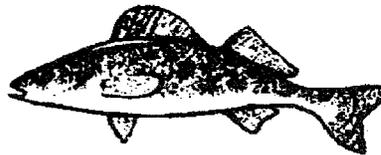


# Kawkawlin Township

1836 E. Parish Road  
Kawkawlin, Michigan 48631

Phone (989) 686-8710

Fax (989) 686-0895



## Facsimile Transmission Sheet

Date: Jan 7, 2009

Pages: (including cover sheet) 8

To: Thomas Hickner

Location: 515 Center Ave Suite 401

Fax #: 989 895 7658

From: Dennis Bragiel

Kawkawlin Township

Fax # (989) 686-0895

### Message:

Tom  
Enclosed is the Draft of  
our Wind Energy ordinance

Time Faxed: \_\_\_\_\_

Initials \_\_\_\_\_

If you have any trouble with this transmission, please call us immediately.

(989) 686-8710

THANK YOU.

### Section 1325 Roadside Stands

1. The gross floor area of the temporary building shall be not less than thirty-two (32) square feet but not more than two hundred and fifty (250) square feet.
2. Suitable containers for rubbish shall be placed on the premises for public use.
3. The temporary building shall be located not less than twenty-five (25) feet from the public road right-of-way. Its height shall be no more than one (1) story.
4. Adequate off-street parking shall be provided.

### Section 1326 Stables, Commercial

1. For breeding, rearing and housing of horses, mules and similar domestic animals, the minimum lot size, shall be ten (10) acres.
2. Structures used as a stable shall not be located nearer than sixty (60) feet to any property line and not nearer than one hundred fifty (150) feet to any dwelling.
3. Animals shall be confined in a suitable fenced area, or paddock, to preclude their approaching nearer than sixty (60) feet to any dwelling on adjacent premises.
4. The facility shall be so constructed and maintained that odor, dust, noise or drainage shall not constitute a nuisance or hazard to adjoining premises.

### Section 1327 Telecommunication Towers

1. Telecommunications Towers shall be located on lots no less than one (1) acre

in size and shall have a minimum lot frontage of no less than sixty (60) feet.

2. The setbacks for each tower from adjacent right-of-way and/or property lines shall be not less than one time the height of each tower above the ground.
3. Unless specifically waived by the Planning Commission, an open weave wire fence six (6) feet in height shall be constructed on the boundary property lines.
4. Every application for a new telecommunication tower shall be required to submit a written documentation stating why an existing tower located within the Township cannot be used for sharing new facilities.

### Section 1328 Wind Energy

*Wind Power is permitted in the Agricultural district. Please see the Michigan Guidelines for Wind Energy Systems as amended for siting principles.*

#### 1. DEFINITIONS

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

*ANSI: American National Standards Institute.*

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

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

*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.

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

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

**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.

**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.

**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 a dwelling.

**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.

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

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

**Wind Energy System:** A wind energy conversion 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.

**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.

2. **On Site Use Wind Energy Systems:** An On Site Use wind energy system is intended to primarily serve the needs of the consumer. An On Site Use wind energy system with a tower higher than 20 meters shall be considered a Special Land Use. On Site Use wind energy systems with no towers or towers 20 meters or less shall be a Permitted Use in all zoning classifications where structures of any sort are allowed subject to the following requirements. Anemometer towers more than 20 meters 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 an On Site Use wind energy system with a tower higher than 20 meters, an application for a Special Land Use permit shall be filed with the local government that will include applicant identification, a site plan, documentation that sound pressure level, construction code, tower, interconnection (if applicable), and safety requirements have been met, and proof of the applicant's public liability insurance.

- a. **Property Set-back:** The distance between an On Site Use wind energy system and the owner's property lines shall be at least 1 ½ times the height of the wind energy system tower including the top of the blade in its vertical position. The distance between an anemometer tower and the owner's property lines shall be at least 1 ½ times the height of the tower. No part of the wind energy system structure, including guy wire anchors, may

extend closer than ten feet to the owner's property lines.

- b. **Sound Pressure Level: On Site Use wind energy systems shall not exceed 55 dB(A) at the property line closest to the wind energy system. This sound pressure level may be exceeded during short-term events such as utility outages and/or severe wind storms. If the ambient sound pressure level exceeds 55 dB(A), the standard shall be ambient dB(A) plus 5 dB(A).**
- c. **Construction Codes, Towers, & Interconnection Standards: On Site Use wind energy systems including towers shall comply with all applicable state construction and electrical codes and local building permit requirements. On Site Use wind energy systems including towers shall comply with Federal Aviation Administration requirements, the Michigan Airport Zoning Act (Public Act 23 of 1950, MCL 259.431 et seq.), the Michigan Tall Structures Act (Public Act 259 of 1959, MCL 259.481 et seq.), and local jurisdiction airport overlay zone regulations. An interconnected On Site Use wind energy system shall comply with Michigan Public Service Commission and Federal Energy Regulatory Commission standards. Off-grid systems are exempt from this requirement.**
- d. **Safety: An On Site Use wind energy system shall have automatic braking, governing, or a feathering system to prevent uncontrolled rotation or over speeding. All wind towers shall have lightning protection. If a tower is supported by guy wires, the wires shall be clearly visible to a height of at least six feet above the guy wire anchors. The minimum vertical blade tip clearance from grade shall be 20 feet for a wind energy system employing a horizontal axis rotor.**

3. **Wind 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. Installation of anemometer towers also known as meteorological or "Met" towers shall be considered 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:

- a. applicant identification,
  - b. a site plan,
  - c. 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
  - d. proof of the applicant's public liability insurance. 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.
4. **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:**
    - a. **Applicant Identification: Applicant name, address, and contact information.**

- b. *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.*
- c. *Site Plan: The site plan shall 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*

- i. *the project area boundaries,*
  - ii. *the location, height, and dimensions of all existing and proposed structures and fencing,*
  - iii. *the location, grades, and dimensions of all temporary and permanent on-site and access roads from the nearest county or state maintained road,*
  - iv. *existing topography,*
  - v. *water bodies, waterways, wetlands, and drainage channels, and*
  - vi. *all new infrastructure above ground related to the project.*
3. *Insurance: Proof of the applicant's public liability insurance.*
  4. *Consent Documents: Copies of any written waivers from neighboring property owners.*
  5. *Sound Pressure Level: Copy of the modeling and analysis report.*
  6. *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.*

7. *Visual Impact: Visual simulations of how the completed project will look from four viewable angles.*
  8. *Environmental Impact: Copy of the Environmental Impact analysis.*
  9. *Avian and Wildlife Impact: Copy of the Avian and Wildlife Impact analysis.*
  10. *Shadow Flicker: Copy of the Shadow Flicker analysis.*
  11. *Manufacturers' Material Safety Data Sheet(s): Documentation shall include the type and quantity of all materials used in the operation of all equipment including, but not limited to, all lubricants and coolants.*
  12. *Decommissioning: Copy of the decommissioning plan.*
  13. *Complaint Resolution: Description of the complaint resolution process.*
- d. *An applicant shall remit an application fee in the amount specified in the fee schedule adopted by the local government. This schedule shall be based on the cost of the application review and may be adjusted from time to time.*
- e. *The Utility Grid wind energy system project shall meet the following standards and requirements:*
- a. *Overlay Zone: If the site of the proposed project is subject to an overlay zone, the proposed project shall meet or exceed the applicable standards in the overlay zone.*
  - b. *Property Set-Back: The distance between a Utility Grid wind energy system and the property lines of adjacent non-leased properties including public rights of way shall be at least the height of the wind energy system tower including the*

top of the blade in its vertical position. Where property is leased on both sides of a public right of way, a wind energy system may be placed no closer than one rotor radius from the closest edge of the right of way. Leased property can include more than one piece of property and the requirement shall apply to the combined properties.

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.

- c. **Sound Pressure Level:** The sound pressure level generated by a Utility Grid wind energy system shall not exceed 55 dB(A) measured at the property lines between leased and non-leased property. This sound pressure level shall not be exceeded for more than 3 minutes in any hour of the day. If the ambient sound pressure level exceeds 55 dB(A), the standard shall be ambient dB(A) plus 5 dB(A).

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. 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 II sound meter. Documentation of the sound pressure level measurements shall be provided to the local government within 60 days of the commercial operation of the project.

- d. **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. All tower lighting required by the FAA shall be shielded to the extent possible to reduce glare and visibility from the ground. The tower shaft shall not be illuminated unless required by the FAA. Utility Grid wind energy systems shall comply with applicable utility, Michigan Public Service Commission, and Federal Energy Regulatory Commission interconnection standards.
- e. **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. The minimum vertical blade tip clearance from grade shall be 20 feet for a wind energy system employing a horizontal axis rotor.

- f. **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.
- g. **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.) 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 be responsible for making repairs to any public roads damaged by the construction of the Utility Grid wind energy system.

- h. **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, <http://www.aplic.org/>) published standards to prevent avian mortality.

- i. **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 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. 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.

- j. **Shadow Flicker:** The applicant shall conduct an analysis on potential shadow flicker at occupied structures. The analysis shall identify the locations of shadow flicker that may be caused by the project and the expected durations of the flicker at these locations from sun-rise to sun-set over the course of a year. The analysis shall identify problem areas where shadow flicker may affect the occupants of the structures and describe measures that shall be taken to eliminate or mitigate the problems.

- k. **Decommissioning:** The applicant shall submit a decommissioning plan. The plan shall include the anticipated life of the project, the estimated decommissioning costs net of salvage value in current dollars, the method of ensuring that funds will be available for decommissioning and restoration, and 4) the anticipated manner in which the project will be decommissioned and the site restored.

- l. **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 the applicant shall maintain and make available to nearby residents a telephone number where a project representative can be reached during normal business hours.