SECTION 14.15 WIND ENERGY SYSTEM

a. INTENT.

1) Promote the safe, effective and efficient use of small wind energy systems installed to reduce the on-site consumption of non wind utility supplied electricity.

2) Permit the safe, effective and efficient siting and operation of utility grid wind energy systems and farms.

3) Wind energy systems are not to destroy the natural beauty of the shoreline.

b. DEFINITIONS

1) Ambient: Ambient is defined as the sound pressure level exceeded 90% of the time or L90.

2) ANSI: American National Standards Institute.

3) Commencement of Construction: Excavation for turbine foundations. Preparation of the substation site, lay down yards, staging areas, and office set up, etc., are not considered commencement of construction.

4) dB(A): The equivalent sound pressure level (Leq) in decibels. Refers to the "a" weighted scale defined by ANSI. A method for weighting the frequency spectrum to mimic the human ear.

5) Decibel: The unit of measure used to express the magnitude of sound pressure and sound intensity.

6) Habitable or Inhabited Structure: Any permanent structure usable for human living or nonagricultural commercial purposes. An area used only for storage incidental to a residential use, and any barn, farm outbuilding, hunting blind, ice fishing shanty or other similar item that is not occupied by a human on an ongoing basis outside of the relevant activity, are not included in this definition.

7) IEC: International Electro technical Commission. The IEC is the leading global organization that prepares and publishes international standards for all electrical, electronic and related technologies.

8) ISO: International Organization for Standardization. ISO is a network of the national standards institutes of 156 countries.

9) On Site Use Wind Energy Systems: An On Site Use wind energy system is intended to primarily serve the needs of the consumer.

10) Participating or Leased Property: Any parcel of property in Akron Township that has a Utility Grid wind energy system or related facilities on it, or is under easement or lease to any Applicant or any Utility Grid Wind Energy System owner. Any parcel of property in Akron Township that does not meet this definition is a "Non-Participating or Non-leased Property."

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

12) SCADA Tower: A freestanding tower containing instrumentation such as anemometers that is designed to provide present moment wind data for use by the supervisory control and data acquisition (SCADA) system.

13) Shadow Flicker: Alternating changes in light intensity caused by the moving blade of a wind energy system casting shadows on the ground and stationary objects, such as a window at an inhabited structure.

14) Sound Pressure: Average rate at which sound energy is transmitted through a unit area in a specified direction. The pressure of the sound measured at a receiver.

15) Sound Pressure Level: The sound pressure mapped to a logarithmic scale and reported in decibels (dB).

16) Total Height: When referring to a Wind Turbine, the distance measured from ground level to the blade extended at its highest point.

17) Utility Grid Wind Energy Systems: A Utility Grid wind energy system is designed and built to provide electricity to the electric utility grid.

18) Wind Turbine: A wind energy system which converts wind energy into electricity through the use of a wind turbine generator and includes the turbine, blades, and tower as well as related electrical equipment. This does not include wiring to connect the wind energy system to the grid.

19) Wind Site Assessment: An assessment to determine the wind speeds at a specific site and the feasibility of using that site for construction of a wind energy system.

c. ON SITE WIND ENERGY SYSTEMS (NET METERING): An On Site Use wind energy system is intended to primarily serve the needs of the consumer. An On Site Use wind energy system shall be considered a use by right in the Agricultural district and subject to setback restrictions from all property lines.

d. WIND ENERGY SYSTEM SITE ASSESSMENT FOR UTILITY GRID WIND ENERGY SYSTEMS: Prior to construction of a Utility Grid wind energy system, a wind site assessment is conducted to determine the wind speeds and the feasibility of using the site. Anemometer towers or “Met Towers,” more than 65 feet in height used to conduct a wind site assessment for possible installation of an On Site Use wind energy system shall also be a Special Land Use.

Prior to the installation of the tower, an application for a Special Land Use permit shall be filed with the local government that will include:

1) applicant identification, a site plan drawn to scale of up to one (1) inch equals one hundred (100) feet and unless otherwise requested by Akron Township.

2) a copy of that portion of the applicant’s lease with the land owner granting authority to install the Met tower and requiring the applicant to remove all equipment and restore the site after completion of the wind site assessment, and

3) Applicant/owner/operator shall procure and maintain comprehensive general and public liability and such other policies of insurance customary to the wind energy system industry. Applicant/owner/operator shall provide such insurance coverage in such amounts and with such limits as are acceptable to the

Township Board. The applicant/owner/operator/ shall maintain these insurances for the duration of the installation, operation, removal and site restoration of the Met tower. Certificates of said insurance shall be provided to the Township Board prior to issuance of a special use permit, and current certificates of insurance shall be provided to the Township Board annually within 30 days after the policy anniversary or issuance date. The insurance carrier shall be instructed to notify the Township Board if such insurances expire for any reason. Failure of the applicant/owner/operator to maintain these insurances at all times shall result in revocation of the Special Land Use Permit.

4) The distance from the center of a Met tower and the property lines between the leased property and the non-leased property shall be at least the height of the Met tower. Leased property can include more than one piece of property and the requirement shall apply to the combined properties.

e. UTILITY GRID WIND ENERGY SYSTEMS: A Utility Grid wind energy system is designed and built to provide electricity to the electric utility grid. Utility Grid wind energy systems shall be considered a Special Land Use. Prior to the installation of a Utility Grid wind energy system, an application for a Special Land Use permit shall be filed with the local government and shall include the following:

1) Applicant Identification: Applicant name, and address in full, a statement that the applicant is the owner involved or is acting on the owner's behalf, the address of the property involved. The application may include a legal description or parcel identification numbers of the properties involved) and any additional contact information.

2) Project Description: A general description of the proposed project including a legal description of the property or properties on which the project would be located and an anticipated construction schedule.

3) Site Plan: The site plan shall be drawn to a scale of up to one (1) inch to equals one hundred (100) feet and unless otherwise requested by Akron Township and will include maps showing the physical features and land uses of the project area, both before and after construction of the proposed project. The site plan shall include

a) the project area boundaries, the location, height and dimensions of all existing and proposed above-ground structures and locations of underground collection lines.

b) the location, grades, and dimensions of all temporary and permanent on-site and access roads from the nearest county or state maintained road,

c) existing topography, and

d) water bodies, waterways, wetlands, and drainage channels

4) Insurance: Applicant/owner/operator shall procure and maintain comprehensive general and public liability and such other policies of insurance customary to the wind energy system industry. Applicant/owner/operator shall provide such insurance coverage in such amounts and with such limits as are acceptable to the Township Board. The applicant/owner/operator/ shall maintain these insurances for the duration of the installation, operation, decommissioning, removal and site restoration of the Grid Utility wind energy system. Certificates of said insurance shall be provided to the Township Board prior to issuance of a

special use permit, and current certificates of insurance shall be provided to the Township Board annually within 30 days after the policy anniversary or issuance date. The insurance carrier shall be instructed to notify the Township Board if such insurances expire for any reason. Failure of the applicant/owner/operator to maintain these insurances at all times shall result in revocation of the Special Land Use permit.

5) Consent Documents: Copies of any written waivers from neighboring property owners.

6) Sound Pressure Level: Copy of the modeling and analysis report.

7) Certifications: Certification that applicant has complied or will comply with all applicable state and federal laws and regulations. Copies of all such permits and approvals that have been obtained or applied for at time of the application. Note: Land enrolled in Michigan Farmland Preservation Program through *Part 361 of the Natural Resources and Environmental Protection Act, 1994 Act 451 as amended, more commonly known as PA 116*, must receive approval from the Michigan Department of Agriculture to locate a WES on the property prior to construction. **MDA - Farmland Preservation**

8) Visual Impact: Visual simulations of how the completed project will look from four viewable angles.

9) Environmental Impact: Copy of the Environmental Impact analysis.

10) Avian and Wildlife Impact: Copy of the Avian and Wildlife Impact analysis.

11) Shadow Flicker: Copy of the Shadow Flicker analysis.

12) Manufacturers' Material Safety Data Sheet(s): Documentation shall include the type and estimated quantity of all hazardous materials used in the operation of all equipment including, but not limited to, all lubricants and coolants.

13) Decommissioning: Copy of the decommissioning plan.

14) Complaint Resolution: Description of the complaint resolution process.

15) An applicant shall remit an application fee, in the amount specified in the fee schedule adopted by the Board of Trustees. This schedule shall be based on the cost of the application review and may be adjusted from time to time.

16) In addition to the application fee, the applicant shall together with the initial application pay to Akron Township a deposit in an amount to be determined by resolution of the Township Board ("Deposited Amount"). The Deposited Amount shall be held in escrow for purposes of reimbursing Akron Township for its costs and expenses incurred for hiring consultants and experts as Akron Township shall, at its sole discretion, deem desirable to review the application, examine, evaluate and verify the data and statements presented by the applicant/owner/operator, and to cover the administrative and legal costs incurred by Akron Township over the term of construction and for the first six months of continuous operation of the Utility Grid wind energy system. At any time the balance of the account shall fall below fifty percent (50%) of the Deposited Amount, the applicant/owner/operator shall deposit such additional amount into the account as is necessary to bring the account balance equal to the Deposited Amount. If at any time the balance of the account shall fall below fifty percent (50%) of the Deposited Amount for a continuous period of thirty (30) days, the application shall be considered to have been withdrawn, or the Special Land Use Permit for the Utility Grid

wind energy system may be revoked. The Zoning Administrator or township designee shall be charged with monitoring the account and giving monthly reports to the Township Board. After a period of six months of continuous operation of the Utility Grid wind energy system following completion of construction, any balance remaining in the account shall be returned to the applicant/owner/operator.

17) The Utility Grid wind energy system project shall meet the following standards and requirements:

i. Exclusion Zone: In addition to the Wind Energy Overlay District that encompasses the entirety of Akron Township, all proposed Utility-Grid Wind Energy Systems are subject to an exclusion zone.

ii. It is the intent and purpose of the Utility-Grid Wind Energy Exclusion Zone to provide residents in specified areas of Akron Township and adjacent villages relief from Utility Grid wind energy systems. Akron Township permits Utility-Grid Wind Energy Systems as a special use requiring a Special use Permit within the Wind Energy Overlay. Wind turbines that are part of a Utility-Grid Wind Energy System are restricted from all property in the Exclusion Zone as depicted on the Utility-Grid Wind Energy Exclusion Zone map, regardless of the zoning district.

iii. The boundaries of the Utility-Grid Wind Energy Exclusion Zone is hereby defined and established as shown on the map which accompanies this Zoning Ordinance and which map, with all explanatory matter thereon, is hereby made part of this Zoning Ordinance.

b) Set-Backs:

i. Setbacks from inhabited structures: Each wind turbine shall be set back from the nearest inhabited structure a distance of at least one thousand (1000) feet.

ii. Setbacks from Non Leased Property: The distance between a Wind Turbine and the property lines of adjacent non-leased properties shall be at least one and one tenth (1.1) times its total height.

iii. Setbacks from Leased Property: Where a property is leased on both sides of a private property line the tower may be placed on the property line. Leased property can include more than one piece of property and the requirement shall apply to the combined properties.

iv. Public Roads, transmission lines: Each wind turbine shall be set back from the nearest public road a distance no less than one and one tenth (1.1) times the total height of the wind turbine or two hundred (200') feet, whichever is greater, determined at the nearest boundary of the underlying right-of-way for such public road.

v. All setbacks shall be measured from the center point of the Wind Turbine.

c) Wind turbines and access roads: Wind related facilities 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.

e) SCADA (supervisory control and data acquisition) or meteorological (Met) towers shall also comply with the property set-back requirement. The set-back shall be at least the height of the SCADA or Met tower. An Operations and Maintenance Office

building, a sub-station, or ancillary equipment shall comply with any property set-back requirement that may be applicable to that type of building or equipment. Overhead transmission lines and power poles shall comply with the set-back requirements applicable to public utilities.

f) Sound Pressure Level: The sound pressure level generated by a Utility Grid wind energy system shall not exceed 50 dB(A) as measured at an inhabited structure. This sound pressure level shall not be exceeded for more than 6 minutes in any hour of the day. If the ambient sound pressure level exceeds 50 dB(A), the standard shall be ambient dB(A) plus 5 dB(A).

g) As part of the application and prior to installation, the applicant shall provide modeling and analysis that will confirm that the Utility Grid wind energy system will not exceed the maximum permitted sound pressure levels.

i. Modeling and analysis shall conform to IEC 61400 and ISO 9613. After installation of the Utility Grid wind energy system, sound pressure level measurements shall be done by a third party, qualified professional according to the procedures in the most current version of ANSI S12.18. All sound pressure levels shall be measured with a sound meter that meets or exceeds the most current version of ANSI S1.4 specifications for a Type 1 sound meter, which has been calibrated according to a National Institute of Standards and Technology acoustic standard within the previous 12 months and shall be field-calibrated with an ANSI Type 1 calibrator.

ii Documentation of the sound pressure level measurements shall be provided to the local government within one hundred twenty (120) days of the commercial operation of the project.

iii Measurements shall exclude invalid samples that are contaminated by extraneous noise sources other than the Wind Turbine(s). Monitoring shall not be done during precipitation events or extreme weather conditions. Compliance shall be demonstrated by taking forty (40) valid 15-second Leq sound level readings, excluding the two highest 15-second readings (5% of the monitoring period) and any samples contaminated by extraneous noise sources other than Wind Turbines, and forming the arithmetic average of the remaining 15-second Leq sound readings.

iv The background Leq sound level (without Wind Turbine sound) shall be established either by monitoring with the nearby Wind Turbines turned off, or by sound level monitoring of Leq at a similar location unaffected by the Wind Turbine sound, and that background level shall then be subtracted (on an energy basis) from the measurement of the Wind Turbine to obtain the Wind Turbine only sound pressure level.

18) Construction Codes, Towers, and Interconnection Standards: Utility Grid wind energy systems including towers shall comply with all applicable state construction and electrical codes and local building permit requirements. Utility Grid wind energy systems including towers shall comply with Federal Aviation Administration requirements, the Michigan Airport Zoning Act (Public Act 23 of 1950, MCL 259.431 et seq.), the Michigan Tall Structures Act (Public Act 259 of 1959, MCL 259.481 et seq.), and local jurisdiction airport overlay zone regulations. The minimum FAA lighting standards shall not be exceeded and the tower shaft shall not be illuminated, unless required by the FAA or the Michigan Tall Structures Act. Utility Grid wind energy systems shall comply with

applicable utility, Michigan Public Service Commission, and Federal Energy Regulatory Commission interconnection standards. These requirements must be met prior to the commencement of construction but not at the time of application.

19) Safety: All Utility Grid wind energy systems shall be designed to prevent unauthorized access to electrical and mechanical components and shall have access doors that are kept securely locked at all times when service personnel are not present. All spent lubricants and cooling fluids shall be properly and safely removed in a timely manner from the site of the wind energy system. A sign shall be posted near the tower or Operations and Maintenance Office building that will contain emergency contact information. Signage placed at the road access shall be used to warn visitors about the potential danger of falling ice.

20) Visual Impact: Utility Grid wind energy system projects shall use tubular towers and all Utility Grid wind energy systems in a project shall be finished in a single, non-reflective matte finished color. A project shall be constructed using wind energy systems of similar design, size, operation, and appearance throughout the project. No lettering, company insignia, advertising, or graphics shall be on any part of the tower, hub, or blades. Nacelles may have lettering that exhibits the manufacturer's and/or owner's identification. The applicant shall avoid state or federal scenic areas and significant visual resources listed in the local unit of government's comprehensive plan.

21) Environmental Impact: The applicant shall have a third party, qualified professional conduct an analysis to identify and assess any potential impacts on the natural environment including, but not limited to wetlands and other fragile ecosystems, historical and cultural sites, and antiquities. The applicant shall take appropriate measures to minimize, eliminate or mitigate adverse impacts identified in the analysis.

    The applicant shall identify and evaluate the significance of any net effects or concerns that will remain after mitigation efforts. The applicant shall comply with applicable parts of the Michigan Natural Resources and Environmental Protection Act (Act 451 of 1994, MCL 324.101 et seq., as amended) including but not limited to Part 31 Water Resources Protection (MCL 324.3101 et seq.), Part 91 Soil Erosion and Sedimentation Control (MCL 324.9101 et seq.) , Part 301 Inland Lakes and Streams (MCL 324.30101 et seq.), Part 303 Wetlands (MCL 324.30301 et seq.), Part 323 Shoreland Protection and Management (MCL 324.32301 et seq.), Part 325 Great Lakes Submerged Lands (MCL 324.32501 et seq.), and Part 353 Sand Dunes Protection and Management (MCL 324.35301 et seq.). The applicant shall enter into a road use agreement with the Tuscola County Road Commission before beginning construction.

22) Avian and Wildlife Impact: The applicant shall have a third party, qualified professional conduct an analysis to identify and assess any potential impacts on wildlife and endangered species. The applicant shall take appropriate measures to minimize, eliminate or mitigate adverse impacts identified in the analysis. The applicant shall identify and evaluate the significance of any net effects or concerns that will remain after mitigation efforts.

    Sites requiring special scrutiny include wildlife refuges, other areas where birds are highly concentrated, bat hibernacula, wooded ridge tops that attract wildlife, sites that are frequented by federally and/or state listed endangered species of birds and bats, significant bird migration pathways, and areas that have landscape features known to attract large numbers of raptors.

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

The analysis shall indicate whether a post construction wildlife mortality study will be conducted and, if not, the reasons why such a study does not need to be conducted. Power lines should be placed underground, when feasible, to prevent avian collisions and electrocutions. All above-ground lines, transformers, or conductors should comply with the Avian Power Line Interaction Committee (APLIC) published guidelines to prevent avian mortality.

23) Electromagnetic Interference: No Utility Grid wind energy system shall be installed in any location where its proximity to existing fixed broadcast, retransmission, or reception antennae for global positioning system correction systems (RTK), radio, television, or wireless phone or other personal communication systems would produce electromagnetic 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 wind energy system or mitigates the interference to the affected party's reasonable satisfaction. No Utility Grid wind energy system shall be installed in any location within the line of sight of an existing microwave communications link where operation of the wind energy system is likely to produce electromagnetic interference in the link's operation unless the interference is insignificant.

24) Shadow Flicker:

a) The applicant shall conduct an analysis of potential shadow flicker created by each proposed wind turbine at inhabitable structure with direct line-of sight to a wind turbine. Such analysis shall be documented in a shadow flicker modeling report to be submitted as part of the Special use Permit Application to the Planning Commission.

b) The analysis shall identify the locations of shadow flicker created by each proposed wind turbine and the expected duration of the flicker at these locations from sunrise to sunset over the course of a year.

c) Site plans shall depict a contour around each proposed wind turbine that represents the predicted thirty (30) hours per year shadow flicker generated by the modeling software used in the report.

d) The analysis shall identify problem areas where shadow flicker may affect the occupants of the habitable structures and describe measures that shall be taken to eliminate or mitigate the problems.

e) A shadow flicker mitigation plan shall also be submitted with the shadow flicker modeling report for any shadow flicker exceeding thirty (30) hours per year. Any shadow flicker complaint shall be addressed by the applicant and be reasonably mitigated.

25) Decommissioning: The applicant shall submit a decommissioning plan. The plan shall include:

a) the anticipated life of the project,

b) the estimated decommissioning costs net of salvage value in current dollars and provide that this figure shall be updated every fifth (5th) year after commercial operation of the Utility Grid wind energy system,

c) confirmation that each Wind Turbine, Wind Turbine foundation, and all electrical components and associated facilities within the Wind Turbine foundation, will be removed to a depth of sixty (60) inches below original grade, or to the level of bedrock, whichever is less. The Zoning Administrator may approve a land owner's request for any concrete foundations or other infrastructure to remain for other uses,

d) the anticipated manner in which the project will be decommissioned and the site restored, which shall be completed within eighteen (18) months after the Utility Grid wind energy system reaches the end of its useful life unless a longer period is approved by the Township Board,

e) A requirement for notice to the Township one year in advance of decommissioning. A surety bond, letter of credit, corporate guaranty or other similar financial instrument acceptable to the planning commission that is equal to the cost of decommissioning is required. The amount of security shall be adjusted to equal the latest estimated net decommissioning costs under subpart (24)(b) above.

f) The Utility Grid energy system or an individual turbine shall be presumed to be at the end of its useful life if no more than ten percent (10%) of cumulative nameplate capacity in commercially viable electricity is generated for a continuous period of twelve (12) months. In such event, the Township Board shall request, and the owner/operator shall provide, a status report and plan regarding the affected Utility Grid energy system or individual turbine, detailing the steps to be taken to decommission the Utility Grid energy system or affected turbine or, as applicable, to achieve renewed operational status. If in the Township Board's discretion applicant/owner/operator fails to provide a viable plan to bring the Utility Grid wind energy system or turbine(s) to renewed operational status, the Township Board may, at its discretion, order that the Utility Grid energy system or affected turbine be decommissioned. Failure of the applicant/owner/operator to decommission as ordered shall result in the issuance of a stop operations order and revocation of the Special Land Use Permit.

g) Wind production summary reports by month shall be provided annually for the Utility Grid wind energy system and each turbine to the Township Board by January 31st of each year, for the preceding year.

h) The Township Board shall be notified within thirty (30) days of any changes in the status of the Utility Grid wind energy system or an individual turbine, including cessation of use, change in ownership, or change in the terms of the underlying lease to the subject property.

26) Complaint Resolution: The applicant shall develop a process to resolve complaints from nearby residents concerning the construction or operation of the project. The process may use an independent mediator or arbitrator and shall include a time limit for acting on a complaint. The process shall not preclude the local government from acting on a complaint. During construction, operations and for the life of the wind turbine, the applicant shall maintain and make available to nearby residents a telephone number where a project representative can be reached during normal business hours. A report

of all complaints and resolutions to complaints shall be filed with the township Zoning Administrator on an annual basis.

27) Conflicting provisions: In the event of a conflict between any provision in this section and any other section of this Zoning Ordinance with regard to Utility-Grid Wind Energy Systems, the provisions of this section shall control.