

**ECKFORD TOWNSHIP
COUNTY OF CALHOUN, MICHIGAN**

ORDINANCE NO. 1-2010

At a regular meeting of the Township Board of the Township of Eckford, held at the Town Hall, 21000 F Drive South, Marshall, Michigan, on the 15th day of February 2010, at 8 p.m.

PRESENT: Members: K. Hinkley, B. Rapp, T. Baylis and W. Cornell

ABSENT: Members: K. Lawrence

The following ordinance was offered by Member W. Cornell and supported by Member T. Baylis.

**AN ORDINANCE TO AMEND THE ZONING ORDINANCE
OF THE TOWNSHIP OF ECKFORD**

[Wind Energy Conversion Systems]

THE TOWNSHIP OF ECKFORD ORDAINS:

Section 1. The Eckford Township Zoning Ordinance is hereby amended by the addition of subsections Sections 11.02M, 11A.02J, 12.02I, 15.02Q and 16.02L (permitted uses), which sections shall read as follows:

____. Wind energy conversion systems which do not exceed 65 feet in height and which otherwise comply with the requirements of Section 10.26.

Section 2. The Eckford Township Zoning Ordinance is hereby amended by the addition of Sections 11.03V, 11A.03H, 12.03L, 15.04C and 16.03T (special land uses), which sections shall read as follows:

____. Wind energy conversion systems, which comply with Section 10.26.

Section 3. The Eckford Township Zoning Ordinance is hereby amended by the addition of Section 10.26, covering special land use conditions for wind energy conversion systems, which shall read in its entirety as follows:

10.26 Wind Energy Conversion Systems

A Wind Energy Conversion System (“WECS”), including all necessary substations, accessory buildings and operation and maintenance offices, shall comply with all of the terms and conditions of this section.

A. **Definitions.** For the purposes of this section, the following terms and phrases shall be defined as provided below:

- (1) **Wind Energy Conversion System (“WECS”).** A wind turbine generator or other device or devices designed to extract energy from the wind and supply it in the form of electrical energy that is suitable for use by the local electrical transmission utility, or that is used to provide electricity on the site or property on which the WECS is located. A WECS shall also include a MET tower, which is a tower containing instrumentation such as anemometers that is used to assess wind resources.
- (2) **Horizontal Axis Wind Turbine (HAWT).** A WECS designed with a rotor mounted on a horizontal axis of rotation. The rotor thus sweeps through a vertical plane perpendicular to the motion of the wind.
- (3) **Rotor.** An element of a wind turbine which acts as a multi-bladed airfoil assembly, thereby extracting through rotation, kinetic energy directly from the wind.
- (4) **Nacelle.** The structure designed to “yaw” (turn) into the wind that is mounted on top of the tower and houses the rotor support shaft, mechanical and electrical components, and generator.
- (5) **Tower.** The structure, above grade, that supports the nacelle, rotor assembly, and other components.
- (6) **Tower Foundation.** The tower support structure, below grade, that supports the weight of the WECS tower.
- (7) **Blade Clearance.** In reference to a horizontal axis rotor, the distance from grade to the lowest point of the rotor’s swept arc.
- (8) **Tower Height.** The height from grade to the highest vertical point of the swept rotor arc. In the case of a WECS with a horizontal axis rotor, the total height includes the distance from grade to the rotor axis of rotation within the nacelle plus one-half the swept rotor diameter.

- (9) **Sub-station.** An electrical construction designed to collect and modify electrical energy produced by the WECS for the purpose of supplying it to the local electrical utility.

B. Application. Applications for a WECS shall include the following:

- (1) A site plan, which, in addition to the site plan requirements of Chapters 10 and 17, shall include the following:
 - (a) The proposed location, size, height and type of all WECS, including MET towers, and the setback distance between the proposed towers and the nearest residential units and residentially-zoned properties.
 - (b) The location of all existing structures and buildings within 300 feet of the parcel subject to the special land use request.
 - (c) The proposed location of all access roads, underground and overhead cabling and utilities.
 - (d) The physical size and electrical nameplate capacity of the proposed WECS, including the total height and the swept rotor diameter.
 - (e) Proposed screening, buffering and tower lighting, if required.
 - (f) A visual representation of the WECS including scale elevations or photographs.
- (2) A copy of the applicant's proof of ownership or control of the land, including any lease with the landowner(s) for the WECS. Any such lease must include a provision requiring the applicant to remove all equipment and restore the site upon cessation of WECS operations.
- (3) The manufacturer's specifications indicating:
 - (a) The rated nameplate output, in kilowatts or megawatts, of the wind turbines included in the WECS.
 - (b) Safety features and sound characteristics.
 - (c) Type of material used in foundation, tower, blade, and rotor construction.
- (4) A noise impact study which includes information on the noise levels to be generated by the use, measured in db(A) at the property line, the tower site or such other location as directed by the Planning Commission.

- (5) Proof that the applicant has obtained or applied for approval from all county, state or federal agencies having jurisdiction over the proposed use, or any aspect thereof.
- (6) An environmental impact study, shadow flicker study and/or avian and wildlife impact study may be required by the Planning Commission. The applicant shall take appropriate measures to mitigate or eliminate adverse effects identified in such studies, including assurance that shadow flicker shall not have a significant adverse effect upon any adjacent property or any occupied building or residence.
- (7) A decommissioning plan which includes the anticipated life of the project, the estimated decommissioning costs net of salvage value in current dollars, the method for ensuring that funds will be available for decommissioning and restoration and the anticipated manner in which the project will be decommissioned and the site restored.

C. **Requirements.** A WECS, including MET towers, shall comply with the following requirements:

- (1) **Review and Approval Procedures.** A WECS that is 65 feet in height or greater must receive special land use approval from the Planning Commission in compliance with Chapter 10 of this Ordinance. A WECS that does not exceed 65 feet in height shall obtain site plan review pursuant to Chapter 10 and Chapter 17, but shall not require special land use approval if it complies with the requirements of this Section 10.26 and with the following requirements:
 - (a) The diameter of the rotor does not exceed 30 feet.
 - (b) The wind turbine generator is to provide energy only to the property where the tower is located, not to any other lands.
 - (c) An individual tower complying with this subsection may, on an intermittent basis, supply excess power to the grid; provided, however, the individual tower shall not in any calendar year supply a net surplus of power to the grid.
 - (d) If the WECS is installed on a building or structure, the diameter of the rotor shall not be greater than twenty (20) feet and the WECS height shall not exceed 50 feet from grade. The WECS must be safely and permanently secured to the building or structure.
- (2) **Setbacks.** WECS towers shall comply with the minimum required building setbacks for the district in which the WECS tower is located or a setback equal to two (2) times the height of the highest WECS, whichever is greater. Notwithstanding the foregoing, a MET tower shall be set back no closer than a distance equal to the height of the MET tower.

For the purposes of determining whether a proposed WECS or MET tower complies with the setback requirements of a district, the dimensions of the entire lot or parcel of land shall control, even though the WECS may be located on smaller leased parcels within such lot or parcel.

- (3) **Setback Modifications.** Setbacks may be reduced or increased from the minimum setback requirements of this section, in the discretion of the Planning Commission. Pursuant to this provision, the Planning Commission shall consider the technical needs of the applicant for a modification of setbacks, the feasibility of alternate locations, the proximity of existing dwellings, and the potential for adverse impacts that noise, shadows and other features may have on adjacent uses.
- (4) **Noise.** A WECS regulated under the terms of this section shall be designed, located and operated so as to cause no serious adverse effect on other lands or other land uses by reason of noise. A WECS shall not exceed 55 db(A) at the property line closest to the WECS. Exceptions for neighboring property may be permitted if the written consent of the property owners is provided. The sound pressure level may be exceeded during short-term events such as utility outages or severe wind storms.

Constant velocity turbines shall be required; provided, however, that if variable speed turbines are proposed, the applicant shall submit additional data concerning noise generated when the revolutions per minute of such turbines exceed 24 rpm's, and the Planning Commission may decline to approve any such variable speed turbines.

- (5) **Lighting.** WECS towers shall not be illuminated by artificial means and shall not display strobe lights unless required by the Federal Aviation Administration or other state or federal authority having jurisdiction. The minimum FAA lighting standards shall not be exceeded and all lighting 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. Towers that are lighted shall be avoided unless no feasible alternative is available.
- (6) **Shadow Flicker.** Any WECS shall be designed, located and installed so that shadow flicker does not have a significant adverse effect upon adjacent property, upon any occupied building or residence and shall be designed, located and operated so as to cause no serious effect on other lands or land uses by reason of the impact of its shadow.
- (7) **Rural View, Towers in Front Yard.** Towers shall only be placed, to the extent possible, at locations that do not dominate the view from existing streets or detract from the rural view. Locations in front yards are to be avoided. A tower shall not be located in any front yard unless it is set back at least 200 feet from the front lot line.

- (8) **Tower Height.** Any WECS, including the foundation, the tower, the rotor and all other components shall have a total height not exceeding 199 feet, as measured from the ground at the base of the tower to the tip of the blade of the rotor, when the blade is in a vertical position; provided, however, the Planning Commission may modify the total height to permit a lighted tower that exceeds 199 feet upon a showing that the tower will be harmonious with adjacent, neighboring land uses and will not have a substantial adverse effect on such adjacent or nearby lands or land uses.
- (9) **Compliance with Law.** All WECS and the construction, installation, operation, maintenance and repair thereof shall comply with all federal, state and local laws, ordinances and regulations, including the Michigan Tall Structures Act and all airport zoning requirements.
- (10) **FAA Standards.** All structures shall comply with applicable standards and regulations of the Federal Aviation Administration and any other state or federal agency having jurisdiction.
- (11) **Building Codes and Maintenance.** All structures constructed shall comply with the standards contained in applicable state and local building codes and shall be regularly maintained in good, safe working order. The applicant shall maintain a maintenance log that the Township can review upon request.
- (12) **Tower Foundation.** All towers shall be permanently secured to a stable foundation.
- (13) **Tower Grounding.** All towers shall be grounded to protect against damage from lightning.
- (14) **Tower Appearance.** All wind turbines and towers shall be finished in a single, non-reflective matte finished color which minimizes the visual impact of the wind farm.
- (15) **Blade Clearance.** The minimum vertical blade tip clearance from grade shall be 20 feet for a wind turbine employing a horizontal axis rotor (HAWT).
- (16) **Tower Construction.** A freestanding tubular monopole tower shall be required for any tower that is more than 50 feet in height. An anti-climbing device or design shall be used on all towers, regardless of their height.
- (17) **Tower Graphics.** No portion of any tower or blades shall display any name, symbol, words, letters, advertising message, graphic representation or other written or pictorial matter. Nacelles may have lettering that exhibits the manufacturer's and/or owner's identification.

- (18) **Power Lines.** All power lines from a WECS and connecting to a sub-station or grid, shall be underground, unless otherwise permitted by the Planning Commission.
- (19) **Safety.** All electrical and mechanical components of the system shall be securely locked. Spent lubricants and cooling fluids shall be promptly and safely removed from the premises. Signage on the access roads shall warn visitors of the danger of falling ice.
- (20) **Electromagnetic Interference.** No WECS shall be installed in any location where its proximity with existing fixed broadcast, re-transmission or reception antenna for radio, television or wireless phone or personal communication systems would produce electromagnetic interference with signal transmission or reception unless the applicant provides a replacement signal to the affected parties that will restore reception to the level present before operation of the WECS. No WECS shall be installed in any location within the line of site of an existing microwave communication link where its operation is likely to produce electromagnetic interference in the link operation unless the interference is insignificant.

D. **Discretionary Conditions.** The Planning Commission, in its reasonable discretion, may impose other terms and conditions regulating the construction, installation, use, maintenance, repair and removal of any WECS regulated by the terms of this section. Such other terms and conditions may include, though are not limited to, the following:

- (1) The screening or buffering of structures (other than towers) with landscaping, berms, walls or any combination thereof. Fencing may be required by the Planning Commission to secure the site and tower.
- (2) The prohibition on the construction or occupancy of dwellings on the lands where the WECS is located, within the separation distances specified by this section.
- (3) The preservation of existing trees and other existing vegetation not required to be removed for installation of the WECS.
- (4) The reasonable replacement of trees or other vegetation removed or destroyed during the construction or installation of a WECS tower or accessory buildings or structures.
- (5) The providing of a performance bond or letter of credit, in favor of the Township, and conditioned upon the timely and faithful performance of all required conditions of the special land use or site plan approval, including but not limited to the timely and complete removal of a WECS, or any individual tower, wind turbine generator, or other device or equipment regulated under the terms of the section, upon the failure of the same to be removed when required. Such performance bond or letter of credit shall remain in effect

during and after the operation of a WECS, until the cessation of operations and the removal of the same.

E. Removal.

- (1) A WECS or other individual device, structure or equipment regulated under the terms of this section shall be removed not later than when the device or equipment is no longer in operation or when it has been abandoned.
- (2) For purposes of this section, a WECS shall be deemed abandoned when it has not produced electrical energy for 12 consecutive months. Operation of the WECS for less than 168 hours shall not be considered production for purposes of this subsection.
- (3) The failure to timely remove a WECS or any device, structure or equipment regulated by the terms of this section shall be a violation of this Ordinance.
- (4) In the event that the owner or operator of a WECS fails to remove the same after the ceasing of operations or after abandonment thereof, the Township may proceed with all appropriate enforcement and remedial action, including but not limited to the obtaining of funds pursuant to the applicable performance bond or letter of credit, and the use of such funds to accomplish the removal of all non-operating or abandoned towers, wind turbine generators, accessory structures and other devices and equipment regulated hereunder.

F. Inspections. Upon the provision of reasonable prior notice to the site operator, the Township zoning administrator and/or his or her designated representative may inspect any property for which special land use or site plan approval has been granted pursuant to this section to determine whether the site complies with the applicable requirements of law and the terms of the special land use approval.

G. Prohibited Structures. The following structures are prohibited as a part of any WECS regulated under the terms of this section:

- (1) Vertical axis wind turbines, commonly known as a “VAWT” or “Darrieus” wind turbine.
- (2) Wind turbines (HAWT’s) with a rotor design consisting of a number of airfoil rotor blades other than three.
- (3) Wind turbines utilizing a lattice tower structure, unless the WECS does not exceed 50 feet in height.

Section 4. Publication/Effective Date. A notice of adoption and a summary of the regulatory effect of this Ordinance shall be published in a newspaper of general circulation in the

Township within fifteen days after adoption. The ordinance shall become effective thirty (30) days after said publication.

AYES: Members: W. Cornell, K. Hinkley, T. Baylis and B. Rapp

NAYS: Members: NONE

ORDINANCE DECLARED ADOPTED.

Kimberly Hinkley, Township Clerk