Site WES and MET tower. Additional items such as banners, streamers, flags and the similar items are prohibited from being attached to any On-Site WES and MET towers or their support structures.
  - d. Support structures, such as the tower and base, for an On-Site WES and MET tower may utilize guy wires. Guy wires must be clearly visible from ground level to a vertical height of six (6) feet via altered coloring, striping methods or other administratively approved methods of delineating or highlighting this part of the structure.
  - e. Any electrical system components related to the On-Site WES and MET tower, except necessary wiring from the base of the support structure to the turbine, are required to be

placed underground within the boundary of each participating parcel at a depth as to accommodate the existing land use to maximum extent practical.

- f. There shall be a minimal negative visual impact of On-Site WES and MET towers on neighborhoods, community landmarks, historic sites and buildings, naturally environmentally sensitive areas and public right of ways.

7. Ground Clearance

- a. The horizontal axis of the On-Site WES must have a minimum distance of twenty (20) feet between the lowest extension of a rotational blade and the average ground surface elevation within a thirty-two (32) foot radius of the structure's base.
- b. The vertical axis of the On-Site WES is exempt from a minimum height standard.

8. Sound: The sound pressure level generated by any On-Site WES or MET tower shall not exceed 35 dB(A) when measured at a habitable structure located on a non-participating parcel. Sound originating from any On-Site WES or MET tower may not exceed 40 dB(A) when measured at the property line of any non-participating parcel. During short-term weather events, including but not limited to severe wind, snow or rain storms, if the ambient sound pressure levels exceeds 40 dB(A), the sound originating from any On-Site WES or MET tower shall not exceed the ambient sound pressure level plus five (5) dB(A). However, in no event shall sound originating from any On-Site WES or MET tower exceed 55 dB(A) during short term weather events when measured at the property line of any non-participating parcel.

9. Parcel Size and Number of On-Site WES and MET Towers

- a. No On-Site WES or MET towers shall be located on any parcel less than 1 ½ acres in size.
- b. A participating parcel shall not be occupied by a number of On-Site WES exceeding a combined total of potential power output greater than ten (10) kW per hour nor shall the number of MET towers on a participating parcel exceed two (2) MET towers for each whole five (5) acres.

10. Safety

- a. An On-Site WES shall have a governing, breaking, feathering or other fail-safe system designed by a certified engineer in order to mitigate and prevent uncontrolled rotation during adverse weather conditions.
- b. On-Site WES and MET towers must possess protection measures from lightning strikes.
- c. A structural analysis must be provided demonstrating the structural integrity of the proposed On-Site WES and MET tower support system in the event of adverse weather conditions.
- d. Anchor points for an On-Site WES and MET tower utilizing guy wires must not be located within the road right-of-way and must be anchored entirely upon the participating parcel.

11. Setbacks

- a. On-Site WES
  - 1) Except as provided in subsection 11(a)(4) below, all setbacks required for On-Site WES towers shall be measured from the outside edge of the base of the tower which shall not be located closer than 1.5 times the total height of the proposed structure to the nearest adjacent property line of a non-participating parcel.

- 2) The base location for any On-Site WES tower located on a participating parcel shall not be located within any other necessary setbacks related to the site, including but not limited to utility easements, well/septic separations, or drain easements.
- 3) A minimum separation distance equal to or greater than a one to one (1:1) ratio to total height is required between multiple On-Site WES or MET towers.
- 4) On-Site WES upon such structure shall be opposite to the structure's façade facing the road right-of-way. In the case of a corner lot or lake property, the township's Zoning Administrator must determine which façade is the participating parcel's principal frontage and the On-Site WES tower shall be opposite of that façade. The location of any On-Site WES mounted to a residential building or residential accessory structure shall not be closer than fifty (50) feet to the nearest adjacent property line of a non-participating parcel.
- 5) All On-Site WES towers must maintain a one to one (1:1) total height to setback ratio from existing utility easements, power lines or other public infrastructure related items which may exist upon the participating parcel.

b. MET Towers

- 1) Except as provided in subsection 11(b)(7) below, all setbacks required for MET towers shall be measured from the outside edge of the base of the tower which shall not be located closer than 1.5 times the total height of the proposed structure to the nearest adjacent property line of a non-participating parcel.
- 2) The setback from a MET tower to the boundary of the Lake Huron shoreline shall be three (3) miles from the ordinary high water mark set forth in MCL 324.32502 as maintained by the Michigan Department of Environmental Quality and shall include, without limitation, all of sections 21 through 28 constituting the Rush Lake State Game Area and adjacent wetlands or other ecological and environmentally sensitive areas.
- 3) The setback from a MET tower to the boundary of the Pigeon and Pinnebog Rivers shall be a minimum of one (1) mile.
- 4) The base location for any MET tower located on a participating parcel shall not be located within any other necessary setbacks related to the site, including but not limited to utility easements, well/septic separations, or drain easements.
- 5) A minimum separation distance equal to or greater than a one to one (1:1) ratio to total height is required between multiple On-Site WES or MET towers.
- 6) If a MET tower is mounted to any building or accessory structure, then the MET tower shall not be greater than thirty-five (35) feet in total height and placement of the MET tower upon such structure shall be opposite to the structure's façade facing the road right-of-way. In the case of a corner lot or lake property, the township's Zoning Administrator must determine which façade is the participating parcel's principal frontage and the MET tower shall be opposite of that façade. The location of any MET tower mounted to any building or accessory structure shall not be closer than fifty (50) feet to the nearest adjacent property line of a non-participating parcel.
- 7) All MET towers must maintain a one to one (1:1) total height to setback ratio from existing utility easements, power lines or other public infrastructure related items which may exist upon the participating parcel.

12. Collocation: The location of any wireless communication facilities on any On-Site WES or MET towers or an equipment compound of any On-Site WES or MET towers is prohibited.

**D. Utility Scale WES or Wind Energy Generation Facilities, Application requirements.** In addition to the information required by Articles 14, Site plan Review, and Article 15, Special Land Uses, the following additional application information shall be provided:

1. Electromagnetic Interference and Signal Degradation
  - a. A report shall be produced by a third party, qualified professional acceptable to the Township to review any adverse impacts to existing telephone (including cellular and land line), microwave, navigational, any wireless technology or radio reception within the township. The report required shall, at a minimum, include the cumulative impact of all proposed, existing and permitted utility scale WES or WEGF in Huron County to existing telephone (including cellular and land line), microwave, navigational, or radio reception within two and a half (2.5) miles of the utility scale WES or WEGF participating parcel boundaries.
  - b. A report shall be produced by a third party, qualified professional acceptable to the Township to review any adverse impacts and degradation to the signal of any existing television provider and FCC licensed television station(s) whose DTV service area includes the location of the proposed utility scale WES or WEGF. The report required shall, at a minimum, include the cumulative impact of all proposed, existing and permitted utility scale WES or WEGF in Huron County to each station included in the report. If the report shows that a geographical area within the DTV service area(s) of an affected station(s) will lose the ability to receive a signal level of at least 35dBuV/m using a receive antenna height of ten (10) feet as result of the proposed turbines, an acceptable mitigation plan shall be submitted to restore coverage of that signal(s) to the residents in those areas.
2. Soil Conditions: The applicant must produce a soils analysis to research the geologic characteristics of the site based upon on site sampling and testing. This report must be certified by a registered professional engineer licensed in the State of Michigan.
3. Shadow Flicker: The applicant shall provide a detailed report from a qualified third party professional acceptable to the Township that includes without limitation, elevation drawings, computer and/or photographic simulations or other models and visual aids, illustrating the locations of any Utility Scale WES or WEGF potential shadow areas produced by the Utility Scale WES or WEGF, including a summation of the impacts of proposed Utility Scale WES or WEGF may have upon neighboring/adjacent properties and homes, including the number of hours per year of impact and mechanisms or mitigation efforts that could be implemented to minimize any negative effects.
4. Sound: A report of the existing and expected audible and low frequency sound conditions related to the Utility Scale WES or WEGF participating parcels must be conducted to identify a baseline sound presence and expected compliance with the sound limits established by this ordinance prior to any installation of any Utility Scale WES or WEGF. The report must be produced in accordance with standards established by ANSI by a qualified sound professional acceptable to the Township and must include:
  - a. A description and map of the sound producing features of the Utility Scale WES or WEGF, including the range of decibel levels expected (to be measured in dB(A) and dB(C)), and the basis for the expectation.
  - b. A description and map of the existing land uses and structures including any sound receptors, (i.e. residences, hospitals, libraries, schools, places of worship, parks, areas with outdoor workers) within one (1) mile of the proposed Utility Scale WES or WEGF participating parcel boundaries. The description shall include the location of the structure/land

use, distances from the proposed Utility Scale WES or WEGF and expected decibel readings for each receptor.

- c. The pre-existing ambient sound (including seasonal variation) and the affected sensitive receptors located within one (1) mile of the proposed participating parcel(s). Potential sensitive receptors at relatively less windy or quieter locations shall be emphasized and any problem areas identified.
  - d. A description of the project's proposed sound control features must be explained within the sound report, including specific measures to mitigate noise impacts for sensitive receptors to a level consistent with this ordinance.
5. Wind Resource Availability: The U.S. Department of Energy and National Renewable Energy Laboratory has adopted standards to measure and classify the wind based on several factors including wind speed and density. Prior to the application being accepted for a Utility Scale WES or WEGF, a thorough wind assessment study must be submitted to the Township. The study must indicate the viability of a potential development by assessing the potential participating parcel's wind resource within the U.S. Department of Energy National Renewable Energy Laboratory classification system.
6. Technical Documentation: The following information is to be assembled and submitted during review of a Utility Scale WES or WEGF Special Use Permit as a separate report from the final site plan to address the physical characteristics of the proposed Utility Scale WES or WEGF. The information will be placed on file with the Township for review purposes.
- a. Wind energy facility technical specifications including manufacturer and model, rotor diameter, tower height/type, and foundation type/dimensions.
  - b. Typical tower foundation blueprints or drawings signed by a professional engineer licensed to practice in the State of Michigan.
  - c. Typical tower blueprints or drawings signed by a professional engineer licensed to practice in the State of Michigan.
  - d. Electrical schematic illustrating the proposed support infrastructure, wires, location, and depth of the Utility Scale WES or WEGF to the point of inter-connection with any other electrical transmission lines.
7. Fire Prevention and Emergency Response Plan Requirements
- a. Description of the potential fire and emergency scenarios that may require a response from fire, emergency medical services, police or other emergency responders.
  - b. Designation of the specific agencies that would respond to potential fire or other emergencies.
  - c. Description of all emergency response training and equipment needed to respond to a fire or other emergency including an assessment of the training and equipment available to the designated agencies.
8. Environmental Impact Issues: Documentation demonstrating the expected ability to comply with the applicable parts of the Michigan Natural Resources and Environmental Protection Act (1994 PA 451, MCL 324.101 et seq.), including but not limited to:
- a. Part 31 Water Resources Protection (MCL 324.3101 et seq.)

- b. Part 91 Soil Erosion and Sedimentation Control (MCL 324.9101 et seq.)
- c. Part 301 Inland Lakes and Streams (MCL 324.30101 et seq.)
- d. Part 303 Wetlands (MCL 324.3030 1 et seq.)
- e. Part 365 Endangered Species Protection (MCL 324.36501 et seq.)

9. Site Plan

- a. The site plan and other documents shall illustrate and describe mitigation measures to minimize potential impacts on the natural environment including, but not limited to wetlands, avian and wildlife (migratory bird patterns and bat population effects), other fragile ecosystems, historical/cultural sites and antiquities.
- b. A map drawn to scale depicting the participating parcel's property lines, locations of existing roads and access drives, structures including above and below ground surface utility lines, public easements and existing mature vegetation.
- c. The required setbacks for a Utility Scale WES or WEGF shall be displayed upon the participating parcel's site plan.
- d. The location(s) of the Utility Scale WES or WEGF and its supporting electrical system's components including distances from existing structures and utility transmission.
- e. Identification and location of the participating parcels on which the proposed Utility Scale WES or WEGF will be located, including distances from occupied structures on participating parcels. The applicant shall provide written documentation that will be recorded at the Register of Deeds from all property owners of participating parcels that provides evidence they agreed to be a participating parcel.
- f. Identification and location of occupied structures on non-participating parcels and distances from property lines of non-participating parcels within a three quarter (3/4) mile of each participating parcel property line.
- g. Illustrations, including without limitation, elevation drawings, computer and/or photographic simulations or other models and visual aids of the proposed Utility Scale WES or WEGF as they will appear from vantage points at various distances from north, south, east and west.
- h. Proof of the applicant's liability insurance for the subject property(s).
- i. A written description of decommissioning and reclamation plan, including initial contact information for the owner, those performing maintenance upon the structures, and operators of the development, and participating parcel owners.
- j. The owner shall have a continuing obligation to provide the Township with up to date contact information.
- k. A site grading, erosion control and storm water drainage plan must be submitted and approved by the Huron County Drain Commission prior to commencement of construction of a Utility Scale WES or WEGF.
- l. A description, or travel plan, of the routes to be used by construction and delivery vehicles and of any road improvements that will be necessary to accommodate construction vehicles, equipment or other deliveries, and an agreement or bond which guarantees the repair of damage to public roads and other areas caused by construction of the development must be

submitted to and approved by the Huron County Road Commission prior to commencement of construction of a Utility Scale WES or WEGF.

- 1) The travel plan must include the load capacity of the affected road, an assessment of the roadway prior to and after the construction efforts have been completed and an intersection display or diagram indicating where and what type of improvements are necessary for transportation, delivery or maintenance purposes for any Utility Scale WES or WEGF related items. Any necessary post construction road repairs and reconstruction shall be the responsibility of the owner/operator of the Utility Scale WES or WEGF and such necessary road repairs or reconstruction must be performed in compliance all applicable requirements of the Huron County Road Commission.
- m. A statement indicating what hazardous material will be used and stored on the site.
- n. An anticipated construction schedule and project phasing plan shall be required prior to final site plan approval.
- o. A statement certifying that every Utility Scale WES or WEGF shall be inspected on an annual basis to ensure that all equipment related to the development is in proper working condition. The Township shall be provided with a copy of the inspection. The owner shall maintain with the Township up to date name and contact information for the person or organization responsible for the general maintenance of the structures.

**E. Utility Scale WES or Wind Energy Generation Facilities, Design Standards.** The following standards and requirements shall apply in addition to all other provisions of this Ordinance.

1. Agricultural Preservation: The proposed Installation of the Utility Scale WES or WEGF shall be consistent with the goals and objectives related to agricultural preservation including the public's health, safety and welfare within Lake Township.
2. Technological Obsolescence: The proposed installation of the Utility Scale WES or WEGF shall minimize the adverse impacts of technological obsolescence of such equipment, including a requirement to remove obsolete and/or unnecessary Utility Scale WES or WEGF in a timely manner.
3. Negative Externalities: The proposed Installation of the Utility Scale WES or WEGF shall minimize negative externalities related to but not limited to noise, shadow flicker, soil erosion and physical road conditions.
4. Certified Drawings: Any proposed equipment fifty (50) feet or greater in height shall be required to provide certified drawings of the structural components of the Utility Scale WES or WEGF, including structure's components, towers, bases and footings. A registered engineer's certification is required for all drawings and any necessary calculations that indicate that the system complies with all local, state, and federal building, structural and electrical codes.
5. Height: No Utility Scale WES or WEGF shall exceed a total height of five hundred (500) feet.
6. Visual Appearance
  - a. Utility Scale WES or WEGF shall be required to be a neutral, non-reflective, non-obtrusive color which must be maintained throughout the life of the product to mitigate visible oxidation or corrosion.
  - b. Lighted safety beacons may be installed upon the top of the structure's nacelle to adhere to FAA or other federal, state or local requirements, or to the extent necessary for the reasonable safety and security thereof. Any lighting shall be implemented at the lowest

intensity allowable under law, including but not limited to FAA regulations, and must be reasonably shielded to reduce glare and visibility from the ground.

- c. No advertising is permitted upon a Utility Scale WES or WEGF. Additional items such as banners, streamers, flags and the similar items are prohibited from being attached to any Utility Scale WES or WEGF or their support structures.
- d. Support structures, such as the tower and base, for a Utility Scale WES or WEGF shall not utilize guy wires.
- e. The proposed installation of the Utility Scale WES or WEGF shall minimize negative visual impact upon neighborhoods, community landmarks, historic sites and buildings, natural environmentally sensitive areas and public right of ways.

#### 7. Audible Sound

- a. Sound originating from the operation of any Utility Scale WES or WEGF shall not exceed 40 dB(A) when measured at the property line of any non-participating parcel. During short-term weather events, including but not limited to severe wind, snow or rain storms, if the ambient sound pressure levels exceeds 40 dB(A), the sound originating from any Utility Scale WES or WEGF shall not exceed the ambient sound pressure level plus five (5) dB(A). However, in no event shall sound exceed 55 dB(A) during short term weather events when measured at the property line of any non-participating parcel.
- b. The sound pressure level generated by the Utility Scale WES or WEGF shall not exceed 35 dB(A) when measured at a habitable structure located on a non-participating parcel.
- c. An annual report shall be required to ensure compliance with this ordinance. The report must be produced in accordance with standards established by ANSI by a qualified sound professional acceptable to the Township. This report shall be at the cost and expense of the owner(s) and/or operator and shall be submitted to the Lake Township Board of Trustees.

#### 8. Setbacks

- a. All setbacks required for Utility Scale WES or WEGF shall be measured from the outside edge of the base of the tower to the nearest adjacent property line or adjacent road right-of-way.
- b. The setback from a Utility Scale WES or WEGF to the boundary of the Lake Huron shoreline shall be three (3) miles from the ordinary high water mark set forth in MCL 324.32502 as maintained by the Michigan Department of Environmental Quality and shall include, without limitation, all of sections 21 through 28 constituting the Rush Lake State Game Area and adjacent wetlands or other ecological and environmentally sensitive areas.
- c. The setback from a Utility Scale WES or WEGF to the boundary of the Pigeon and Pinnebog Rivers shall be a minimum of one mile.
- d. The base of any Utility Scale WES or WEGF shall be set back a minimum of 2 times the total height from any habitable structure located on a participating parcel.
- e. The base of any Utility Scale WES or WEGF shall be set back a minimum of four (4) times the total height of the Utility Scale WES or WEGF or seventeen hundred (1,700) feet, whichever is greater, from any property line of a non-participating parcel.
- f. Each Utility Scale WES or WEGF shall be setback a minimum of four (4) times the total height of the Utility Scale WES or WEGF or seventeen hundred (1,700) feet, whichever is

less from a public road right-of-way, communication tower, existing electrical lines or any other public utility, except for the interconnection between a Utility Scale WES or WEGF and the transmission facilities of a public utility.

- g. All Utility Scale WES or WEGF shall have a minimum separation distance between structures of not less than one and one half (1.5) times the WES rotor diameter, the minimum industry standards or minimum manufacturer's recommendations. The applicant is required to provide documentation and rationale certified by a registered engineer supporting the separation distance.

#### 9. Low-Impact Design Layout

- a. The placement of Utility Scale WES or WEGF must minimize the impacts on existing agricultural endeavors and farmland activity including, but not limited to, tiling systems, harvest and planting patterns or pasture areas.
- b. Appropriate locations for potential Utility Scale WES or WEGF with existing agricultural lands shall be encouraged along fence rows, tree lines, forest areas and other portions of land that are not typically utilized for agricultural production.
- c. Land clearing, soil erosion, habitat impact and clearing of natural vegetation shall be limited only to that which is necessary for construction, operation and maintenance of the Utility Scale WES or WEGF and is otherwise prescribed by applicable laws, regulations, and ordinances.
- d. Any cooling system ventilation, generators or other potential sources of sound must be referenced by location and type per Utility Scale WES or WEGF upon a final site plan. Any sound generative device must be oriented upon the machine or site in such a manner which will minimize any negative impacts to neighboring parcels.

#### 10. Safety

- a. Utility Scale WES or WEGF shall not be designed to be climbable on the exterior of the structure.
- b. All access doors and interior access points shall be lockable and accessible only to those either constructing or maintaining the Utility Scale WES or WEGF.
- c. Appropriate warning signs shall be placed at the base of the Utility Scale WES tower or WEGF upon any associated electrical equipment and at every Utility Scale WES tower or WEGF entrance.
- d. Any access drives or roads remaining on the site shall be gated and locked at night or when not in use. Gates shall be located no closer than fifty (50) feet from the road right-of-way.
- e. The blade tip on any Utility Scale WES or WEGF shall not be less than seventy-five (75) feet from the ground when measured from the lowest rotational position.
- f. Each Utility Scale WES or WEGF shall be equipped with both manual and automatic braking device capable of stopping the operation in high winds and adverse weather conditions.
- g. All Utility Scale WES or WEGF must have lightning protection.
- h. Spills of any hazardous materials shall be reported to the Zoning Administrator immediately upon discovery of release and shall be removed and disposed of in accordance with applicable state and federal law.

- i. The Township or any emergency service provider who services the Township has the authority to order any Utility Scale WES or WEGF to cease its operation if they determine in good faith that there is an emergency situation involving the Utility Scale WES or WEGF that may result in danger to life or property. The owner and/or operator shall provide the Township and emergency service providers with contact information for personnel with access to the braking device who shall be available at all times in person or by phone with remote access. The owner and/or operator may be required to be available and present in such an emergency situation.
  - j. All Utility Scale WES or WEGF must comply with all state, federal and local laws and regulations, including but not limited to the applicable requirements of the Federal Aviation Administration (FAA), the Michigan Airport Zoning Act and the Michigan Tall Structures Act both prior to and after installation. No Utility Scale WES or WEGF shall be located on any property in such a manner as to interfere with the safe take off, approach and landing of aircraft at any non-publicly owned airport as defined by the Michigan Airport Zoning Act as amended.
11. Shadow Flicker. A Utility Scale WES or WEGF shall not be allowed to cast a shadow upon an adjacent or nearby non-participating parcel's principal structure in excess of thirty (30) hours measured on a continuous 365 day basis. Equipment and software such as "Shadow Impact Module SIM by NorthTec GMBH" or equivalent with all necessary cabling and receptors may be necessary and shall be installed and maintained by the owner and/or operator to abate any shadow flicker in excess of the thirty (30) hours permitted by this subsection.
12. Maximum Vibrations and Low Frequency Sound
  - a. A Utility Scale WES or WEGF shall not produce vibrations humanly perceptible upon a non-participating parcel.
  - b. Sound emanating from the operation of a Utility Scale WES or WEGF shall not exceed 50 dB(C) measured at the property line of a non-participating parcel.
13. State/Federal Requirements: A Utility Scale WES or WEGF shall meet or exceed any applicable standards and regulations of the FAA, Michigan Public Service Commission, National Electric Safety Code, U.S. Fish and Wildlife Services and any other agency of the state or federal government with the authority to regulate wind turbine generators or other tall structures.
14. Environmental Impact Issues: Utility Scale WES or WEGF shall comply with the applicable parts of the Michigan Natural Resources and Environmental Protection Act (1994 PA 451, MCL 324.101 et seq.), including but not limited to:
  - a. Part 31 Water Resources Protection (MCL 324.3101 et seq.)
  - b. Part 91 Soil Erosion and Sedimentation Control (MCL 324.9101 et seq.)
  - c. Part 301 Inland Lakes and Streams (MCL 324.30101 et seq.)
  - d. Part 303 Wetlands (MCL 324.3030 1 et seq.)
  - e. Part 365 Endangered Species Protection (MCL 324.36501 et seq.)
15. Avian and Wildlife Impact:
  - a. The applicant shall have a third party qualified professional, approved by the township, conduct an analysis to identify and assess any potential impacts on wildlife and endangered

species. The applicant shall take appropriate measures to minimize, eliminate or mitigate adverse impacts identified in the analysis. The applicant shall identify and evaluate the significance of any net effects or concerns that will remain after mitigation efforts.

- b. Sites requiring special scrutiny include bird refuges and other areas where birds are highly concentrated, bat hibernacula, wooded ridge tops that attract wildlife, sites that are frequented by federally listed endangered species of birds and bats, significant bird migration pathways, and areas that have landscape features known to attract large numbers of raptors.
  - c. 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.
  - d. A post construction wildlife mortality study shall be conducted annually. Power lines shall be placed under ground to prevent avian collisions and electrocutions. All power lines, transformers, or conductors shall comply with the Avian Power Line Interaction Committee (APLIC, <http://aplic.org>) published standards to prevent avian mortality.
  - e. The Township shall be provided with a copy of the analysis required in this subsection.
16. **Collocation:** The location of any wireless communication facilities on any Utility Scale WES or WEGF, or an equipment compound of any Utility Scale WES or WEGF, is prohibited except upon express approval of the Township according to Section 7.26.

#### **F. Utility Scale WES or Wind Energy Generation Facilities, Additional Requirements.**

##### **1. Security Bond Requirements**

- a. Prior to final approval of a Special Land Use, the applicant shall engage a certified professional engineer acceptable to the Township to estimate the total cost of decommissioning the Utility Scale WES or WEGF and reclamation efforts needed to return affected land back to its original physical condition. The applicant shall pay for the costs of obtaining such estimate. The estimate shall be submitted to the Lake Township Board of Trustees for review.
- b. The owner(s) and/or operator of the Utility Scale WES or WEGF shall post a security bond, in a form acceptable to the Township, equal to one hundred fifty percent (150%) of the total estimated decommissioning and reclamation costs.
- c. Said bond shall be posted and maintained with a bonding company licensed in the State of Michigan or federal or state chartered lending institution chosen by the owner(s) or operators acceptable to the Township.
- d. Any lending institution shall be required to notify the Township ninety (90) days prior to expiration of the applicable security bond and the owner(s) and/or operator shall renew the security bond with the lending institution of their choosing and acceptable to the township. Until each Utility Scale WES or WEGF is decommissioned and the property reclaimed, the owner(s) and/or operator is required to maintain a security bond in accordance with this section. In the event a security bond is not maintained, the Township may take any action permitted by law, revoke the Special Use Permit, order a cessation of operation, and/or order that the Utility Scale WES or WEGF be removed and the land reclaimed.

- e. When decommissioning and site reclamation has been completed, written correspondence to the Lake Township Board of Trustees is required before the Board of Trustees may authorize a release of security bonds associated with a Utility Scale WES or WEGF.

## 2. Decommissioning and Removal Procedures

- a. As part of the Special Use Permit process, the applicant shall submit a decommissioning plan to describe the anticipated life of the project, estimated decommissioning costs net of salvage value in current dollars, methods of ensuring that funds will be available for decommissioning, including a method of reclamation for restoration of the land.
- b. Any Utility Scale WES or WEGF that is not operated for a continuous period of twelve (12) months shall be considered abandoned. The owner(s) of such structure shall be required to either provide to the Township a written explanation regarding why the tower is inoperable and a timeline no longer than sixty (60) days to bring the tower back into operation or compliance or apply for the necessary demolition permits for removal within ninety (90) days of receipt of written notice from the Township.
  - 1) If the owner(s) fail to provide explanation within sixty (60) days as described above or fails to apply for the necessary demolition permits within ninety (90) days for removal of an abandoned Utility Scale WES or WEGF, the Township shall provide the owner(s) with written notice of the violation. If the owner(s) fails to cure the violation within sixty (60) days of the date of the notice, the Township may begin the process of removing the Utility Scale WES or WEGF and all associated equipment or appurtenances at the owner(s) expense. The Township shall sell any salvageable material and deduct any monies generated from said sales from the balance of the required security bond. The remedies provided to the Township pursuant to this subsection shall be in addition to and not in place of any other remedy available to the Township at law or in equity to enforce the provisions of this ordinance.
- c. When a Utility Scale WES or WEGF is decommissioned, all items must be removed from the subject property and Lake Township, including buildings, electrical components, any roads, structure foundation, or other associated components. Reclamation of the site includes the planting of grasses or cover crops, which may have been present prior to construction or can be utilized to effectively maintain soil erosion.
- d. Any removal and reclamation must be documented and recorded upon a certified survey and recorded with the Huron County Register of Deeds.
- e. The property owner may be exempt from removing the entrance or roadway on the property, if the Township grants written permission.

## 3. Post Construction Activities: To ensure compliance with the requirements of this ordinance, the following actions must be taken pending completion of any Utility Scale WES or WEGF.

- a. A final inspection with the Huron County Drain Commissioner shall take place to ensure that soil erosion matters have been finalized at each site hosting a Utility Scale WES or WEGF.
- b. Within ninety (90) days of project completion, any roadway utilized for moving or construction purposes shall be inspected by the Zoning Administrator and representatives from the Huron County Road Commission to ensure compliance with the travel plan.
- c. A sound pressure level analysis is required to be completed by the applicant from a sample of locations throughout the perimeter of the participating parcels to demonstrate compliance with the requirements of this ordinance. Proof of compliance with audible sound standards shall be submitted to the Township for review within one hundred-eighty (180) days of the

date the Utility Scale WES or WEGF project becoming operational. Sound shall be measured by a third-party, qualified sound professional approved by the Township.

- d. Following the completion of construction, the applicant shall provide the Township written certification that all construction was completed pursuant to the Special Use Permit and approved site plan.
4. Public Inquiries and Complaints: Should an aggrieved property owner allege that a Utility Scale WES or WEGF is not in compliance with the requirements of this ordinance, the procedure shall be as follows:
- a. Complaints must be submitted to the Township Clerk in writing from the affected property owner including their name, address and contact information.
  - b. Upon receiving a complaint the township Clerk shall present the complaint to the Township Board for review at its next regular meeting or a special meeting called for that purpose. If the Township Board deems the complaint sufficient to warrant an investigation, the Township Board shall advise the owner(s) and/or operator of the Utility Scale WES or WEGF of the complaint. Within ten (10) days of the date of the notice, the owner and/or operator of the Utility Scale WES or WEGF shall deposit funds with the Township in an amount determined by the Township Board sufficient to pay for an independent investigation of the complaint, including but not limited to an investigation related to decibel level testing and shadow flicker analysis. All such independent investigations and analyses shall be conducted by qualified professionals acceptable to the Township to determine compliance with the requirements of this ordinance.
  - c. If the Utility Scale WES or WEGF is in violation of this ordinance, the owner(s) and/or operator shall reimburse the Township from the deposit required in subsection (b) above for the investigation or analysis and shall take immediate action to bring the Utility Scale WES or WEGF into compliance. In the event that the owner(s) and/or operator fails or refuses to bring the Utility Scale WES or WEGF into compliance the Township may seek relief at law or equity to abate the nuisance and may also issue a municipal civil infraction citation according to Section 2.10.