

Wind Energy Conversion Systems

TOWNSHIP OF LAKEFIELD
COUNTY OF SAGINAW, STATE OF MICHIGAN
TOWNSHIP ORDINANCE NO. _____

ORDINANCE TO AMEND THE LAKEFIELD TOWNSHIP ZONING ORDINANCE

AN ORDINANCE AMENDING THE LAKEFIELD TOWNSHIP ZONING ORDINANCE
IN ORDER TO PROVIDE FOR THE ESTABLISHMENT AND REGULATION OF WIND
ENERGY CONVERSION SYSTEMS WITHIN THE TOWNSHIP

IT IS HEREBY ORDAINED BY THE TOWNSHIP OF LAKEFIELD, SAGINAW
COUNTY, MICHIGAN:

Sec. 1. – ORDINANCE AMENDMENT

The Lakefield Township Zoning Ordinance shall be amended to add Section 701 to the Ordinance as follows:

Section 701 WIND ENERGY CONVERSION SYSTEMS

(a) – Intent and Purpose.

The purpose of this ordinance is to establish regulations for wind energy systems with the intention to strike an appropriate balance for the need for clean, renewable energy resources and the necessity to protect the health, safety, and welfare of the general public. This ordinance shall set standards for both large scale wind commercial energy facilities and small wind energy systems designed to serve the needs of home, small business, or farm. In addition, an “overlay zoning” technique is incorporated into this ordinance to regulate the development of wind energy resources in the Agricultural District as well as to preserve large tracts of land within the district for future agricultural use.

(b) – Definitions as applied to this section:

Avian Analysis – for the purposes of this ordinance an avian study means a study of the nesting and migration patterns of birds and flyways which may affect the location of a wind energy facility.

County – shall mean the County of Saginaw.

Decommissioning – shall mean the termination of use of a wind energy facility or portion of a facility where the owner provides notice to the Township that the facility or individual wind turbine(s) are no longer used to produce electricity. Such decommissioning shall occur no less than thirty (30) days per wind turbine and not to exceed three (3) years total.

FAA – shall mean the Federal Aviation Administration.

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

Inhabited Structure – shall mean a permanent building existing prior to the installation of a wind energy conversion facility, which is used for human or animal habitation.

Kilowatt – a unit of electricity equal to 1,000 watts.

Large Wind Energy Conversion Facility (WECT) of Wind Energy Facility – shall mean any 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, whose main purpose is to supply electricity to off-site customer(s). It includes substations, MET Towers, cables and wires and other buildings accessory to such facility. A single turbine may be referred to as a large-scale wind energy system.

Total Height – shall include the height of the tower including the rotor radius measured at the top of its blade in the vertical position.

Township – means the Township of Lakefield.

Waiver Agreement – means a signed statement between the owner of a Wind Energy Facility and a Non-Participating Property owner releasing rights of this ordinance relating to setbacks from internal property lines.

Wind Energy Facility Site Permit – is a 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 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 and base and pad transformer, if any. A wind turbine, by definition, shall include a Horizontal Axis Wind Turbine (HAWT) and/or a Vertical Axis Wind Turbine (VAWT).

Wind Energy Overlay District – means a district created by the Lakefield Township Board, upon receiving a recommendation of the Planning Commission, by identifying specific areas within the Agricultural District best situated for development of wind energy facilities and adopting specific provisions that apply in that area in addition to other provisions of the zoning ordinance.

(c) – Principal or Accessory Uses

A large scale wind energy facility 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.

A small scale on-site wind energy system shall be considered an accessory use for all systems designed to serve the needs of the individual owner. Small scale on-site wind energy systems shall not be considered an expansion of a nonconforming use or structure.

(d) – Applicability

A. Large-Scale Wind Energy Facility: a combination of more than one wind energy system under common ownership whose main purpose is to supply the needs of off-site customers shall be permitted in Agricultural Districts with a Wind Energy District Overlay classification, as a special use approval. A large scale wind turbine is generally limited to 400 feet (121.95 meters) in total height, but the Township Planning Commission may waive the height limitation where adjustment of the total height is in the interest of the Township and the Applicant.

B. Small-Scale Wind Turbine System: a single or combination of not more than two (2) wind turbine generators sized to serve the needs of the on-site consumer for a home, farm, or small business shall be a permitted use in all districts where the parcel size is one (1) acre or larger, and shall not be considered a special use where the wind turbine is 10kW or less of rated capacity and the wind turbine is seventy five (75') feet (22.865 meters) or less in total height. Such approvals may be administratively given subject to meeting the requirements of this ordinance. Where a wind turbine is greater than 10kW of rated capacity and/or greater than seventy five (75') feet (22.865 meters) in

total height, the wind turbine shall be considered a special use approval. An on-site wind energy system with a total height of over 150 Feet (45.73 meters) shall be considered a large scale wind energy system for siting purposes.

(e) Wind Energy Facilities Overlay District

A Wind Energy Facility Overlay District shall be created only within the Agricultural Zoning Districts. A "Wind Energy Overlay District" classification is a prerequisite to developing a Large-Scale Wind Energy Facility. It is the intent of this "overlay district" 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.

(f) 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. Modification of development standards shall be based on a recommendation by the Planning Commission that said modifications are in the best interest of the Township and the Applicant. Where modifications of a standard are requested, the Township Board shall hold a public hearing prior for the consideration of a modified site plan. The Wind Energy Facilities Site Plan must be reviewed and approved by the Lakefield Township Planning Commission pursuant to the standards contained herein, and as required in Chapter 15, Section 1507 (Site Plan Review), prior to being submitted to the Lakefield Township Planning Commission for the special use approval.

Small-Scale "on-site" wind energy turbines shall not be located, erected, altered, or used without first submitting a site plan for zoning approval, where such approval may be administratively given, or as may be required as a special use approval.

(g) Information to be submitted

A The following information, in addition to information as required and as may be applicable for site plan review under Sections 1603 and 1604 of the Lakefield Township Zoning Ordinance, must be submitted as part of the site plan review for Wind Energy Facilities and single wind turbine system(s) of rated capacities of more than 10 kW. The following, as applicable, shall also be submitted for MET Towers.

1. Survey of the property showing property boundaries and of existing features such as land contours, large trees, buildings, structures, roads (rights-of-way), utility easements, land use, zoning district, ownership of property, and vehicular access;

2. Plan(s) showing the proposed location and number of turbine towers, Underground and overhead wiring (including depth of underground wiring), access roads (including width) substations and accessory structures;
3. Photo exhibits visualizing the proposed wind energy system;
4. A description of the large wind energy system(s)' height and design, including across section, elevation, and diagram of how the wind energy system will be anchored to the ground;
5. A signed statement indicating that the application has legal authority to construct, operate, and develop the wind energy system(s) under state, federal and local laws and regulations, including Federal Aviation Administration (FAA), the Michigan Tall Structures Act (Act 259 of 1959), the Airport Zoning Act (Act 23 of 1950), and state and local building codes. The FAA will issue a signed statement when the precise location(s) has been determined. Building permits will not be issued prior to receiving all signed statements, but a special use permit may be granted;
6. A description of the routes to be used by construction and delivery vehicles and any road improvements that will be necessary in the County to accommodate construction vehicles, equipment or other deliveries, and a bond which guarantees the repair of damage to public roads or other areas caused by construction of the Wind Energy Facility;
7. Engineering data concerning construction of the tower and its base or foundation, which must be engineered and constructed in such a manner that upon removal of said tower, the soil will be restored to its original condition to a depth of four (4) feet;
8. A copy of the lease, or recorded document, with the land owner if the applicant does not own the land for the proposed large wind energy facility(s). A statement from the land owner of the leased site that he/she will abide by all applicable terms and conditions of the use permit, if approved;
9. A copy of any applicable waiver agreements;
10. A certificate of insurance with a minimum of \$1,000,000 liability coverage per incidence, per occurrence shall be required. Each renewal period will require a copy of certificate of insurance be provided to the Township. An expired

insurance certificate or an unacceptable liability coverage amount is grounds for revocation of the use permit;

11. Anticipated construction schedule; and

12. Description of operations, including anticipated regular and unscheduled maintenance.

B. Information required as part of an administrative site plan review for a Small-Scale "on-site" Wind Energy Turbine with a rated capacity of 10 kW or less.

1. A site plan at an appropriate scale showing the proposed location of the wind energy system, and any structures.

2. Standard drawings of the wind turbine structure including the tower, base, footings, cross section, and connection and certification of the tower and turbine showing compliance with applicable building codes and recognized standards.

3. Plan(s) showing the proposed location of turbine tower(s), underground wiring (including depth of underground wiring), access road, if any, and accessory structures.

4. Documentation from the manufacturer, including full specifications and manufacturer recommended installation procedures.

5. Proof of applicant's public liability insurance.

(h) – Wind Turbine/Tower Height (total height)

The total height of a wind turbine shall be the distance to the center of the hub of the wind turbine plus the distance to the tip of the turbine blade at its highest point. Generally, the hub height shall be limited to two hundred seventy five (275) feet from the existing grade unless modification of this maximum height is approved pursuant to the review of the Planning Commission. The applicant shall demonstrate compliance with the Michigan Tall Structure Act (Act 259 of 1959, as amended) and FAA guide lines as part of the approval process.

(i) – Application Material

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

Commission and approval from the Township Board that the modification is in the best interest of the Township and the Applicant. Such things that will be considered in addition to the site plan are as follow:

A. Avian Analysis.

The applicant may be required to submit an avian study to identify and assess the potential impact of a proposed wind energy facility upon wildlife and endangered species. Sites requiring special scrutiny include bird refuges and other areas where birds are highly concentrated, bat hibernacula, wooded ridge tops that attract wildlife, sites that are frequented by federally listed endangered species of birds and bats, significant bird migration path ways, and areas that have landscape features known to attract large numbers of raptors. The analysis shall indicate whether a post construction wildlife mortality study will be conducted and, if not, the reasons why a study does not need to be conducted.

B. Obstructions to Air Traffic.

Wind turbines which exceed two hundred (200) feet in total height, are considered obstructions to air traffic and shall be subject to the approval of the Federal Aviation Administration (FAA). The FAA requires that obstructions to air traffic be illuminated with the appropriate FAA approved flashing red, flashing white, or steady burning red light lighting as described in FAA Advisory Circular AC70/7460-1K, titled Obstruction Lighting and Marking.

C. Visual Appearance, Lighting; Power lines.

(1) Wind turbines shall be mounted on tubular towers. The appearance of turbines, towers and buildings shall be maintained throughout the life of the wind energy facility pursuant to industry standards;

(2) Blade Glint is prohibited. Wind turbines and tubular towers shall be painted a non-reflective, non-obtrusive color, such as gray, white, or off-white. The applicant shall submit a paint sample that demonstrates the color, texture and gloss of the proposed surface coating. The applicant shall also submit a certification by the manufacturer stating that the proposed surface coating will not create a reflective surface conducive to blade glint.

(3) Wind Energy Facilities shall not be artificially lighted, except to the extent required by the FAA, the Tall Structures Act, other applicable authority, or as otherwise necessary for the reasonable safety and security thereof.

(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 connection shall be placed underground within the interior of each parcel at a depth designed to accommodate the existing agricultural land use to the maximum extent practicable. The 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.

(6) All electrical components of the wind energy facility shall conform to the relevant and applicable local, state, and national codes, and relevant and applicable international standards.

D. Setbacks, Separation and Security.

(1) Inhabited structures: Each wind turbine or MET Tower shall be setback from the nearest residence, or other inhabited structure, a distance no less than the greatest of (a) 4 times its total height or (b) 2000 feet. A lesser setback may be approved if the intent of this paragraph would be better served thereby. A reduced setback shall be considered only with written approval from the owner of the inhabited structure.

(2) Property line setbacks: Excepting locations of public roads, drain rights-of-way and parcels within inhabited structures, Wind Energy Facilities and MET Towers shall not be subject to a property line setback, except as provided below for a non-participating property owner. Along the border of the Wind Energy Facility Overlay District, there shall be a setback distance no less than 4 times the total height of the wind turbine.

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 than 4 times the total height of the wind turbine, an easement shall be established on the abutting parcels.

(3) Waiver Agreement: Where a proposed wind energy or MET Tower would be located along side an internal property line adjacent to a non-participating property owner, the owner of a wind energy facility shall obtain a waiver agreement with the adjacent property owner for the siting location otherwise a setback of no less than 4 times the total height of the wind turbine shall apply from the non-participating property line.

(4) Public Roads: Each wind turbine shall be set back from the nearest public road a distance no less than 2000 feet or 4 times its total height, whichever is greater, determined at the nearest boundary of the underlying right-of-way for such public road.

(5) Communication and electrical lines: Each wind turbine shall be set back from the nearest above-ground public electrical power line or telephone line at distance no less than 2000 feet or 4 times its total height, whichever is greater, determined from the existing power line or telephone line.

(6) Tower separation: Turbine/tower separation shall be based on

- a) Industry standards
- b) Manufacturer recommendation
- c) Characteristics [prevailing wind, topography, etc.] of the particular site location.

At a minimum, there shall be separation between towers of not less than 4 times the turbine (rotor) diameter; and, the Wind Energy Facility shall be designed to minimize disruption to farm land activity.

Documents shall be submitted by the developer/manufacturer confirming specifications for turbine/tower separation.

(7) 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.

(8) Where a Small-Scale Wind Energy System is installed for "on-site" use, the minimum setback distance between the wind turbine tower and all surrounding property lines, overhead utility or transmission lines, other wind turbine towers, electrical substations, meteorological towers, public roads and dwellings (other than the owner), shall be equal to no less than 2 times the sum of the tower height at its hub and the rotor radius measured at the top of its blade in the vertical position. No part of the wind energy system structure, including any guy wire anchors, may extend closer than ten (10) feet to the owner's property lines.

E. Sound Pressure Levels.

1) Audible noise or the sound pressure level from the operation of the Wind Energy Facility shall not exceed forty five (45) dBA, or the ambient sound pressure level plus five (5) dBA, whichever is greater, for more than ten percent (10%) of any hour, measured at any residence, or other occupied structure, existing on the date of the approval of the Wind Energy Facility Site Permit. The applicant shall be able to provide sound pressure level measurements from a reasonable number of sampled locations at the perimeter and in the interior of the Wind Energy Facility to demonstrate compliance with this standard.

2) The ambient noise level shall be expressed in terms of the highest whole number sound pressure level in dBA, which is exceeded for more than five (5) minutes per hour. Ambient noise levels shall be measured at a building's exterior of potentially affected residences or other occupied structures. Ambient noise levels shall be measured when wind velocities are sufficient to allow wind turbine operations, provided that wind velocities are less than thirty (30) mph at the ambient noise level location.

3) In the event that allowable noise levels of a Wind Energy Facility are exceeded, a waiver to said levels may be approved provided that the following has been accomplished:

a. Written statements from the affected property owner(s) has been obtained stating that they are aware of the Wind Energy Facility and the noise limitations imposed by this ordinance, and that they are not opposed to the Township's granting of a waiver to the maximum sound pressure level limits otherwise allowed.

b. A permanent noise impact statement must be recorded in the Saginaw County Register of Deeds office which describes the burdened properties and which advises all subsequent owners of the burdened property that noise levels in excess of those otherwise permitted by this ordinance may exist on or at the burdened property.

4) Individual Small-Scale on-site wind turbine towers shall be located so that the level of noise produced by wind turbine operation shall not exceed forty-five (45) dBA, measured at any site from the property line, except that the level of noise generated by a wind turbine operation may exceed forty-five (45) dBA during short term events such as power outages and severe wind storms. If the tower is installed in an area of already higher sound levels, the ambient sound level plus five (5) dBA shall be used.

F. Minimum Ground Clearance.

1. The vertical distance from the ground level to the tip of a wind generator blade on a Wind Turbine Facility, when the blade is at its lowest point must be at least seventy-five (75) feet.
2. The vertical distance from the ground level to the tip of a wind generator blade on a Small-Scale on-site wind turbine, when the blade is at its lowest point must be at least twenty five (25) feet.

G. Shadow Flicker.

The applicant of a large scale wind energy facility shall be required to conduct an analysis on potential shadow flicker at nearby occupied structures. Any analysis shall identify the receptor locations of shadow flicker that may be caused by the project and the expected durations of the flicker at each receptor from sun-rise to sun-set over the course of a year. All existing occupied structures, structures permitted for construction and roadways shall be identified within the model as receptors.

Wind Turbines shall be sited such that shadow flicker will not fall directly on a receptor or provide written documentation describing measures that shall be taken to eliminate or mitigate the problem. Shadow flicker expected to fall on a roadway may be acceptable if all of the following conditions are satisfied:

- a. The flicker will not exceed 10 hours per year at any one receptor measured as the sum of those times during which shadow flicker occurs during any calendar year.
- b. The traffic volumes are less than 500 vehicles per day on the affected roadway.
- c. The flicker will not fall onto an intersection.

H. Signal Interference.

No Large-Scale 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 communications systems would produce electromagnetic interference with signal transmission or reception. No Large-Scale Wind Energy Facility shall be installed in any location

along the major axis of an existing microwave communications link where its operation is likely to produce electromagnetic interference in the link's operation.

I. Safety.

- 1) All wind energy facilities shall be equipped with a redundant braking system. This includes both aerodynamic over speed controls (including variable pitch, tip, and other similar systems) and mechanical brakes. Mechanical brakes shall be operated in a failsafe mode. Stall regulations shall not be considered a sufficient braking system for over speed protection.
- 2) All collection system wiring shall comply with all applicable safety and stray voltage standards.
- 3) All wind energy towers shall have lightning protection.
- 4) Large Wind Turbine towers shall not be climbable on the exterior.
- 5) All access doors to wind turbine towers and electrical equipment shall be lockable.
- 6) Appropriate warning signs shall be placed on wind turbine towers, electrical equipment, and Wind Energy Facilities entrances.
- 7) The owner/operator of a wind energy facility shall post and maintain at each wind turbine system a 24 hour a day manned telephone number in case of emergency.
- 8) All sub-stations shall be fenced to prevent public access and may be installed to a height of eight (8) feet.
- 9) A Small-Scale on-site wind energy system designed for the home, business, or farm shall have braking, governing, or a feathering system to prevent uncontrolled rotation or over speeding. All wind towers shall have lightning protection. All ground mounted electrical and control equipment must be labeled and secured to prevent unauthorized access. A tower may not have step bolts or a ladder within eight (8') feet of the ground that is readily accessible to the public.

J. Certification.

Any approval for Wind Energy Facilities shall require the applicant to provide a post-construction certification that the project complies with applicable codes and industry practices.

K. Inspections.

The applicant of a Wind Turbine Facility shall submit bi-annual inspection reports to the Planning Commission or its designated officer confirming compliance with applicable codes and industry practices.

The applicant(s) of all on-site small-scale wind turbine systems, including towers, shall comply with all applicable State construction and electrical codes and local building permit requirements. The owner must have received the required inspections from a State and Federal licensed inspector showing that the wind energy system complies with all applicable codes before placing it into operation. Interconnected (on-grid) systems must comply with the Michigan Public Service Commission Standards.

L. Decommissioning.

The applicant of a large scale wind energy facility shall submit a decommissioning plan prior to the project approval. The plan shall include: 1) the anticipated life of the project, 2) the estimated decommissioning costs net of salvage value in current dollars, 3) 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. Any foundation shall be removed to a minimum depth of four (4) feet below grade, by the owner of the facility or its assigned.

Following removal, the location of any remaining wind turbine foundation shall be identified on a map as such and recorded with the deed to the property with the Saginaw County Register of Deeds.

Any access roads shall be removed, cleared, and graded by the owner of the large wind energy facility or its assigns, unless the property owner requests in writing a desire to maintain the access road. The Township will not be assumed to take ownership of any access road unless through official action of the Township Board.

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 the respect to the tower removal, site restoration, etc.]. The bond shall be in favor of Lakefield Township and may be provided jointly as a single instrument for multiple townships within a single wind farm, provided that such single instrument shall be in an amount of at least \$1 million/unit and shall contain a replenishment obligation. In the event of bankruptcy, there needs to be protection with a prepayment within three (3) years

M. Complaint Resolution.

The applicant of a large wind energy facility shall develop a process to resolve complaints from nearby residents concerning the construction or operation of a project. The process may use an independent mediator or arbitrator and shall include a time limit for action on a complaint. The process shall not preclude the Township from acting on a complaint. During the construction process, the applicant shall maintain a telephone number during business hours where nearby residents can reach a project representative.

N. Indemnification.

The owner of a large wind energy facility shall defend, indemnify, and hold harmless the Township and their officials from and against all claims, demands, losses, suits, causes of action, damages, injuries, costs, expenses, and liabilities whatsoever including attorney fees arising out of the acts or omissions of the operator concerning the operation of the large wind energy facility without limitation, whether said liability is premised on contractor tort.

Section 2 – SEVERABILITY

This ordinance and the various parts, sentences and clauses thereof are hereby declared to be severable and if any part, sentence, paragraph, section or clause is adjudged unconstitutional or invalid, the same shall not affect the validity of this ordinance as a whole or any part thereof, other than the part declared to be unconstitutional and invalid.

Section 3. – REPEAL CLAUSE

All ordinances or parts of ordinances in conflict herewith are repealed to the extent necessary to give this ordinance full force and effect.

Section 4. – EFFECTIVE DATE

This ordinance shall take effect and be in force thirty days after its publication.