

WHEATFIELD TOWNSHIP PLANNING COMMISSION

Draft Zoning Ordinance Amendments

Wind Energy Systems

Draft: December 1, 2023

(As Recommended by the Planning Commission on 11/30/2023 for Township Board Adoption)

AMENDMENT #1

Amend Table 3-2 of Article 3, Permitted Principal Uses in Agricultural and Residential Zoning Districts, to insert Line #18 under *Uses of a Primarily Commercial, Business, or Industrial Character*, and to insert Footnote #3, to read as follows:

		PRINCIPAL USES ¹		ZONING DISTRICTS						
				A-1	A-2	R-1	R-2	R-3	R-MF	R-MHC
		Uses of a Primarily Commercial, Business or Industrial Character								
18	Wind energy systems, large ³	S	-	-	-	-	-	-	-	-

Footnote 3:

- The authorization of Large WES in the A-1 District is restricted to Sections 25, 26, 27, 34, 35, and 36, and the south half of Sections 22, 23, and 24, and the east half of Sections 28 and 33. See Section 7.38 regarding wind energy system definitions and exceptions to the classification of wind energy systems as “special land uses” or “prohibited uses.”

AMENDMENT #2

Amend Article 21 to insert the following phrase and respective definition:

Wind Energy System (WES): See Section 7.38 regarding definitions pertaining to wind energy systems.

AMENDMENT #3

Delete Section 7.38, Wind Energy Systems, Private, and insert the following in its place:

Section 7.38 Wind Energy Systems

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

- Ambient Sound:** The all-encompassing sound associated with a given environment including sound emanating from near and far locations, as measured by ANSI S12.9 Part 3.
- ANSI:** American National Standards Institute.
- dB(A):** The sound pressure level in decibels, using the “A” weighted scale defined by ANSI.
- dB(C):** The sound pressure level in decibels using the “C” weighted scale defined by ANSI.
- Decibel:** The unit of measure used to express the magnitude of sound pressure and sound intensity.
- Large Wind Energy System (Large WES):** See definition for Wind Energy System (WES).
- MET (Meteorological) Tower:** The equipment and support structure used to provide present wind data for use in determining the viability of a potential wind energy system (WES).
- Non-participating Parcel:** Any parcel within the Township other than a participating parcel.
- Participating Parcel:** Any property or portion thereof owned or under the control of any person by lease, easement, or any other agreement, and proposed for the placement of a MET tower or wind energy system (WES) or portion thereof, or is otherwise subject to an agreement in association with the WES irrespective of whether any WES equipment is to be placed on the property.

10. Shadow Flicker: Alternating changes in light intensity caused by the moving blade of a WES casting shadows on the ground and stationary objects.
11. Small Wind Energy System (Small WES): See definition for Wind Energy System (WES).
12. Sound Pressure/Sound Pressure Level: The difference at a given point between the pressure produced by sound energy and the atmospheric pressure, measured in decibels (dB).
13. Total Height: The vertical distance measured from the ground level at the base of a wind turbine tower or other support system to the uppermost vertical extension of any blade.
14. WES Rotor Diameter: The distance measured across the central potential swept area of a WES blade's pattern.
15. Wind Energy System (WES): A combination of equipment that converts and stores or transfers energy from the wind into electrical energy including wind turbine generators and related elements such as, foundations, support bases, blades, generators, nacelles, rotors, towers, transformers, converters, substations, and other components that may be part of the system. A wind energy system may be comprised of a one (1) wind turbine and supporting tower or may be comprised of multiple wind turbines and supporting towers.
 - a. Large Wind Energy System (Large WES): A wind energy system that is designed and constructed to principally provide electricity to users not located on the parcel on which the Large WES is located including the provision of electricity to the utility grid. A Large WES commonly relies on two (2) or more wind turbines and may occupy multiple participating parcels, all of which is under common ownership or operational control.
 - b. Small Wind Energy System (Small WES): A wind energy system that functions as an accessory structure and designed to principally provide electricity to users located on the participating parcel on which the Small WES is located, and which generates no greater than thirty (30) kilowatts total peak capacity. This definition shall not be construed to prohibit a Small WES from transmitting back to a public utility any excess generated electricity.
16. Wind Turbine: A group of component parts used to convert wind energy into electricity and commonly includes a support tower, base, rotor, nacelle, and blades.

B. Authorization and Approval Procedures:

1. Small WES: Small WES shall be construed as accessory structures, as defined in this Ordinance, and are permissible in all districts.
 - a. Zoning Administrator/Plot Plan Approval. A small WES that meets the conditions of subsection (1) below is subject to Zoning Administrator approval according to Section 2.4(B). The applicant shall submit a plot plan containing the information required by Section 2.4(B) and the information required by subsection (C). The Zoning Administrator shall approve such application upon finding that the Small WES application complies with the standards and regulations of this Section and Ordinance.
 - (1) A Small WES is subject to Zoning Administrator approval provided it has a total height of no greater than forty (40) feet and is to be located a minimum distance of one-hundred fifty (150) feet from existing buildings on a nonparticipating parcel and forty (40) feet from lot lines.
 - b. Planning Commission Approval. A Small WES that is not subject to Zoning Administrator approval according to subsection (a) above shall be subject to Township Board approval after receiving a recommendation from the Planning Commission. The applicant shall submit a plot plan containing the information required by Section 2.4(B) and any additional information necessary to demonstrate conformance with the standards of this Section 7.38. The Township Board shall approve such application upon finding that the Small WES application complies with the standards and regulations of this Section and Ordinance, and that the WES is sited to maximize compatibility with surrounding conditions to the greatest extent practical.
 - c. Exemption: Small WES that are attached to an existing structure, such as the roof of a dwelling or an existing accessory structure, are exempt from the regulations of this Section and the need for a zoning permit provided no part of the Small WES extends more than ten (10) feet above the point where it attaches to the existing structure and is setback from lot lines a minimum distance of twenty (20) feet as measured horizontally from the nearest

moving part to the lot line.

2. **Large WES:** Large WES constitute special land uses and are subject to the review and approval provisions of Article 15. See Table 3-2 of Article 3 regarding in what districts Large WES are permitted.
3. **Met Towers:** See subsection (H) regarding authorization and approval procedures for MET towers.

C. Small WES – Application Information. In addition to the information required by Section 2.4(B), the following additional application information shall be provided. See subsection (H) regarding application requirements for MET towers.

1. The location(s) of the proposed Small WES and the supporting electrical system's components including distances from existing structures, utility lines or any other structures and possibly impacted features of the participating parcel.
2. Proposed type, number, and total height of the Small WES turbine tower to be constructed including the manufacturer and model, product specifications regarding sound output (measured in decibels dB(A), total rated generating capacity, dimensions, rotor diameter, description of ancillary facilities including tower design, color and wiring, and Material Safety Data Sheets.
3. A map drawn to scale depicting all participating parcel's property lines, locations of existing roads and access drives, structures including above and below ground surface utility lines, public and private easements, and existing mature vegetation.

D. Small WES – Design Standards. The following standards and requirements shall apply in addition to all other provisions of this Ordinance. Where the provisions of this subsection (D) provide for additional or greater restrictions than Section 20.9, the provisions of this subsection (D) shall apply. See subsection (H) regarding design standards for MET towers.

1. **Visual Appearance**
 - a. A Small WES shall be a neutral, non-reflective, non-obtrusive color, which shall be maintained throughout the life of the product. Acceptable colors include white, black, and gray.
 - b. A Small WES shall not be artificially lighted except to comply with FAA or other federal, state, or local requirements, or to the extent necessary for the reasonable safety and security thereof as determined by the Township Board. Any lighting shall be implemented at the lowest intensity allowable under law, including but not limited to FAA regulations, and must be shielded to reduce glare and visibility from the ground.
 - c. Advertising, and banners, streamers, flags, and other similar items are prohibited from being attached to a Small WES.
2. **Ground Clearance:** The lowest extension of any exposed blade or other exposed moving component of a Small WES shall be at least twenty (20) feet above the ground elevation as measured from the highest point of the ground elevation within twenty (20) feet of the WES base.
 - a. There shall be required no minimum clearance for any exposed blade or other moving component where the movement is of a horizontal nature, provided sufficient measures are in place to protect the safety of persons under or near the moving component.
3. **Sound:** Sound emanating from the operation of a Small WES shall not exceed the lowest ambient sound pressure level that is present between the hours of 9:00 p.m. and 9:00 a.m. at the lot lines of a lot within an Agricultural or Residential District and at the lot lines of a lot occupied by a park, school, hospital, or church, and shall not exceed the lowest ambient sound level pressure plus 5 dB(A) that is present during the same hours at any other lot line.
4. **Vibration:** Vibrations shall not be produced that are humanly perceptible beyond the participating parcel on which a wind turbine is located.
5. **Guy Wires:** Guy wires are prohibited.
6. **Electrical:** All electrical systems shall comply with all state, county, and National Electrical Codes. Any electrical system components, except necessary wiring from the base of a support structure to a turbine, shall be placed underground within the boundary of each participating

parcel, at a depth as to accommodate the existing use of the participating parcel to the maximum extent practical.

7. Height: No Small WES wind turbine shall exceed a total height of eighty (80) feet.
8. Setbacks: A Small WES shall be set back a minimum distance equal to the total height of the wind turbine, from all lot lines, public road right-of-ways, private access easements, occupied buildings, surface and overhead utility lines, utility easements, and other public infrastructure related items that may be present on the participating parcel, as measured horizontally from the nearest moving part to the lot line.
9. Shadow Flicker: A Small WES shall be sited in such a manner to minimize shadow flicker from the blades on any road or on any building on an adjacent property existing at the time the application is considered. The approving body may require the applicant to submit a shadow report illustrating or otherwise delineating the projected shadow pattern of the Small WES on a daily basis or on the 21st day of March, June, September and December, specific to the Wheatfield Township area. The source and basis for such projections shall be provided.
10. Parcel Size and Number of Small WES
 - a. No Small WES shall be located on any parcel less than two (2) acres in size.
 - b. A participating parcel shall not be occupied by multiple wind turbines except where the parcel area is a minimum of five (5) acres and in no case shall more than two (2) wind turbines be erected.
11. Public Health, Safety and Welfare
 - a. A WES shall have a breaking, feathering, or other fail-safe system in order to mitigate and prevent uncontrolled rotation during adverse weather conditions.
 - b. A Small WES shall possess protection measures from lightning strikes.
 - c. On-Site WES shall 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 facility 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.
12. Abandonment/Restoration: A Small SES wind turbine 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 turbine is inoperable and a timeline no longer than sixty (60) days to bring the turbine back into operation or compliance, or otherwise remove the SES within ninety (90) days of receipt of written notice from the Zoning Administrator. Should demolition be required, the SES shall be removed in its entirety including support structures, equipment, foundations and other features and the ground shall be restored to its preconstruction state, within ninety (90) days of notification of required demolition by the Zoning Administrator.

E. Large WES – Application Information. In addition to the information required by Article 14, Site Plan Review, and Article 15, Special Land Uses, the following additional application information shall be provided. See subsection (H) regarding application requirements for MET towers.

1. Electromagnetic Interference and Signal Degradation A report prepared by a third party qualified professional acceptable to the Township, addressing any anticipated adverse impacts to existing telephone, cellular, microwave, radio, television or navigational transmission or reception within the township. The report shall address, in part, the cumulative impact of all proposed and existing Large WES within ten (10) miles of the Township on such transmission and reception.
2. Soil Conditions: A report presenting an assessment of soils and geologic characteristics of participating parcels, certified by a professional engineer licensed in the State of Michigan.
3. Shadow Flicker: A report prepared by a third party qualified professional acceptable to the Township, addressing the extent to which shadow flicker will impact adjacent and other nearby buildings and residential properties. The report shall include elevation drawings, computer and/or photographic simulations, or other models and visual aids, illustrating the locations of potential shadow areas produced by the WES and shall include a summation of the impacts the

proposed WES may have upon adjacent and other nearby buildings and residential properties 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 WES participating parcels, to identify a baseline sound presence and expected compliance with the sound pressure level limits established by this Section. The report shall be produced by a qualified sound pressure level professional acceptable to the Township and in accordance with standards established by ANSI. The report shall include:
 - a. A description and map of the sound producing features of the WES including the range of sound pressure 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 such as residences, hospitals, libraries, schools, places of worship, and parks within one (1) mile of the proposed WES participating parcels. The description shall include the location of the structure/land use, distances from the proposed wind turbines, and expected decibel readings for each receptor.
 - c. The pre-existing ambient sound pressure levels (including seasonal variation) and the affected sensitive receptors located within one (1) mile of the proposed participating parcels.
 - d. A description of the project's proposed sound pressure level control features including specific measures to mitigate sound impacts for sensitive receptors to a level consistent with this Section.
5. Wind Resource Availability: A wind resources report that indicates the viability of the proposed WES by assessing the potential participating parcels' wind resources according to the U.S. Department of Energy National Renewable Energy Laboratory classification system.
6. Property Value Impacts: A report addressing the anticipated impact of the project on local property values and proposed measures to minimize negative impacts on such values including any compensation program in the case of demonstrated reduced property sale values following installation of the facility.
7. Technical Documentation: The following information is to be assembled and submitted as part of the WES application, which is to be separate from the final site plan submittal.
 - a. Wind energy facility technical specifications including manufacturer and model, rotor diameter, tower height/type, and foundation type/dimensions.
 - b. Typical tower and tower foundation blueprints or drawings signed by a professional engineer licensed to practice in the State of Michigan.
 - c. Electrical schematic illustrating the proposed support infrastructure including wires, conduits, and the point of inter-connection with any other electrical transmission lines.
8. 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 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.
9. 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 55 Air Pollution Control (MCL 324.5501 et seq.)
 - c. Part 91 Soil Erosion and Sedimentation Control (MCL 324.9101 et seq.)
 - d. Part 111 Hazardous Waste Management (MCL 324.11101 et seq.)
 - e. Part 115 Solid Waste Management (MCL 324.11501 et seq.)
 - f. Part 201 Environmental Remediation (MCL 324.20101 et seq.)
 - g. Part 211 Underground Storage Tank Regulations (MCL 324.21101 et seq.)
 - h. Part 213 Leaking Underground Storage Tanks (MCL 324.21301 et seq.)

- i. Part 301 Inland Lakes and Streams (MCL 324.30101 et seq.)
 - j. Part 303 Wetlands (MCL 324.3030 1 et seq.)
 - k. Part 365 Endangered Species Protection (MCL 324.36501 et seq.)
10. Interconnection: 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.
 11. Decommissioning and Reclamation Plan: A plan that addresses the anticipated life of the project, estimated decommissioning and reclamation costs in current dollars, methods of ensuring that funds will be available for decommissioning and reclamation, and the proposed phasing for the completion of decommissioning and reclamation. The plan shall provide for the removal of all buildings, electrical components, roads, structure foundations, and other associated components, except as may be expressly authorized otherwise by the Township Board. Reclamation of the site shall provide for the planting of grasses or cover crops to prohibit erosion. A detailed cost estimate prepared by a qualified independent professional engineer shall accompany the proposed reclamation plan. See also subsection (G)(1) regarding the posting of a performance guarantee to ensure proper decommissioning and reclamation.
 12. Site Plan: In addition to the information required by Article 14 for site plan review, the site plan documents, or other supporting documents, shall address the following:
 - a. Illustrate and describe mitigation measures to minimize impacts on the natural environment including, but not limited to wetlands, wildlife including migratory bird patterns and bat populations, and other fragile ecosystems.
 - 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 and private easements and existing mature vegetation.
 - c. The required setbacks for components of the Large WES, including wind turbines, shall be displayed upon the participating parcel's site plan.
 - d. The supporting electrical system's components including connections to utility transmissions.
 - e. Identification and location of the participating parcels on which the proposed Large WES will be located, including distances from occupied structures on participating parcels. Written documentation that will be recorded at the Register of Deeds from all owners of participating parcels that provides evidence that such owners agree 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 of the proposed Large WES including elevation drawings, computer and/or photographic simulations, or other models and visual aids, as it 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 the decommissioning and reclamation plan.
 - j. 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 caused by construction of the Large WES that is found to be acceptable by the Ingham County Road Department.
 - 1) The travel plan shall 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, and maintenance purposes. Any necessary post construction road repairs and reconstruction shall be the responsibility of the owner/operator of the WES and such necessary repairs or reconstruction shall be performed in compliance all requirements of the Ingham County Road Department.
 - k. A statement indicating what hazardous material will be used and stored on the site.

- l. A statement certifying that every element of the WES shall be inspected on an annual basis to ensure that all equipment related to the facility is in proper working condition. The Township shall be provided with a copy of the inspections.
- m. Description of the proposed type, number, and total height of the Large WES to be constructed including the manufacturer and model, product specifications regarding sound pressure levels (measured in decibels dB(A), total rated generating capacity, dimensions, rotor diameter, description of ancillary facilities including tower design, color and wiring, and Material Safety Data Sheets.

F. Large WES – Design and Operational Standards. The following standards and requirements shall apply in addition to all other provisions of this Ordinance. See subsection (H) regarding design and operational requirements for MET towers.

1. Visual Appearance

- a. Large WES 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 shielded to reduce glare and visibility from the ground. Lighting shall be radar-activated except upon the applicant's demonstration that the FAA denied the applicant's request for such lighting activation.
- c. Advertising, and banners, streamers, flags, and other similar items are prohibited from being attached to a Large WES.

2. Ground Clearance: The lowest extension of any exposed blade or other exposed moving component of a Large WES shall be at least seventy-five (75) feet above the ground elevation as measured from the highest point of the ground elevation within fifty (50) feet of the wind turbine base.

3. Sound

- a. Sound pressure levels originating from the operation of any Large WES shall not exceed 40 dB(A) for more than five (5) minutes during a sixty (60) minute period, measured at the property line of any non-participating parcel, but in no case shall such sound pressure levels exceed 55 dB(A). If the ambient sound pressure levels exceed 40 dB(A), the sound pressure levels originating from any Large WES shall not exceed the ambient sound pressure level plus five (5) dB(A) but in no case shall sound pressure levels exceed 55 dB(A) when measured along the property lines of any non-participating parcel.
- b. The sound pressure level generated by the Large WES shall not exceed 35 dB(A) when measured at a habitable structure located on a non-participating parcel.
- c. The sound pressure level generated by the Large WES shall not exceed 50 dB(C) measured along the property lines of a non-participating parcel.
- d. A tonal noise condition generated by a Large WES shall result in the addition of 5 dB(A) to a recorded noise level for the determination of compliance with the noise level restrictions of this subsection (3). By example, the presence of tonal noise shall increase a recorded noise level of 40 dB(A) to 45 dB(A).
- e. No Large WES shall exceed a sound pressure level from 0.1 to 20 Hz of 50 dB(unweighted) re 20uPA, or exceed an RMS acceleration level of 50 dB(unweighted) re 1 micro-g, measured along the property lines of a non-participating parcel.
- f. No Large WES shall result in any vibration in the low-frequency range of 0.1 to 20 Hz, including the 1, 2, 4, 8, and 16 Hertz octave bands that is commonly perceivable by human sensation according to industry standards, or exceeds an RMS acceleration level of 50 dB(unweighted) re 1 micro-g at any time and for any duration, measured along the property lines of a non-participating parcel.
- g. An annual report shall be required to ensure compliance with this ordinance. The report shall be prepared by a qualified sound pressure level professional acceptable to the Township Board. Testing shall be performed according to the procedures in the most current

version of ANSI S12.18 and ANSI S12.9 Part 3. All sound pressure levels shall be measured with a sound pressure level meter that meets or exceeds the most current version of ANSI S1.4 specifications for a Type II sound pressure level meter. This report shall be at the cost and expense of the owner and shall be submitted to Township Clerk.

- h. The provisions of Section 20.26 shall apply except as otherwise provided by this subsection.
4. Vibration: Vibrations shall not be produced that are commonly humanly perceptible beyond the participating parcel on which a wind turbine is located.
5. Guy Wires: Guy wires are prohibited.
6. Electrical: All electrical systems shall comply with all state, county and National Electrical Codes. Any electrical system components, except necessary wiring from the base of a support structure to a turbine, shall be placed underground within the boundary of each participating parcel, at a depth as to accommodate the existing use of the participating parcel to the maximum extent practical.
7. Height: No Large WES turbine tower shall exceed a total height of five hundred (500) feet.
8. Setbacks: All setbacks required for a Large WES shall be measured from the outside edge of the base of the turbine tower to the property line, road right-of-way, or other designated feature, unless specified otherwise.
 - a. A Large WES turbine shall be set back from a habitable structure located on a participating parcel a minimum of one and one-half (1.5) times the total height. A Large WES turbine shall be set back from a habitable structure located on a non-participating parcel a minimum of three (3) times the total height.
 - b. A Large WES turbine shall be set back from lot lines of a non-participating parcel a minimum of two and one-half (2.5) times the total height. A Large WES turbine shall not be subject to lot line setbacks from shared lot lines between two (2) participating parcels.
 - c. A Large WES turbine shall be setback a minimum of one and one-half (1.5) times the total height of the Large WES from a public road right-of-way, communication tower, existing electrical lines or any other public utility, provided there is compliance with subsection (a) and (b) above. The required setbacks of this subsection from electrical lines and other public utilities shall not apply to the interconnection between the WES turbine and the transmission facilities of a public utility.
 - d. A Large WES shall have a minimum separation distance between turbines of not less than one and one-half (1.5) times the WES rotor diameter, the minimum industry standards, or minimum manufacturer's recommendations, whichever is less. The applicant shall provide documentation and rationale certified by a professional engineer licensed in the State of Michigan supporting the separation distance.
 - e. All other structures not otherwise addressed by this subsection shall be setback from all lot lines as provided by Section 20.9 for accessory buildings and structures, except that no building shall be within one hundred (100) feet from a lot line of a non-participating parcel, and a substation in excess of two thousand (2,000) sq. ft. shall be set back a minimum of four hundred (400) feet from a lot line of a non-participating parcel.
9. Shadow Flicker: A Large WES shall not be allowed to cast a shadow upon an adjacent or nearby non-participating parcel. Equipment and software such as "Shadow Impact Module SIM by NorthTec GMBH" or equivalent, with all necessary cabling and receptors that may be necessary, shall be installed and maintained to ensure compliance with this subsection.
10. Public Health, Safety and Welfare
 - a. A Large WES 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 Large WES.
 - c. Appropriate warning signs shall be placed at the base of a Large WES tower and upon any associated electrical equipment and at every facility 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. A Large WES shall possess protection measures from lightning strikes.

- f. A Large WES shall be equipped with both manual and automatic braking device capable of stopping the operation in high winds and adverse weather conditions.
 - g. Spills of any hazardous materials shall be reported to the Zoning Administrator and Michigan Department of Environment, Great Lakes, and Energy immediately upon discovery of release, and shall be removed and disposed of in accordance with applicable state and federal law including as provided by Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, Act 451 of 1994 as amended.
 - h. The Township or any emergency service provider who services the Township has the authority to order any Large WES to cease its operation if they determine in good faith that there is an emergency situation involving the facility 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.
 - i. All Large WES shall 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 Large WES 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. Electromagnetic Interference and Signal Degradation: No Large WES shall be erected where its proximity to existing fixed broadcast, retransmission, or reception antennae for radio, television, or wireless phone or other personal communication systems would produce interference with signal transmission or reception unless the applicant provides a replacement signal to the affected party that will restore reception to at least the level present before operation of the WES. Such replacement signal shall be provided within fourteen (14) days after written notification by the Zoning Administrator of documented interference. No Large WES shall be installed in any location within the line of sight of an existing microwave communications link where operation of the WES is likely to produce electromagnetic interference in the link's operation.
12. Environmental Impact Issues: Large WES 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 those parts referenced in subsection (E)(9).
13. 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 including endangered and protected 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. 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. The analysis shall be made part of the Large WES application.
 - 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.

G. Large WES – Additional Requirements

1. Performance Guarantee

- a. Prior to final approval of a Large WES application, the applicant shall engage a professional engineer licensed in the State of Michigan and acceptable to the Township to estimate the total cost of decommissioning the Large WES and reclamation 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 Township Board for review.
- b. The applicant shall post a performance guarantee, in a form acceptable to the Township, equal to one hundred percent (100%) of the total estimated decommissioning and reclamation costs. The initial performance guarantee shall be based on the inflation rate projected three (3) years after the year in which project approval is anticipated. Said bond shall be issued by a bonding company with an A.M. Best A+ rating of better, or with a federal or state-chartered lending institution chosen by the applicant and found acceptable to the Township.
 - 1) At intervals of no greater than three (3) years, the performance guarantee amount shall be reviewed and modified accordingly to ensure the value of the guarantee is equal to one hundred percent (100%) of the updated total estimated decommissioning and reclamation costs. The updated value of the performance guarantee shall be based on the inflation rate projected three (3) years from the year in which the updated guarantee is submitted.
- c. The applicant shall renew the performance guarantee annually with the lending institution of their choosing and acceptable to the Township. Until the Large WES is fully decommissioned and the property reclaimed, the applicant shall maintain a performance guarantee in accordance with this Section. In the event a performance guarantee is not maintained, the Township may take any action to revoke the Large WES permit, order a cessation of operation, and/or require the Large WES be removed and the land reclaimed.
- d. When decommissioning and site reclamation have been completed, written correspondence shall be provided to the Township Board requesting the release of the performance guarantee.

2. Abandonment: Any wind turbine of a Large WES 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 turbine is inoperable and a timeline no longer than sixty (60) days to bring the turbine 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.

- a. If the owner(s) fail to provide explanation or apply for the necessary demolition permits as described above, the Township shall provide the owner(s) with written notice of the violation. If the owner(s) fail to cure the violation within sixty (60) days of the date of the notice, the Township may begin the process of removing the turbine and all associated equipment or appurtenances at the owner(s) expense. The Township may sell any salvageable material and if so, shall deduct any monies generated from said sales from the balance of the required performance guarantee. 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 by law or in equity to enforce the provisions of this Ordinance.

3. Post Construction Activities: To ensure compliance with the requirements of this ordinance, the following actions must be taken pending completion of any Large WES construction.

- a. Following the completion of construction, the applicant shall provide the Township written certification that all construction has been completed pursuant to the zoning permit including the approved site plan and any conditions made part of the issued permit.
- b. The owner shall maintain with the Township up-to-date name and contact information for the person or organization responsible for construction of the WES facility, the general maintenance of the facility, the operators of the facility, and participating parcel owners.
- c. A sound pressure level analysis report shall be completed by the applicant for a sample of locations throughout the perimeter of the participating parcels, at locations most proximate

to occupied buildings. The report shall document the extent of compliance with the sound requirements of this Ordinance. The report shall be submitted to the Township within one hundred eighty (180) days of the date the WES facility becomes operational. Sound shall be measured by a third-party, qualified sound pressure level professional approved by the Township.

4. **Complaint Resolution:** During or after WES construction but prior to the operation of any one (1) or more turbines, the applicant shall deposit ten thousand (10,000) dollars into an escrow account established by the Township for the purpose of funding investigations by the Township into complaints of noncompliance with such permit such as in the case of sound levels and shadow flicker. At no time shall the Township permit the account to drop below a minimum of five thousand (5,000) dollars. The applicant shall bring the account balance to ten thousand (10,000) within ten (10) days of notification by the Township should account funds decrease to less than five thousand (5,000) dollars. Should an aggrieved property owner allege that a Large WES is not in compliance with the requirements of this ordinance, the procedure shall be as follows:
 - a. Complaints must be submitted to the Zoning Administrator in writing from the affected property owner including their name, address, and contact information.
 - b. Upon receiving a complaint, the Zoning Administrator 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 Large WES of the complaint and shall initiate further investigations. 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. Following the conclusion of the investigation, the Township Board shall review the results of the investigation. Copies of the investigation results shall be provided to the complainant and operator/owner.
 - 1) In the event that no violations of the Zoning Ordinance and permit are documented, the complainant shall be contacted in writing and informed of no evidence of violations and that no further action is to be taken by the Township regarding the complaint.
 - 2) In the event that one (1) or more violations are documented, the Township Board shall direct the Zoning Administrator to inform the owner/operator of the violations, the measures that must be taken to correct the violations, and the date by which each violation must be corrected.
 - d. Except as provided by this subsection, the enforcement of this Ordinance and permit provisions shall be subject to Section 2.10.

H. MET Towers for Small WES and Large WES

1. Authorization and Application Requirements

- a. A MET tower for a prospective Small WES shall be construed as an accessory structure and is permissible in all districts. A MET tower for a prospective Large WES shall be construed as an accessory structure and is permissible in all districts that permit a Large WES. The Zoning Administrator shall be the approving body for a MET tower for a prospective Small WES. The Planning Commission shall be the approving body for a MET tower for a prospective Large WES.
- b. An application for a MET tower for a prospective Small WES or Large WES shall include the scope of information required for an accessory structure according to Section 2.4(B). The following additional information shall be provided for a MET tower application for a Small or Large WES.
 - 1) Description of the proposed type, number and total height of the MET towers to be constructed including the manufacturer and model, product specifications regarding sound pressure levels (measured in decibels dB(A), total rated generating capacity, dimensions, rotor diameter, description of ancillary facilities including tower design, color and wiring, Material Safety Data Sheets, the extent of topographic alterations for construction including the limits of clearing and grading, and tower setbacks from

existing structures, lot lines, utility lines and any other structures on the participating parcel and adjacent non-participating parcels.

- c. The approval of an application for a MET tower shall not be construed as a likely approval of a subsequent application for a WES on the same parcel.

2. Design Standards and Operational Requirements

- a. MET towers shall be a neutral, non-reflective, non-obtrusive color, which shall be maintained throughout the life of the product. Acceptable colors include white, black, and gray.
- b. MET towers shall not be artificially lighted except to comply with FAA or other federal, state, or local requirements, or to the extent necessary for the reasonable safety and security thereof as determined by the Township Board. Any lighting shall be implemented at the lowest intensity allowable under law, including but not limited to FAA regulations, and must be shielded to reduce glare and visibility from the ground.
- c. Advertising, and banners, streamers, flags, and other similar items are prohibited from being attached to MET towers.
- d. Guy wires may be utilized in association with a MET tower provided guy wire anchors are set back from all lot lines a minimum distance of fifty (50) feet.
- e. A MET tower in association with a prospective Small WES shall not exceed eighty (80) feet in total height. A MET tower in association with a prospective Large WES shall not exceed five hundred (500) feet in total height.
- f. A MET tower shall be set back a minimum distance equal to the total height of the tower, from all lot lines, public road rights-of-way, private access and utility easements, occupied buildings, surface and overhead utility lines, and other public infrastructure related items that may be present on the participating parcel, as measured horizontally from the nearest moving part to the lot line.
- g. No MET tower shall be located on any parcel less than two (2) acres in size except that in the case of a MET tower for a prospective Large WES, the minimum parcel area shall be five (5) acres.
- h. No MET tower shall be in place for more than two (2) years irrespective of its operational status. See also Section 2.4(C) regarding permit expirations and extensions.
- i. A MET tower shall possess protection measures from lightning strikes.
- j. A MET tower shall 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 MET tower 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.

(End)