Meade Township
Draft Solar Energy Ordinance 2024

A. Definitions

Abandoned/Abandonment: To give up, discontinue, withdraw from. Any solar energy facility that ceases to produce energy on a continuous basis for one hundred eighty (180) days will be considered abandoned.

Applicant: This term applies to a person, company, or other legal entity that makes an application under this ordinance.

Collection System: The system of electrical lines within the Utility Scale Solar Energy Facility between the solar panels and any public utility substations.

Component: Any equipment in the Utility Scale Solar Energy Facility prior to the point of interconnection at the transmission line.

Decommission Plan: A document that details the planned shutdown or removal of a solar energy facility from operation or usage.

Energy Storage System: Rechargeable system that allows storage of energy from solar arrays or the electric grid for the purpose of commercial distribution. This may be located on parcels with a Utility Scale Solar Energy Facility, or on parcels that do not have a Utility Scale Solar Energy Facility.

Non-Participating Parcel: A property that is not subject to a Utility Scale-Solar Energy Facility lease or easement agreement at the time an application is submitted for a Special Land Use for the purposes of constructing a Utility Scale Solar Energy Facility.

Operator: Entity charged with the daily operation/maintenance of a Utility Scale Solar Energy Facility.

Owner of Facility: A person, company, or other legal entity, with legal ownership of the Utility Scale Solar Energy Facility.

Owner of Land: A person, company, or other legal entity, with legal ownership of real property who can lease or mortgage the property as collateral for a loan.

Participating Parcel: A property participating in a lease or easement agreement, or other contractual agreement, with an entity submitting a Special Land Use Permit application for the purposes of developing a Utility Scale Solar Energy Facility.

Solar Array: Multiple solar panels that collect energy from the sun to generate electricity as part of a Solar Energy System.

Solar Energy System: Equipment and components designed to collect energy from the sun to generate electricity.

Transmission Line: Electrical lines transmitting energy from the Utility Scale Solar Energy Facility's substations to public utility substations.

Utility Scale Solar Energy Facility: A solar Energy System where the principal design, purpose or use of such system is to provide energy to off-site uses or for the wholesale or retail sale of generated electricity to any person or entity.

B. Utility Scale Solar Energy Facility

1. **Purpose and Intent:** A Special Use Permit issued from the Planning Commission shall be required for any Utility Scale Solar Energy Facility to be installed and operated within the Agricultural District zoned by the Township. The purpose and intent of this ordinance is to establish standards for the siting, installation, operation, repair,

decommissioning, and removal of a Utility Scale Solar Energy Facility within the Agricultural District as a Special Land Use.

2. **Site Plan Drawing and Supporting Materials:** All applications for a Utility Scale Solar Energy Facility must be accompanied by a detailed site plan, drawn to scale with dimensions and certified by a registered engineer licensed by the State of Michigan. In addition to requirements for a site plan contained in the Township Zoning Ordinance, these materials shall also contain the following information:
    a. Vicinity map showing the location of all surrounding land uses.
    b. All lot lines and dimensions, including a legal description of each lot or parcel comprising the Utility Scale Solar Energy Facility.
    c. Names of owners of each lot or parcel that is proposed to be within the Utility Scale Solar Energy Facility and other parcels within 300'.
    d. Horizontal and vertical (elevation) scale drawings with dimensions that show the locations and heights of the proposed Solar Array(s), building, structures, above ground structures and utilities on the property.
    e. Setbacks from the Solar Array(s) to all boundary lines and all existing and proposed structures within the Utility Scale Solar Energy Facility.
    f. Photos of current condition of land, and a written description of soil conditions and other land features as of the time of the application. This is also to be included with the Decommissioning Plan.
    g. Location of all existing utility easements on record and available tile fields maps and other types of drainage systems within the Utility Scale Solar Energy Facility. Electrical lines shall be clearly defined with information whether lines are overhead or underground.
    h. Access driveways within and to the Utility Scale Solar Energy Facility, together with a detailed narrative regarding dimensions, composition, and maintenance of each proposed driveway; all access drives shall be subject to the Huron County Road Commission or Michigan Department of Transportation approval, as appropriate, and shall be planned so as to minimize the use of lands for that purpose.
    i. Planned security measures to prevent unauthorized trespass and access and to warn of potential dangers during construction, operation, removal, maintenance, or repair of the Utility Scale Solar Energy Facility.
    j. A written description of the maintenance program to be used for the Solar Array(s) and other components of the Utility Scale Solar Energy Facility, including a decommissioning plan and removal procedures. The description shall include design of site, construction plan, types, and sizes of panels with description including materials composing panels, and number of panels.
    k. Safety measures to neighboring properties or roadways.
    l. A glare study shall be conducted by a third-party qualified professional to determine if glare from the Utility Scale Solar Energy Facility will be visible from nearby residents and roadways. The study shall consider the changing position of the sun throughout the day and year.
    m. A Phase 1 Environmental Site Assessment.
    n. If the following information is not included in the Phase 1 Environmental Site Assessment, an additional environmental report describing the environmental impact of the Utility Scale Solar Energy Facility, including, but not limited to, a review of the following factors:
        i. Impact on area water resources
        ii. Impact on air quality,
        iii. Impact by sound caused by the Utility Scale Solar Energy Facility. A modeling study shall be provided to show compliance with ordinance sound requirements at project boundaries. This study shall include sound isolines extending from the sound source to the property lines.
        iv. Impact on utilities and infrastructure.
        v. Impact on wildlife.
        vi. Effects on flood plains and wetlands.
        vii. Identify all woodlots in each Utility Scale Solar Energy Facility.
        viii. Unique farmlands or soils.
        ix. Areas of aesthetic or historical importance.
        x. Archeological or cultural concerns.
    o. A written description of measures to be taken to support the flow of rainwater throughout the Utility Scale Solar Energy Facility, including any measures to promote the growth of vegetation beneath the Solar Array(s)

and/or otherwise limit the impacts of storm water runoff. The measures shall be reviewed by the Huron County Drain Commissioner.

p. A written report describing the economic impact to Meade Township and all power output and electrical energy capacity to be generated to the electrical grid by the Utility Scale Solar Energy Facility. This report shall include estimated improvement values.

q. Any other environmental factors typically evaluated by other members of the Commercial Energy industry when evaluating location for a proposed power-generating facility.

r. Application Bond: A Permit Performance Bond or other payment guarantee acceptable to the Township shall be submitted to the Township by the applicant when the applicant applies for a Special Land Use Permit for a Utility Scale Solar Energy Facility. The monetary amount of the bond shall be estimated by the Township to cover all reasonable costs and expenses associated with the Special Land Use Permit review and approval process, which costs shall include, but are not limited to, reasonable fees of the Township Attorney, Township Planner, Township Engineer, as well as costs for any reports or studies that reasonably relate to the zoning review process for the application. Such bond amount shall be in addition to any filing or application fees established by resolution. At any point during the Special Land Use Permit review process, the Township may require that the applicant increase the amount of the bond if the existing bond amount submitted by the applicant is deemed insufficient by the Township. If the applicant refuses to so increase the bond amount promptly, the Special Land Use Permit process shall cease unless and until the applicant increases the amount of the bond. Any applicable bonding resolutions or other ordinances adopted by the Township must also be complied with by the applicant.

s. A post construction "as built", to scale drawing shall be submitted to the Zoning Administrator for compliance.

t. Abandonment and Decommissioning plan. That plan shall include photos of current condition of land. See Section N. "Abandonment and Decommissioning."

u. An escrow account for legal fees, etc. for $25,000, shall be required with the application of a site plan review.

C. Compliance with the State Building Code and the National Electrical Safety Code: Construction of a Utility Scale Solar Energy Facility shall comply with the National Electric Safety Code (as amended) and the State Construction Codes, as administered and enforced by the Township Planning Commission as a condition of any Special Land Use Permit under this section.

D. Certified Solar Array Components of a Solar Array shall be approved by the Institute of Electrical and Electronics Engineers ("IEEE"), Electronic Testing Laboratories ("ETL"), United Laboratories ("UL Listed" equipment), or other similar certification organization acceptable to the Township Planning Commission.

E. Project Area:

1. The number of total acres, directly dedicated to solar arrays allowed by Special Use Permits to be used as Utility Scale Solar Energy Facilities shall not exceed 10% (shall not exceed 1800 acres) of the overall agricultural land in Meade Township. Acreage for this purpose shall be defined by the number of acres of area directly dedicated to fenced solar arrays within parcels leased, contracted, or purchased by the Special Use Permit applicant for the purpose of installing a Utility Scale Solar Energy Facility. The Planning Commission shall deny any Special Use Permit application that requests a number of acres that exceed 10% of agricultural land.
2. The general Zoning Ordinance provision limiting coverage to 15% of lot size shall not be applied to the construction of a Utility Scale Solar Energy Facility; i.e., there shall be no percentage limit to the area of construction within a parcel that has been approved for construction of a Utility Scale Solar Energy Facility, so long as applicable setbacks are maintained.

F. Height:

1. Maximum height of a Solar Array shall generally not exceed eighteen (18) feet at full tilt from the ground level under each individual solar panel to the highest point of each panel, except as follows. Land surface undulations and swales may be factored into height measurements so that no more than 50% of the array shall exceed the eighteen (18) feet height limitation.
2. Other collection devices (not including the Solar Array), accessory structures, and other components or buildings of the Utility Scale Solar Energy Facility, shall not exceed the maximum building height permitted within the district in

which that Solar Energy Facility is located, at any location on the property. The height shall be measured from the natural grade at the base of the device, component or building measured.

G. Setbacks:

1. For occupied community buildings and dwellings on nonparticipating properties, the setback distance shall be 350 feet from the nearest point on the outer wall.
2. From public road right-of-ways, the setback distance shall be 50 feet measured from the nearest edge of public road right-of-way.
3. For nonparticipating parties, the setback distance shall be 50 feet measured from the nearest shared property line.
4. The setback requirements for this section shall not apply to property boundaries where the applicable adjoining property owner(s) have provided a written waiver of this requirement in recordable form and recorded it with the County Register of Deeds.
5. Fencing and other aspects of the landscaping and screening/buffering plan as noted in Section I (Screening/Security), may be situated within the setback. The Utility Scale Solar Energy Facility operator shall maintain grounds located within setbacks, either through their own maintenance organization or by allowing the property owner to farm the land.
6. A Utility Scale Solar Energy Facility shall in all other respects comply with Article 5 of the Zoning Ordinance. Property line setbacks do not apply to contiguous participation parcels within a given Section.

H. Pre-existing Tile Fields: The System Applicant, Owner of Facility, or Operator shall not disturb or damage any existing tile field or other drainage system within the Utility Scale Solar Energy Facility, unless there is a prior agreement to the contrary with the Owner of the Land.

I. Screening/Security: The special land use application shall include a proposed landscaping, fencing, and screening/buffering plan. This plan shall be reviewed through the special land use approval process to assure that the proposed facility is appropriately landscaped in relation to adjacent land uses and road rights-of-way. The use of berms and/or evergreen plantings along the property lines adjacent to residential-zoned or developed parcels may be required as a buffer by the Planning Commission. In any event, a Utility Scale Solar Energy Facility shall be completely enclosed by perimeter fencing to restrict unauthorized access. Location of such fencing shall be subject to approval of the Township Planning Commission. Fencing shall be compliant with North American Electric Reliability Corporation standards.

J. Signage: There shall be a name and emergency telephone number posted on the fence, at all times, of the person(s) responsible for the maintenance and emergency. Signage of the facility shall in all other instances be governed by the Township's general Zoning Ordinance. Signage shall be placed on fencing facing Public Road right-of-way and other locations designated by the Planning Commission as part of the site plan review process.

K. Sound: No component of any Utility Scale Solar Energy Facility shall emit sound exceeding forty- five (45) dBa Leq (1 hour) within 100' from dwellings of participating and non-participating properties, nor exceeding sixty (60) dBa Leq (1 hour) at the external project boundary line of the facility.

1. "Component" shall include any equipment from the Utility Scale Solar Energy Facility prior to the end hook up to the final transmission line.
2. Sound testing, or industry equipment documentation documenting sound emissions, required for each application, shall be performed by a firm approved by the Township and paid by the Applicant.

L. Lighting: All lighting for parking lots, driveways, external illumination of buildings, or the illumination of signs shall be directed away from and be shielded from adjacent properties and shall be so arranged as to not adversely affect driver visibility on adjacent public roads.

M. Distribution, Transmission, and Interconnection: The electrical collection system shall be placed underground within the interior of each parcel at a minimum depth five (5) feet when placed outside of fenced Utility Scale Solar Energy Facility. Any communication system lines shall be placed underground to a minimum depth of four (4) feet when placed outside of fenced Utility Scale Solar Energy Facility. The final location of the electrical collection system installation shall be identified by GPS location when placed outside of fenced Utility Scale Solar Energy Facility. The actual installed burial depth of underground wiring shall be verified by the developer of the Utility Scale Solar Energy Facility. The developer shall provide certification

from the installing contractor of the actual installed burial depth of all underground wiring. Such certification shall be under the penalty of perjury. The collection system may be placed overhead, as necessary with Township Planning Commission approval.

N. Energy Storage System: Utility Scale Solar Energy Systems shall not include Battery Energy Storage Systems as a component. Incidental batteries for backing up electronic control, communication, and safety systems are permissible.

O. Abandonment and Decommissioning: When the operational life of the project has ceased, or at the time the project is declared abandoned as determined by the Zoning Administrator, the Facility Owner/Operator shall perform decommissioning and removal of the Utility Scale Solar Energy Facility and all its components per the requirements of the approved decommissioning plan.

1. The Applicant shall prepare a decommissioning plan and submit it to the Planning Commission for review and approval prior to issuance of the Special Land Use Permit. The plan shall include an estimated cost of decommissioning and shall include or describe any agreement with the landowner regarding equipment removal or alteration to the land upon termination of the lease. Under this plan, all structures and facilities shall be removed, including any structures below-grade (not including buried cables), and removed offsite for disposal. No concrete, piping and other materials may be left in place. Any Solar Array or combination of Photovoltaic Devices that become an Abandoned Solar Energy System shall be removed under the decommissioning plan.
2. Following the completion of the decommissioning, the Facility Owner/Operator shall conduct a Phase 1 environmental site assessment similar to the one required at the beginning of the Utility Scale Solar Energy Facility's operation, and send the results to the Zoning Administrator.
3. The ground must be restored to its original condition as near as practical within one hundred eighty (180) days of becoming an Abandoned Solar Energy System or any components thereof. Two exceptions to the 180-day period:

i. An exception to this requirement shall be granted by the Township Planning Commission if the Utility Scale Solar Energy Facility operator provides reasonable justification for an extension, or

ii. An exception to this requirement shall be granted for those conditions that the landowner provides written consent to remain the same or to provide a designated delay beyond the 180-day period. Any costs incurred by the Township in pursuing such activities shall be at the expense of the Applicant/Facility Owner, including the Applicant/Facility Owner's continuing restoration security as provided by this section.

4. If applicable, any green belt vegetation shall be removed unless landowner opts to have it remain.
5. Photos of the original condition and lay of the land to be included in the application.
6. The Decommissioning Plan shall include provisions for recycling.
7. If any Utility Scale Solar Energy Facility is shut down for 180 days or more, it shall be decommissioned. The Facility Owner/Operator may request an extension, provided they provide documented reasons for the shutdown and the reason for the extension request. The Planning Commission will be responsible for approving such an extension.
8. The applicant shall submit a plan describing the intended disposition of the Solar Energy Facilities and/or individual solar arrays at the end of their useful life and shall describe any agreement with the landowner regarding equipment removal upon termination of the lease. A performance bond or equivalent financial instrument shall be posted in an amount determined by the Township (to be utilized in the event the decommissioning plan needs to be enforced with respect to removal, site restoration, etc.). The bond shall be in favor of Meade Township and shall be in an amount of at least $1 million and shall contain a replenishment obligation. The replenishment obligation shall be satisfied with other additional documentation determined by the Township if the bond is not replenishable. The Township reserves the right to review the decommissioning plan every 5 years and revise requirements as necessary.

P. Health and Safety: The Planning Commission shall not recommend for approval any Utility Scale Solar Energy Facility Special Land Use Permit if it finds the Utility Scale Solar Energy Facility will pose an unreasonable safety hazard to the occupants of any surrounding properties or area wildlife.

Q. Inspection: The Township Zoning Administrator shall have the right to inspect the premises on which a Utility Scale Solar Energy Facility is located, with a 48-hour notice of planned inspection to operator of the facility. The Township may hire one or more consultants to assist with any such inspections, at the expense of the Facility Owner/Operator.

R. Performance Reports: Upon request by the Township Planning Commission, but not more frequently than annually, the Facility Owner/Operator shall submit a performance report to the Planning Commission.

S. Maintenance and Repairs: Each Utility Scale Solar Energy Facility must always be kept and maintained in good repair and condition.

a. The Facility Owner/Operator shall keep all sites within the Utility Scale Solar Energy Facility neat, clean, and free of refuse, waste, or unsightly, hazardous, or unsanitary conditions.
b. If the Township Zoning Administrator determines that a Solar Energy System fails at any time to meet the requirements of this Ordinance and the Special Land Use Permit, or that it poses a potential unreasonable safety hazard, the Facility Owner/Operator shall shut down the Utility Scale Solar Energy Facility within forty-eight (48) hours after notice by the Zoning Administrator, and not operate, start, or restart the Utility Scale Solar Energy Facility until the condition has been corrected.
c. Upon request by the Township Planning Commission, but not more frequently than annually, the Facility Owner/Operator shall submit a repairs and improvements report to the Planning Commission. Such report shall include an update of any incomplete repairs.

T. Roads: Any material damages to a public road located within the Township resulting from the construction, maintenance, or operation of a Utility Scale Solar Energy Facility shall be repaired at the Facility Owner/Operator's expense. In addition, the Facility Owner/Operator shall submit to either the Road Commission or Michigan Department of Transportation (as appropriate) a description of the routes to be used by construction and delivery vehicles and any road improvements that will be necessary to accommodate construction vehicles, equipment or other deliveries. Any improvement projects must be approved by the appropriate agencies.

U. Conditions: The Planning Commission may impose additional reasonable conditions on the approval of a Utility Scale Solar Energy Facility as a Special Land Use.

V. Complaint Resolution Process: The Complaint Resolution Process in Section 1202 of the Zoning Ordinance applies. If the complainant fails to reasonably cooperate with the Township's investigation of the complaint, the complaint process shall be terminated. Examples of a failure to reasonably cooperate in the investigation shall include, but not be limited to, failure of the complainant to allow and provide access to the complainant's property.

W. Transfer of Facility Ownership/operation: The Township Planning Commission shall be notified of any intent to transfer the ownership of the Utility Scale Solar Energy Facility and reassignment of a Special Land Use Permit. The current facility owner or operator shall provide written notice to the Township Planning Commission at least sixty (60) days prior to when an agreement to change the ownership of the Facility becomes effective. This notice shall inform the Township Planning Commission of the intended transfer of control of the Utility Scale Solar Energy Facility. Such an instrument or agreement shall include an express statement that the new owner or operator of the Utility Scale Solar Energy Facility shall not be permitted to operate that Facility until compliance with the terms of this ordinance have been met, including requirements for surety bonds.

X. Litigation: Any litigation, by the Township against the Applicant/Facility Owner/Operator or by the Applicant/Facility Owner/Operator against the Township, shall be litigated in the State of Michigan.

Y. Enforcement:

1. Any person, firm or corporation violating any of the provisions of this Ordinance shall be guilty of a misdemeanor or civil infraction, and the penalties and manner in which this Ordinance shall be enforced shall be governed by the general Zoning Ordinance of the Township of Meade.
2. False report of official complaint: any person who intentionally makes a false complaint or intentionally causes a false report of a complaint of a violation of this ordinance to the official in charge of enforcing this ordinance, knowing the report is false, is guilty of a civil infraction, and upon a finding of responsibility is subject to a fine of up to $500.00 for each violation and all costs associated with the investigation and prosecution thereof.

County of Huron
State of Michigan

Meade Township Wind Energy Conversion Facility Revised Zoning Ordinance

Ordinance No. 2022-1

Section 1. Purpose

The purpose of this Ordinance is to establish standards and procedures for the siting, installation, operation, and decommissioning of Wind Energy Conversion Facilities within the AG Agricultural District of Meade Township. Commercial Wind Energy Conversion Facilities are appropriate uses within AG Agricultural District zoned land. Wind energy is a viable source of renewable energy, and the conversion of wind energy to electricity may reduce dependence on nonrenewable energy and decrease the adverse effects that result from the use of conventional energy sources. The "Thumb" area of Michigan has been recognized as a prime area for wind energy development.

An appropriate balance between the need for clean, renewable energy resources and the necessity to protect the public from any known risk to health, safety, welfare and quality of life is primary.

Section 2. Definitions

As used in this Article, the following terms shall have the meaning indicated:

Airport Zoning Ordinance shall mean the Huron County Memorial Airport Zoning Ordinance.

Ambient Sound shall mean all-encompassing sound associated with a given environment, being usually a composite of sound from many sources near and far, as defined by ANSI S12.9 Part 3.

A-weighted sound level shall mean the sound pressure level in decibels as measured on a sound level meter using the A-weighting network, a method for weighting the frequency spectrum to mimic the human ear. Expressed as dB(A) or dBA.

ANSI shall mean the American National Standards Institute. The referenced standard or the most recently enacted local standard in effect at the time of any incident shall be used

Background sound shall mean the all-encompassing sound associated with a given environment without contribution from the source or sources of interest, as defined by ANSI S12.9 Part 3.

Board of Trustees shall mean the Meade Township Board of Trustees and Supervisor.

Commission shall mean the Meade Township Planning Commission.

County shall mean the County of Huron.

Township shall mean the Township of Meade.

Continuous Background Sound shall mean background sound measured during a measurement period, after excluding the contribution of transient background sounds, as defined by ANSI S12.9 Part 3.

Decibel: see Sound Pressure Level and Sound Power Level

Downwind shall mean a position where the direction of the wind vector is within an angle of ± 45 degrees of the direction connecting the center of the sound source and the center of the specified receiver area, as defined by ANSI S12.18.

End of Useful Life shall mean the Wind Energy Conversion Facility, or a portion thereof, such as one or more individual wind turbines that have not produced electrical energy for twelve (12) consecutive months.

Equivalent A-weighted Continuous Sound Level shall mean the level of a steady sound which, in a stated time period and at a stated location, has the same A-weighted sound energy as the time varying sound, and expressed as dBA.

FAA shall mean the Federal Aviation Administration.

FERC shall mean the Federal Energy Regulatory Commission.

Frequency shall mean the number of oscillations or cycles per unit of time, expressed as Hertz (Hz).

Hertz means the frequency of sound expressed by cycles per second.

Hub Height shall mean, when referring to a wind turbine, the distance measured from ground level to the *center* of the turbine hub.

IEC means the International Electrotechnical Commission. The IEC is the leading global organization that prepares and publishes international standards for all electrical, electronic and related technology. The referenced standard or the most recently enacted *local* standard in effect at the time of any incident shall be used.

ISO means the International Organization for Standardization. ISO is a network of the national standards institutes of 156 countries. The referenced standard or the most recently enacted *local* standard in effect at the time of any incident shall be used.

INCE means the Institute of Noise Control Engineering.

Inhabited means to live or reside in.

Inhabited Structure means a structure designed for human occupancy and provides complete independent living facilities for one or more persons, including permanent provisions for living, eating, sleeping, cooking and sanitation.

Lmax or Maximum Sound Level Descriptor is the highest sound level measured during a single noise event (such as a vehicle passed by) in which the sound level changes value as time goes on.

MET Tower shall mean a meteorological tower used for the measurement of wind speed.

Michigan Tall Structure Act (Act 259 of 1959) shall govern the height of structures in proximity to airport related uses and is included as a standard in this Ordinance by reference.

Noise Sensitive Facility means an inhabited structure, school, hospital, church, public library or other area designated by the Planning Commission.

Non-participating Parcel means a parcel of real property which is not under lease or other property agreement with a Wind Energy Conversion Facility (WECF) owner/operator.

Octave Band shall mean the frequency interval where the upper frequency is twice the lower frequency.

One-Third Octave Band shall mean the frequency interval where the upper frequency is the lowest frequency times the cube root of two.

Participating Parcel means a parcel of real property which is under lease or other property agreement with a Wind Energy Conversion Facility (WECF) owner/operator.

Rotor means an element of a wind energy system that acts as a multi-bladed airfoil assembly, thereby extracting through rotation, kinetic energy directly from the wind.

SCADA shall mean Supervisory Control and Data Acquisition, a computer system for gathering and analyzing real time data.

Shadow Flicker shall mean alternating changes in light intensity caused by the moving blade of a wind energy system casting shadows on the ground and stationary objects, such as but not limited to a window at a dwelling.

Sound Power shall mean the rate per unit of time at which sound energy is radiated, expressed as watts (W).

Sound Power Level shall mean ten times the logarithm to the base 10, of the ratio of a given sound power to the reference sound power of 1 picowatt, expressed in decibels.

Sound Pressure shall mean the difference at a given point between the pressure produced by sound energy and the atmospheric pressure, expressed as pascals (Pa).

Sound Pressure Level shall mean twenty (20) times the logarithm to the base 10, of the ratio of the root-mean-square sound pressure to the reference pressure of twenty (20) micropascals, expressed as decibels (dB). Note that, unless expressed with reference to a specific weighting (such as dBA), the unit dB shall refer to an un-weighted measurement.

Tip Height means the distance measured from ground level to the furthest vertical extension of the rotor and blade.

Township shall mean the Township of Meade in Huron County, Michigan.

Transient Background Sound shall mean background sound associated with one or more sound events which occur infrequently during the basic measurement period, a measurement interval with or without the source operating, as defined by ANSI S12.9 Part 3.

Wind Energy Conversion Facility (WECF) or Wind Energy Facility shall mean an electricity generating facility consisting of one or more wind turbines under common ownership or operation control, and includes substations, MET towers, cables/wires and other buildings accessory to such facility, located on private land which is under lease or other property agreement with a WECF owner/operator, whose main purpose is to supply electricity to off-site customer(s).

Wind Energy Facility Site Permit is a **zoning** permit issued upon compliance with the standards of this Ordinance.

Wind Energy Facility Site Plan Review is the process used to review a proposed Wind Energy Facility.

Wind Energy Overlay Districts are districts created by the Meade Township Board of Trustees upon receiving recommendations from its Planning Commission, by identifying areas within the Agricultural District best situated for the development of wind energy facilities and adopting specific provisions that apply in that area in addition to other provisions of the zoning ordinance.

Wind Turbine shall mean a wind energy conversion system which converts wind energy into electricity through the use of a wind turbine generator, and includes the turbine, blade, tower, base and pad transformer, if any; provided that such a system shall only be a wind turbine for purposes of this Ordinance if it both has a total height greater than 150 feet and nameplate capacity of greater than 100 kilowatts.

Section 3. Regulatory Framework

3.1 Zoning A Wind Energy Conversion Facility (W.E.C.F.) may be constructed on land that is zoned AG Agricultural on the official zoning map of the Township, subject to provisions and standards of Section 5. Wind Energy Facility Site Plan Review of this Ordinance.

3.2 Principal or Accessory Use

A Wind Energy Conversion Facility (W.E.C.F.) and related accessory uses may be considered either principal or accessory uses. A different existing use or an existing structure on the same parcel shall not preclude the installation of a Wind Energy Facility or a part of such facility on such parcel. Wind Energy Facilities that are constructed and installed in accordance with the provisions of this Ordinance shall not be deemed to constitute the expansion of a nonconforming use or structure. Wind Energy Facilities shall be reviewed and approved pursuant to Section 5.0 of this Ordinance.

Section 4.0 Applicability Wind Energy Conversion Facilities may be allowed only within the AG Agricultural District, subject to the regulations and requirements of the general Meade Township Zoning Ordinance and this Meade Township Wind Energy Conversion Facility Revised Ordinance.

Wind Energy Conversion Facility connections, ancillary equipment and underground wiring may also be allowed to be installed. All parcels, regardless of the zoning district may participate in proposed

wind lease agreements, but no utility grade wind turbines shall be allowed in any Residential or Commercial Districts.

Section 4.1 Application: Signatures

The application for a permit for a Wind Energy Conversion Facility shall be submitted on a form prepared for that purpose by the Township, and shall demonstrate the support in writing of each and every legal and equitable owner of each lot or parcel within Meade Township that is participating in whole or in part in the Wind Energy Conversion Facility.

The applicant shall submit eight (8) copies of the application and all supporting material to the Township Zoning Administrator. The Zoning Administrator shall cause the application to be placed on the Planning Commission's regular meeting agenda.

Section 5.0 Wind Energy Facility Site Plan Review Procedures

The following procedures shall be utilized when reviewing an application for a Wind Energy Facility Permit. The intent is to identify agricultural land eligible for commercial, large-scale wind energy conversion facilities and, at the same time, provide for maximizing and preserving agricultural activity.

Section 5.1 Site Plan Review Required

Wind Energy Conversion Facilities shall not be located, constructed, erected, altered or used without first obtaining a Wind Energy Facility Permit pursuant to this Ordinance. The Wind Energy Facilities Site Plan must be reviewed and approved by the Meade Township Planning Commission pursuant to standards contained herein. Applicants whose site plans do not fully comply with the standards of this Ordinance may submit an appeal to the Meade Township Zoning Board of Appeals for further review and possible approval. Modifications of development standards shall be based on a recommendation by the Zoning Board of Appeals that said modification is in the best interest of the Township and the applicant. Where modification of a standard is requested, the Meade Township Board of Trustees shall hold a public hearing prior to consideration of a modified site plan.

An applicant proposing a Wind Energy Facility must submit the following site plan materials:

a. Survey of the property showing existing features such as contours, large trees, buildings, structures, roads (right-of-way), utility easements, land use, zoning district, names of the owners of each lot or parcel on the site plan and of owners of each parcel adjacent to the proposed site plan within 300 feet within Meade Township, and vehicle access;

b. Plan(s) showing the location of proposed turbine towers, underground and overhead wiring (including depth of underground wiring), access roads (including width), substations and accessory structures. Location of all structures and aboveground utilities

located on the proposed site; On-site buildings, structures and utilities shall also be scalable on drawings.

c. A description of routes to be used by construction and delivery vehicles and of any road improvements that will be necessary in the Township to accommodate construction vehicles, equipment or other deliveries, and a performance bond which would guarantee the repair of any damage to public roads and other areas caused by construction of the Wind Energy Facility.

d. Engineering data concerning construction of the tower and its base or foundation, which must be engineered and constructed in a manner that upon removal of said tower, the soil will be restored to its original condition to a depth of eight (8) feet from the established ground level

e. Access driveways to each Wind Energy Facility, together with a detailed narrative regarding dimensions, composition, and maintenance of each proposed driveway. All access driveways shall be subject to the Huron County Road Commission's approval, and the use of the drives shall be planned so as to minimize the use of lands for that purpose.

f. Anticipated construction schedule.

g. A written description of the maintenance program to be used to maintain each Wind Energy Facility including removal when determined to be obsolete or abandoned. The description shall include maintenance schedules, the types of maintenance to be performed, and removal procedures and schedules should the wind energy facility become obsolete or abandoned.

h. Planned security measures to prevent unauthorized trespass and access and to warn of potential dangers, during both construction and operation of the Wind Energy Facility and a copy of the manufacturer's safety measures to prevent uncontrolled rotation or over speeding.

i. Digital versions of all planning and construction documents are required pursuant to Section 5.1 Site Plan Review. Digital submittals are in addition to paper plans and do not replace any current submission requirements. Digital versions shall be submitted in PDF (Adobe Acrobat/Portable Document File) format.

j. Plan(s), permits, and/or data showing compliance with the Huron County Memorial Airport Zoning Ordinance and the Meade Township Zoning Ordinance.

5.2 Application Fee: An applicant for a Wind Energy Facility shall remit an application fee to the Township in the amount specified in the fee schedule adopted by the Meade Township Board of Trustees. Payment shall be made at time of application submission.

5.3 Application Material The following shall be included and/or be utilized as standards when preparing, submitting and reviewing an application for a Wind Energy Facility. A site plan which differs from these standards can be approved only upon the review of the Meade Township Planning

Commission and approval of the Meade Township Board of Trustees that the modification is in the best interests of the Township and applicant.

a. Avian Analysis

The applicant shall submit an avian study to assess the potential impact of proposed Wind Energy Facilities upon bird and bat species. The avian study shall be at a minimum, a report on a literature survey for threatened and endangered species, and any information on critical flyways. The applicant must identify any plans for post-construction monitoring or studies. The analysis should also include an explanation of potential impacts and propose a mitigation plan, if necessary.

b. Visual Appearance; Lighting; Powerlines; Shadow Flicker. The applicant shall use measures to reduce the visual impact of wind turbines to the extent possible, utilizing the following:

1) Wind turbines shall be mounted on tubular towers, painted a non-reflective, non-obtrusive color. The appearance of turbines, towers and buildings shall be maintained throughout the life of the Wind Energy Facility pursuant to industry standards (i.e., condition of exterior paint, signs, landscaping, etc.). A certified registered engineer and authorized factory representative shall certify that the construction and installation of the wind energy conversion system meets or exceeds the manufacturer's construction and installation standards.

2) The design of the Wind Energy Facility's buildings and related structures shall, to the extent reasonably possible, use materials, textures, screening and landscaping that will blend facility components with the natural setting and the existing environment.

3) Wind Energy Facilities shall not be artificially lighted, except to the extent required by the FAA or other applicable authority, or otherwise necessary for the reasonable safety and security thereof. Lighting of the latest available technology acceptable to the FAA is required.

4) Wind turbines shall not be used for displaying any advertising except for reasonable identification of the manufacturer or operator of the Wind Energy Facility.

5) The electrical collection and communication systems shall be placed underground within the interior of each parcel, at a minimum burial depth of six (6) feet. Landowners are allowed to have the option of a waiver for a burial depth of electrical and collection communication wiring at a depth of five (5) feet. The electrical collection system may be placed overhead adjacent to County roadways, near substations or points of interconnection to the electric grid or in other areas as necessary. The final location of the electrical collection system installation shall be identified by GPS location. The actual installed burial depth of underground wiring shall be verified by the developer of the Wind Energy Facility. The developer shall provide certification from the installing contractor of the actual installed burial depth of all underground wiring.

A waiver to allow a minimum burial depth of electrical connection and communications wiring at a depth of less than six (6) feet may be approved, provided that the following have been accomplished:

(a) Written consent from the affected property owner(s) has been obtained stating that they are aware of the Wind Energy Facility and the electrical connection and communications wiring burial depth limitations imposed by this Ordinance and that consent is granted to allow such limitations to exceed the maximum limits otherwise allowed; and

(b) A burial depth impact easement shall be recorded with the Huron County Register of Deeds office which describes the benefited and burdened properties and which advises all subsequent owners of the burdened property that burial depth limits in excess of those otherwise permitted by this Ordinance may exist on or at the burdened property.

6) **Shadow Flicker** shall be limited to a maximum of 10 hours per year for participating inhabited structures and zero shadow flicker allowed on Non-Participating parcels. In any case where Shadow Flicker may exceed these limits a waiver may be approved, provided that the following have been accomplished:

(a) Written consent from the affected property owner(s) has been obtained stating that they are aware of the Wind Energy Facility and the Shadow Flicker limitations imposed by this Ordinance, and that consent is granted to allow Shadow Flicker limits to exceed the maximum limits otherwise allowed; and

(b) A Shadow Flicker impact easement shall be recorded with the Huron County Register of Deeds office which describes the benefited and burdened properties and which advises all subsequent owners of the burdened property that Shadow Flicker limits in excess of those otherwise permitted by this Ordinance may exist on or at the burdened property.

C. Setbacks, Separation and Security. The following setbacks and separation requirements shall apply to all wind turbines within a Wind Energy Facility:

1) **Inhabited Structures:** On a Participating Parcel, each wind turbine shall be set back from the nearest inhabited structure a distance of no less than 1320 feet.

Wind turbines adjacent to Non-participating Parcels shall have a setback of 1640 feet from the base of the wind turbine to the Non-participating property line.

A lesser setback may be approved pursuant to Section 5.1 of this Ordinance if the intent of this Ordinance would be better served thereby. A reduced setback shall be considered only with written approval from the owner of the inhabited structure. Where a turbine within a Wind Energy Facility is located in the vicinity of a city, village or adjacent township, a setback of 1640 feet from the city/village/township limits shall be required.

2. **Property Line Setbacks**:

Wind turbines shall not be subject to a property line setback for Participating Parcels. Wind turbines and access roads shall be located so as to minimize the disruption to agricultural activity, and therefore, the location of towers and access routes is encouraged along internal property lines. Where a turbine location is proposed nearer to an internal property line, then the setback shall be two (2) times the Hub Height of the wind turbine.

3. Public Roads: Each wind turbine shall be set back from the nearest public road a distance no less than 1000 feet, determined at the nearest boundary of the underlying right-of-way for such public road.

4. Communication and Electrical lines: Each wind turbine shall be set back from the nearest above-ground public electric power line or telephone line a distance of no less than 500 feet or 1.5 times its Hub Height, whichever is greater, determined from the nearest existing power line or telephone line.

5. Tower separation: Turbine/tower separation shall be based on 1) industry standards, 2) manufacturer certification and 3) the characteristics (prevailing wind, topography, etc.) of the particular site location. At a minimum, there shall be a separation between towers of not less than 3 times the turbine (rotor) diameter, and the Wind Energy Facility shall be designed to minimize the disruption to farmland activity. Documents shall be submitted by the developer/manufacturer confirming specifications for a turbine/tower separation.

6. Following the completion of construction, the applicant shall certify that all construction is completed pursuant to the Wind Energy Site Permit and, in addition, that appropriate security will be in place to restrict unauthorized access to Wind Energy Facilities.

Table I
Setbacks and Separation Requirements

	Setback Distance	Measured from:
Participating Parcel	1320 feet	Inhabited Structure
Non-participating Parcel	1640 feet	Property Line
Wind Turbine Adjacent to City, Village or Adjoining Township	1640 feet	City, Village or Neighboring Township Limits
Public Road	1000 feet	Nearest Boundary of right-of-way of Public Road
Above-ground Public Electric Power or Communication Line	500 feet or 1.5 times the Hub Height	Nearest existing power line or telephone/communication line
Separation Between Towers	Not less than 3 times the Turbine (Rotor) Diameter	Based on Industry Standards, Manufacturer Certification, Site Characteristics

D. Wind Turbine/Tower Height (Total Height): The total height of a wind turbine shall be a maximum of 499 feet. The applicant shall demonstrate compliance with the Michigan Tall Structure Act (Act 259 of 1959, as amended) and FAA guidelines as part of the approval process.

E. Sound

All Wind Energy Conversion Facilities shall be manufactured and constructed with the best available sound reduction technology available at the time of their construction.

1) The audible sound from a Wind Energy Facility at a Noise Sensitive Facility may not exceed the Lmax Sound Level limits set forth in Table II, measured in accordance with the methodology described in Sections (X) and (Y).

Table II
Sound Level (Lmax) Limits

Inhabited Structure on a Participating Parcel from 7:00 a.m. to 10:00 p.m. not to exceed - 45 dBA Lmax
Inhabited Structure on a Participating Parcel from 10:00 p.m. to 7:00 a.m. not to exceed - 45 dBA Lmax
Property Line on a Non-participating Parcel from 7:00 a.m. to 10:00 p.m. not to exceed - 40 dBA Lmax
Property Line on a Non-participating Parcel from 10:00 p.m. to 7:00 a.m. not to exceed - 38 dBA Lmax

2.) In the event audible sound from the operation of the Wind Energy Conversion System contains a prominent discrete tone, the limits set forth above shall be reduced by five (5) dBA. For a prominent discrete tone to be identified as present, the equivalent-continuous sound pressure level in the one-third octave band of interest is required to exceed the arithmetic average of the equivalent continuous sound pressure level for the two adjacent one-third octave bands by five (5) dB for center frequencies of five hundred (500) Hz and above, by eight (8) dB for center frequencies between one hundred and sixty (160) Hz and four hundred (400) Hz, or by fifteen (15) dB for center frequencies between twenty-five (25) and one hundred and twenty-five (125) Hz as specified by ANSI S12.9 Part 3, Annex B.

3.) In the event the sound levels from the Wind Energy Conversion Facility exceed the criteria listed above, a waiver to said levels may be approved provided that the following have been accomplished:

(a) Written consent from the affected property owner(s) has been obtained stating that they are aware of the Wind Energy Facility and the sound/noise limitations imposed by this Ordinance, and that consent is granted to allow noise levels to exceed the maximum limits otherwise allowed; and

(b) A sound/noise impact easement shall be recorded in the Huron County Register of Deeds office which describes the benefited and burdened properties and which advises all subsequent owners of the burdened property that noise levels in excess of those otherwise permitted by the ordinance may exist on or at the burdened property.

4.) **Infrasound** shall be included in this Ordinance in the future when ANSI Infrasound standards have been published and reasonable limits for Infrasound from Wind Turbines have been determined.

5.) **Sound Modeling Study** -- the applicant shall provide a predictive sound modeling study of all turbine noise for a Wind Energy Conversion Facility to verify that ordinance requirements can be met for the preceding Lmax Sound Level limits in Table II. The sound modeling must follow International Standard, ISO 9613-2 "Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation." The sound modeling study shall use the maximum apparent wind turbine sound power levels as determined by measurement according to IEC 61400 – Part 11, or as determined by analytical calculations according to the manufacturer, plus 2 dB to each frequency band. The sound power shall be measured at hub height. Modeling shall include topographical information and assume hard ground (G = 0) for all large areas of pavement and water, and mixed ground (G = 0.5) for all other land. The sound modeling study shall include a map with all wind turbine locations, all Noise Sensitive Facilities, and all participating and non-participating parcels. The sound study map shall be overlaid with sound contour lines extending out to 30 dBA sound contour line, at 5 dBA intervals from the center of the proposed Wind Energy Conversion Facility.

6.) **Post Construction Sound Survey --** The applicant shall complete a post construction sound survey within 12 months of the commencement of the operation of the project. The applicant shall be able to determine compliance with the Lmax sound level limits set forth in Sections (1) and (2). The measurements and the reporting of the data shall be conducted in accordance with Section (7)(a) through Section (7(c). The survey shall address noise complaints on file with Meade Township and may require additional measurement locations as deemed necessary by the Planning Commission. Should the sound survey indicate a non-compliant measurement, the owner of the Wind Energy Conversion Facility will be required to obtain compliance through mitigation or other measures.

In the event the sound levels from the Wind Energy Conversion Facility Post Construction Sound Survey exceed the criteria listed above, a waiver to said levels may be approved following the same standards set is Sections 4.) a. and b. above shall apply:

(i) Written consent from the affected property owner(s) has been obtained stating that they are aware of the Wind Energy Facility and the sound/noise limitations imposed by this article, and that consent is granted to allow noise levels to exceed the maximum limits otherwise allowed; and

(ii) A sound/noise impact easement shall be recorded in the Huron County Register of Deeds office which describes the benefited and burdened properties and which advises all subsequent owners of the burdened property that noise levels in excess of those otherwise permitted by the ordinance may exist on or at the burdened property.

(a.) **Methodology**

i) Measurements for both Pre- and Post-construction surveys shall be supervised by a company whose personnel are independent of the Wind Energy Conversion Facility, well qualified by training and experience in measurement and evaluation of environmental sound, and are Board Certified members of the Institute of Noise Control Engineering (INCE). The company chosen to do measurements shall be chosen and approved by the Township Board.

ii) A calibration check shall be performed and recorded before and after each measurement period.

iii) The nighttime measurement period shall be 2 hours minimum and shall be continuously recorded by a monitoring device. Sound level data shall be aggregated in 10-minute measurement intervals within the nighttime compliance measurement periods (nighttime: 10:00 p.m. to 7:00 a.m.).

iv) The daytime measurement period shall be 2 hours minimum and shall be continuously recorded by a monitoring device." Sound level data shall be aggregated in 10-minute measurement intervals within the daytime compliance measurement periods (daytime: 7:00 a.m. to 10:00 p.m.)

v) Compliance will be demonstrated when the Lmax
Sound Level of every twelve representative 10-minute measurement intervals is less than or equal to the Lmax Sound Level limits as set forth
in Sections (1) and (2) of this ordinance. Representative intervals are defined as:

(*a.*) Periods complying with the general method for routine measurements of ANSI S 12.18. Measurements shall be made either downwind as defined in ANSI S12.18, or if the atmospheric conditions are such that the direction of the wind vector is within an angle of $\pm$45 degrees of the annual prevailing wind direction.

(*b.*) Periods when the concurrent turbine hub-elevation wind speeds are sufficient to generate within 1 dB of the maximum continuous rated sound power from the nearest wind turbine to the measurement location.

(*c.*) Periods when ground level gusts are equal to or less than 7 m/s (15.66 mph)

(b.) Measurement Locations

i) The measurement locations shall be chosen by the developers' Measurement Personnel and by the Meade Township Planning Commission prior to the Post Construction Sound Survey.

ii) For subsequent Sound Surveys, the Meade Township Board of Trustees/Planning Commission reserve the right to request that specific individual wind turbines be targeted for testing.

iii) The measurement locations shall be performed at Noise Sensitive Facilities in close proximity to one or multiple wind turbines and/or locations which have modeled sound levels closest to limits provided in Table I. A 6:1 ratio (wind turbines to measurement locations) will be used to determine the number of measurement locations, with a minimum of 8 measurement locations. The number of locations shall include, but are not limited to the following:

(*a.*) A minimum of four measurements of different non-participating parcels. The measurement location shall be at the Noise Sensitive Facility, measured 50 feet from the property line facing the closest wind turbine of the Wind Energy Facility.

(*b.*) In the event of a non-participating land owner denying access for measurement, a calculated value shall be acceptable.

(*c.*) A minimum of two measurements of different participating parcels. The measurement location shall be at the Noise Sensitive Facility, measured 50 feet from the exterior wall facing the closest wind turbine of the Wind Energy Facility.

(*d.*) Any measurement location deemed necessary by the Measurement Personnel and the Meade Township Planning Commission. If both parties agree, a measurement location deemed unnecessary may be omitted from the required location.

iv) The microphone shall be positioned at a height 5 feet $\pm$ 1 foot above the ground, and oriented in accordance with the characteristics of the microphone so that the frequency response is as flat as possible.

v) To the greatest extent possible, measurement locations should be located away from potential contaminating sources of noise such as major highways, industrial facilities and urban areas.

vi) To the greatest extent possible, measurement locations shall be at the center of unobstructed areas that are maintained free of vegetation and other structures or material that is greater than 2 feet in height for a 50-foot radius around the sound monitoring equipment.

vii) To the greatest extent possible, measurement locations should be at least 50 feet from any known sound source.

viii) Meteorological measurements of the surface wind speed and direction shall be collected using anemometers at a height of 6.6 feet $\pm$ 0.7 foot above the ground, near each noise measurement

location. Care should be taken to avoid noise measurement contamination from the anemometer operation.

(c) **Reporting of Measurement Data** Measurement reports shall be submitted to the Meade Township Planning Commission within 45 days of completion of the post-construction survey and shall include, at a minimum, the following:

i) A narrative description of the sound from the Wind Energy Facility for the compliance measurement period result.

ii) A narrative description of the sound measurements collected.

iii) A map showing the wind turbine locations, noise measurement locations, and all Noise Sensitive Facilities.

iv) The dates, days of the week and hours of the day when measurements were made.

v) The wind direction and speed, temperature, precipitation, and sky conditions for each 10-minute measurement interval. Meteorological measurements of the wind speed and direction will be reported at both the surface height, and at hub level (to be provided by the Wind Energy Facility, from the participating parcel exterior wall or non-participating parcel property line of the Noise Sensitive Facility facing the closest wind turbine), based on five second integration intervals. Both the average and the maximum wind speeds for each 10-minute measurement interval shall be reported.

vi) The wind energy output for each 10-minute measurement interval from the participating parcel exterior wall or non-participating parcel property line of the Noise Facility facing the closest wind turbine.

vii) Identification of all measurement equipment by make, model and serial number.

viii) All meteorological, sound, windscreen and audio instrumentation specifications and calibrations.

ix) All Lmax sound levels for each 10-minute measurement interval.

x) All 1/3 octave band linear equivalent sound levels for each 10-minute measurement interval and identification of tonal periods.

xi) All attendant's notes and observations.

xii) All concurrent time stamped turbine operational data including the date, time and duration of any noise reduction operation or other interruptions in operations if present.

xiii) All periods removed from the data due to temperatures above or below manufacturer specifications, wind speeds above ANSI S12.18 limits.

xiv) All corrections for transient background and continuous background sound according to ANSI S12.9 Part 3. All methodology, data, field notes and calculations shall be included. Audio recordings submitted for identification of intrusive noise events. Audio collection shall occur through the same microphone /sound meter as the measurement data. Audio recordings shall be time stamped (hh:mm:ss), at an adequate quality for identifying events and in mp3 format.

xv) All other information determined necessary by the Meade Township Planning Commission.

7) Measurement of the Sound from Routine Operation of the Developments -- Measurements of the sound from routine operation of completed Wind Energy Facilities are generally necessary only for specific compliance testing purposes in the event that community complaints result from operation of the development, for validation of the applicant's calculated sound levels when requested by the Meade Township Board of Trustees/Planning Commission, or for enforcement by the appropriate department. The applicant shall be able to determine compliance with the Lmax sound level limits set forth in Table II. The measurements and the reporting of the data shall be conducted in accordance with Section (7)(a) through (7)(c). Should the measurements indicate a non-compliant measurement, the owner of the Wind Energy Facility will be required to obtain compliance through mitigation or other measures.

Meade Township shall keep records of any and all complaints from residents that are filed with the Township or Huron County. The Township Planning Commission shall develop procedures for resolving any such complaints including appropriate forms as necessary.

(a) **Methodology** – Refer to Sections (6) and (7) above.

(b) **Measurement Locations**

1) Measurement locations shall be conducted at the property of the complainant and as chosen by the developers' Measurement Personnel and the Meade Township Planning Commission beforehand. The measurement locations shall include, but are not limited to, the following representative locations:

a. A minimum of one measurement location at the Noise Sensitive Facility of the complainant, measured 50 feet from the participating parcel exterior wall or from the non-participating parcel property line facing the closest wind turbine of the Wind Energy Facility.

b. Any measurement location deemed necessary by the developers' Measurement

Personnel and the Meade Township Planning Commission.

ii) The microphone shall be positioned at a height of 5 feet ± 1 foot above the ground, and oriented in accordance with the characteristics of the microphone so that the frequency response is as flat as possible.

iii) To the greatest extent possible, measurement locations should be located away from potential contaminating sources of noise such as major highways, industrial facilities and urban areas.

iv) To the greatest extent possible, measurement locations shall be at the center of unobstructed areas that are maintained free of vegetations and other structures or material that is greater than 2 feet in height for a 50-foot radius around the sound monitoring equipment.

v) To the greatest extent possible, measurement locations should be at least 50 feet from any known sound source.

vi) Meteorological measurements of the surface wind speed and direction shall be collected using anemometers at a height of 6.6. feet ± 0.7 feet above the ground, near each noise measurement location. Care should be taken to avoid noise measurement contamination from the anemometer operation.

(c) **Reporting of Measurement Data** Measurement data shall be submitted to the Meade Township Planning Commission within 45 days of completion and shall include, at a minimum, the following:

i) Refer to Sections (6) through Section (7)(c)(i).

8) **General Sound Survey Methodology**

(a) **Measurement Personnel.** Measurements shall be supervised by personnel who are independent of the Wind Energy Facility, well qualified by training and experience in measurement and evaluation of environmental sound, and are Board Certified members of the Institute of Noise Control Engineering (INCE).

(b) **Measurement Instrumentation** Measurement devices shall comply with the following requirements:

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

ii) An integrating sound level meter (or measurement system) shall also meet the

Class 1 performance requirements for integrating/averaging in the International Electrotechnical Commission Sound Level Meters, IEC Publication 61672-1.

iii) A filter for determining the existence of tonal sounds shall meet all of the Class 1 performance requirements of American National Standard Specification for Octave-Band and Fractional Octave-Band Analog and Digital Filers, ANSI S1.11.

iv) An acoustical calibrator shall be used of a type recommended by the manufacturer of the sound level meter and that meets the Type 1 performance requirements of American National Standard Specification for Acoustical Calibrators, ANSI S1.40

v) A microphone windscreen shall be used of a type that meets or exceeds the recommendations of the manufacturer of the sound level meter.

vi) The sound level meter shall have been calibrated by a laboratory within 24 months of the measurement, and the microphone's response shall be traceable to the National Bureau of Standards.

vii) The sound level meter shall be used with the fast meter response and sampling frequency of one sample per second.

viii) Anemometer(s) used for surface wind speeds shall have a minimum manufacturer specified accuracy of $\pm$ 1 mph providing data in five second integrations at ground level.

ix) Compass used for surface wind direction shall have a minimum manufacturer specified accuracy of $\pm$ 3 degrees providing data in five second integrations.

x) Thermometer used for surface temperature shall have a minimum manufacturer specified accuracy of $\pm$ 2 degrees Celsius providing data in five second integrations.

xi) A digital recording device used to store the time waveform of the sound pressure levels shall comply with the requirements of ANSI/ASA S1.13, mp3 type.

G. Minimum Ground Clearance:

The blade tip of any Wind Turbine shall, at its lowest point, have ground clearance of not less than seventy-five (75) feet.

H. Signal Interference:

No Wind Energy Facility shall be installed in any location where its proximity with existing fixed broadcast, retransmission, or reception antennas for radio, television, or wireless phone or other personal communication systems would produce electromagnetic interference with signal transmission or reception. No Wind Energy Facility shall be installed in any location along the major axis of an existing microwave communication link where its operation is likely to produce electromagnetic interference in the link's operation.

I. Safety:

1) All collection system wiring shall comply with all applicable safety and stray voltage standards.
2) Wind Turbine towers shall not be climbable on the exterior.
3) All access doors to wind turbine towers and electrical equipment shall be lockable.
4) Appropriate warning signs shall be placed on wind turbine towers, electrical equipment, and Wind Energy Facility entrances.

5.4 Site Plan Approval, Amendments, Expiration and Revocation:

A Wind Energy Conversion Facility Site Plan shall be permitted to be approved, approved with conditions, or denied. Site plans must also comply with this Wind Energy Conversion Facility Revised Ordinance. An approved site plan and/or "conditionally approved" site plans are valid for 12 months from the date of approval by the Meade Township Planning Commission. The approved site plan shall be considered exercised once a building permit has been issued and substantial construction commenced. Any amendments to an approved site plan, accompanied by supporting documentation, shall be submitted to the Meade Township Planning Commission prior to permit issuance. The Meade Township Planning Commission shall review the amendment and may grant, deny, or amend such amendment as deemed necessary. An approved site plan shall be revoked if the applicant fails to comply with conditions imposed by the Meade Township Planning Commission and this Ordinance.

Section 6.0 CERTIFICATION. Operation of a Wind Energy Facility shall require certification of compliance; a certification report from the Wind Facility's owner/operator is required within twelve (12) months of the facility's initial operation (start-up) date. The post-construction certification report shall confirm the project's compliance with provisions of this code as well as all other applicable laws and conformity with wind industry practices.

Section 7.0 INSPECTIONS. The applicant (owner/operator) shall submit annual reports to the Meade Township Planning Commission or its designated officer confirming continued compliance with applicable Meade Township codes or ordinances. This requirement shall not preclude Meade Township from undertaking a separate compliance report, where confirmation of data provided by the facility's operator is desired. The cost of any Meade Township-sponsored report shall be reimbursed to Meade Township by the facility's owner/operator through an escrow fund established pursuant to the "Schedule of Fees for Wind Energy Facilities," adopted from time-to-time by the Meade Township Board of Trustees

Section 7.01 COMPLAINT RESOLUTION. The Michigan Zoning Enabling Act allows a local unit of government to enact through ordinance regulations to achieve specific land management objectives and avert or solve specific land use problems; see MCL 125.3201(3). The Thumb area has been designated as a primary wind zone area and as a result it is recognized that Huron County and Meade Township will experience substantial growth in wind energy facilities. In light of the foregoing, Huron County and Meade Township have proposed a process for the resolution of complaints unique to wind energy systems. The process is intended to facilitate resolution of complaints concerning the construction, operation and decommissioning of the Wind Energy Facility from nearby residents and/or property owners. The process may use an independent mediator or arbitrator and shall include a reasonable time limit for acting on a complaint. A complaint resolution process approved through a Wind Energy Facility permit shall be prepared utilizing, at a minimum,

guidelines which are established in Section 7.015 below. Said process shall not preclude Meade Township from pursuing any and all appropriate legal action on a complaint.

Section 7.015

See APPENDIX I for the
Meade Township Wind Turbine Complaint Resolution Process

Section 8.0 DECOMMISSIONING. The applicant shall submit a plan describing the intended disposition of the Wind Energy Facilities, and/or individual wind turbines at the end of their useful life and shall describe any agreement with the landowner regarding equipment removal upon termination of the lease. A performance bond or equivalent financial instrument shall be posted in an amount determined by Meade Township (to be utilized in the event the decommissioning plan needs to be enforced with respect to tower removal, site restoration, etc.). The bond shall be in favor of Meade Township, and may be provided as a single instrument for participating parcels/landowners, provided that any such single instrument shall be in the amount of at least $1 million per turbine and shall contain a replenishment obligation. Meade Township reserves the right to review the decommissioning plan every five (5) years or sooner, and revise requirements as necessary.

This Ordinance shall take effect 30 days after notice of the adoption is printed in a newspaper of general circulation in Huron County.

This Ordinance is adopted by action of the Board of Trustees of Meade Township, Huron County, State of Michigan.

(Yea / Nay) Melissa Periso, Clerk

(Yea / Nay) Barbara Carpenter Treasurer

(Yea / Nay) John Osentoski, Trustee

(Yea / Nay) Greg Krozek, Trustee

(Yea / Nay) Bernie Creguer, Supervisor

on this ____ day of _____

Supervisor: _____
Bernie Creguer

Clerk: _____
Melissa Periso

Appendix I

Meade Township
Huron County, Michigan

Wind Turbine Complaint Resolution Process

A description of a Complaint Resolution Process shall be established by an applicant of a wind energy facility permit as part of its initial application for zoning approval. The "Owner" and/or "Operator" of each Wind Energy Conversion System Facility shall file with the Supervisor or designated officer of the Meade Township Board of Trustees a copy of their Complaint Resolution Process including copies of all appropriate forms to be filed to resolve any complaint from a Meade Township resident or landowner concerning the construction, operation or decommissioning of the Wind Facility. Any such Complaint Resolution Process shall contain a time limit for acting on a complaint.

Applicant shall be required as a condition of approval to fund an escrow account for investigation of complaints for, but not limited to, shadow flicker, noise and signal interference to the amount of $15,000.00 to be used at the discretion of the Meade Township Board. When the escrow account balance is below $5,000.00 the Township shall notify Applicant and Applicant shall replenish account in the amount of $15,000.00 within 45 days.

I. The Complaint Resolution Process shall include all of the following:

A. Copies of an official Wind Turbine Complaint Form shall be available from the Wind Energy Facility, from each Township official as well as at the Meade Township Hall, the Bad Axe or Pigeon District Libraries, or the Huron County Building and Zoning Office.

B. The local and/or toll free telephone number of the Wind Facility's representative designated to receive complaints shall be posted on the Township bulletin board outside the hall and/or on the landowner's contract with the Wind Energy Conversion System Facility. Each telephoned complaint shall be confirmed in writing, dated and signed by the Complainant and the Wind Facility representative. All required information including the Complainant's telephone number and address shall be entered on the official Complaint Form. The complaint shall include the substance of the complaint in sufficient detail so that the Owner can determine the nature and location of the complaint.

C. Requests for Complaint Forms can also be sent to the Township via e-mail to the Township Clerk at: perisocrown@hotmail.com

D. Upon receipt of a complaint by the Wind Facility Owner/Operator,

a written copy shall be forwarded within 24 hours to the Meade Township Supervisor or designated representative.

E. Upon receipt of a complaint by Meade Township, a written copy shall be forwarded within 24 hours to the Wind Energy Conversion System Facility's designated representative.

F. Within 30 days of the Facility Owner/Operator's receipt of a Complaint, the Owner shall forward to the Complainant in writing a proposed resolution of the complaint, or a detailed explanation as to why no action will be taken.

G. If the proposed resolution is agreed upon by the parties, the Facility Owner/Operator shall resolve the issue which led to the complaint within 60 days of receipt of the complaint. If the Facility Owner/Operator and the Complainant require additional time to resolve the complaint, they may agree in writing to a specified extension of time to resolve the complaint.

II. Meade Township Review

A. If no response is given to the Complainant from the Wind Facility Representative addressing the complaint, that acknowledges the complaint and responds that an investigation to resolve the issue has begun, or if 60 days have transpired since the complaint was registered with the WECF Representative and the Complainant does not believe the complaint issue has been resolved, the Complainant shall notify the Meade Township Supervisor or designated representative. That Township official shall contact the Wind Facility Representative and begin an investigation of the substance of the complaint within 21 days after notification from the Complainant.

B. The investigation by Meade Township's designated official shall be completed within thirty (30) days of the date that the investigation began. A written report shall be completed by the Township Designated Official which shall include a decision of whether enforcement against the Wind Facility Owner/Operator shall be commenced. A copy of the written report and decision shall be provided to the Complainant.

C. If the WECF is found in violation of this ordinance, the owner/operator shall take immediate action to bring the WECF into compliance. If the owner/operator fails to bring the WECF into compliance within 60 days the Township may seek any relief at law or equity to abate the nuisance and may also issue a municipal civil infraction citation. Each violation for which the owner(s) and/or operators are deemed responsible shall result in a $500.00 fine. Each day of noncompliance shall be a separate offense. Meade Township reserves the right to require the WECF owner/operator to shut down any WECF unit that does not meet ordinance requirements until such WECF unit meets ordinance requirements or is removed.

D. If the Complainant disagrees with the decision of the Township Designated Official, the Complainant may appeal said decision to the Meade Township Board of Appeals.

E. The Township Supervisor or representative shall report to the Board of Trustees the status of the complaint, investigation and the enforcement action taken (or lack thereof).

III. The Complainant is not required to follow the procedures outlined herein and the above is not intended to preclude the complainant from seeking any other legal right or remedy available in law or equity that it may have against any party, at any time, before any court of law or other forum.